ANALYTICAL REPORT

Job Number: 160-18521-1

SDG Number: Headworks/9720-8

Job Description: ORNL Y-12 Outfall 200 Characterization

For:
Alliant Corporation
320 N Cedar Bluff Road
Suite 200
Knoxville, TN 37923

Attention: Doug Milloway

Approved for release.
Erika K Gish
Project Manager II
8/30/2016 10:23 AM

Erika K Gish, Project Manager II
13715 Rider Trail North, Earth City, MO, 63045
(314)298-8566
erika.gish@testamericainc.com
08/30/2016

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. Pursuant to NELAP, this report shall not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of TestAmerica and its client. All questions regarding this report should be directed to the TestAmerica Project Manager.

Louisiana Lab Certification ID (Non-Potable, Solid/Haz. Material): 106151
Florida Lab Certification ID (Drinking Water): E87689.

Table of Contents

Cover Title Page 1

Data Summaries 8

Definitions 8

Case Narrative 9

Detection Summary 12

Client Sample Results 13

Default Detection Limits 19

Surrogate Summary 21

Tracer/Carrier Summary 24

QC Sample Results 26

QC Association 40

Chronicle 45

Certification Summary 47

Method Summary 48

Sample Summary 49

Manual Integration Summary 50

Reagent Traceability 66

COAs 143

Organic Sample Data 640

GC/MS VOA 640

Method 8260C 640

Method 8260C QC Summary 641

Method 8260C Sample Data 649

Standards Data 659

Method 8260C ICAL Data 659

Method 8260C CCAL Data 714

Table of Contents

Raw QC Data 730

Method 8260C Tune Data 730

Method 8260C Blank Data 739

Method 8260C LCS/LCSD Data 745

Method 8260C MS/MSD Data 751

Method 8260C Run Logs 764

Method 8260C Prep Data 766

GC/MS Semi VOA 767

Method 8270D 767

Method 8270D QC Summary 768

Method 8270D Sample Data 778

Standards Data 786

Method 8270D ICAL Data 786

Method 8270D Resolution Data 834

Method 8270D CCAL Data 836

Raw QC Data 854

Method 8270D Tune Data 854

Method 8270D Blank Data 868

Method 8270D LCS/LCSD Data 875

Method 8270D MS/MSD Data 879

Method 8270D Run Logs 887

Method 8270D Prep Data 889

GC Semi VOA 893

Method 8082A 893

Method 8082A QC Summary 894

Method 8082A Sample Data 910

Table of Contents

Standards Data 931

Method 8082A ICAL Data 931

Method 8082A CCAL Data 1043

Raw QC Data 1163

Method 8082A Blank Data 1163

Method 8082A LCS/LCSD Data 1167

Method 8082A MS/MSD Data 1181

Method 8082A Run Logs 1209

Method 8082A Prep Data 1212

Method 8151A 1214

Method 8151A QC Summary 1215

Method 8151A Sample Data 1224

Standards Data 1234

Method 8151A ICAL Data 1234

Method 8151A CCAL Data 1306

Raw QC Data 1352

Method 8151A Blank Data 1352

Method 8151A LCS/LCSD Data 1357

Method 8151A MS/MSD Data 1363

Method 8151A Run Logs 1373

Method 8151A Prep Data 1376

Inorganic Sample Data 1380

Metals Data 1380

Met Cover Page 1381

Met Sample Data 1382

Met QC Data 1384

Table of Contents

Met ICV/CCV 1384

Met CRQL 1388

Met Blanks 1389

Met ICSA/ICSAB 1391

Met MS/MSD/PDS 1393

Met LCS/LCSD 1395

Met Serial Dilution 1397

Met MDL 1398

Met IECF 1400

Met Linear Ranges 1406

Met Preparation Log 1407

Met Analysis Run Log 1408

Met Raw Data 1410

Met Prep Data 1585

General Chemistry Data 1588

Gen Chem Cover Page 1589

Gen Chem MDL 1590

Gen Chem Analysis Run Log 1592

Gen Chem Prep Data 1593

Radiochemistry Raw Data 1594

Alpha Spectroscopy 1594

Method A-01-R Am+Cm 1595

Method A-01-R Np 1606

Method A-01-R Pu 1617

Method A-01-R Th 1627

Method A-01-R U 1644

Table of Contents

Daily Checks 1655

Initial Calibrations 1686

Initial Calibration Verifications 1706

Monthly Calibration Verifications 1729

Monthly Backgrounds 1749

Run Logs 1788

Gamma Spectroscopy 1793

Method TC-02-RC Tracers 1794

Daily Checks 1826

Initial Calibrations 1833

Initial Calibration Verifications 1855

Annual Calibration Verifications 1877

Monthly Backgrounds 1896

Run Logs 1906

Gas Flow Proportional Counter 1909

Method A-01-R Np Tracer 1910

Method SR-03-RC Sr 1917

Daily Checks 1927

Initial Calibrations 1958

Alpha Beta Calibrations 1958

Neptunium Calibrations 2031

Initial Calibration Verifications 2047

Alpha Beta Calibration Verifications 2047

Neptunium Calibration Verifications 2080

Annual Calibration Verifications 2087

Alpha Beta Annual Calibration Verifications 2087

Table of Contents

Neptunium Annual Calibration Verifications 2104

Monthly Backgrounds 2111

Run Logs 2119

Liquid Scintillation Counter 2124

Method H3-04-RC 2125

Method TC-02-RC 2134

Daily Checks 2144

Initial Calibrations 2147

Tc-99 Calibrations 2148

Tritium Calibrations 2156

Initial Calibration Verifications 2165

Tc-99 Calibration Verifications 2166

Tritium Calibration Verifications 2172

Run Logs 2179

Pre-Preparation Data 2181

Subcontracted Data 2183

Shipping and Receiving Documents 2235

Client Chain of Custody 2236

Sample Receipt Checklist 2237

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

GC/MS Semi VOA

Qualifier	Qualifier Description
N	MS, MSD: Spike recovery is outside acceptance limits.
U	Undetected at the Limit of Detection.
N	LCS, LCSD: Recovery exceeds upper or lower control limits.
S	Surrogate is outside control limits

GC Semi VOA

Qualifier	Qualifier Description
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation

Rad

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
S	Tracer is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: Alliant Corporation

Project: ORNL Y-12 Outfall 200 Characterization

Report Number: 160-18521-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 8/6/2016 8:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.7º C.

TCLP VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for TCLP volatile organic compounds (GC-MS) in accordance with EPA SW846 Method 1311/8260C. The samples were leached on 08/08/2016 and analyzed on 08/10/2016.

The following compound did not meet the minimum relative response factor limits in the continuing calibration verification (CCV): 2-Butanone (MEK). A low-level LOQV was analyzed at the reporting limit (5ug/L) and the affected analyte was detected. Target analytes recovering above the reporting limit will be qualified and reported. (CCVIS 160-264101/2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for TCLP semivolatile organic compounds (GC-MS) in accordance with EPA SW-846 Methods 1311 / 8270D. The samples were leached on 08/11/2016, prepared on 08/12/2016 and analyzed on 08/15/2016.

2,4,6-Tribromophenol (Surr) recovery for the following sample was outside the upper control limit: (LB 160-264502/1-B). The samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

The laboratory control sample (LCS) and matrix spike (MS) recovered outside control limits for the following analyte: Hexachlorobenzene. This analyte was biased high in the LCS and MS and was not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

POLYCHLORINATED BIPHENYLS (PCBS)
Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for polychlorinated biphenyls (PCBs) in

accordance with EPA SW-846 Method 8082. The samples were prepared on 08/15/2016 and analyzed on 08/19/2016.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries were outside control limits for PCB-1016 from the primary column. Sample matrix interference is suspected because the associated laboratory control sample (LCS) and MS/MSD recoveries for the confirmation column were within acceptance limits. The confirmation analyzes which were the lower values and were within the QC limits are reported.

The following MS/MSD contained PCB-1254 with co-elution of PCB-1016 and PCB-1260 to quantify individually. The PCBs present are quantified as the predominant Aroclor.

The %RPD between the primary and confirmation column exceeded 40% for DCB Decachlorobiphenyl (Surr) for the following MS: (160-18504-E-1-B MS). The surrogate recoveries were within the QC limits; therefore, re-analysis was not warranted. The lower value has been reported and qualified in accordance with the laboratory's SOP.

The %RPD between the primary and confirmation column exceeded 40% for PCB-1016 for the following MS/MSD: (160-18504-E-1-B MS) and (160-18504-E-1-C MSD). PCB-1016 recoveries were within the QC limits; therefore, re-analysis was not warranted. The lower value has been reported and qualified in accordance with the laboratory's SOP.

EPA Method 8082/8082A requires a minimum of 3 peaks to be used for PCB quantitation. Due to the presence of multiple aroclors in the following samples, less than 5 peaks were used for quantitation: (160-18504-E-1-B MS), (160-18504-E-1-C MSD),YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP CHLORINATED HERBICIDES

Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for TCLP chlorinated herbicides in accordance with SW- 846 Method 9315. The samples were leached on 08/11/2016, prepared on 08/12/2016 and analyzed on 08/18/2016.

The CCV recovery for 2,4-D is outside the upper QC limits on the secondary column, but is within the acceptable QC limits on the primary column. There were no hits above the RL on the primary column; thus confirmation was not needed on the secondary column. The data results are reported from the primary column. (CCV 160-265408/15)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP METALS (ICP)

Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for TCLP metals (ICP) in accordance with EPA SW-846 Method 1311/6010C. The samples were leached on 08/11/2016, prepared on 08/16/2016 and analyzed on 08/17/2016.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

PERCENT SOLIDS

Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/09/2016.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

ISOTOPIC AMERICIUM 241 (ALPHA SPECTROMETRY)

Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for Isotopic Americium 241 (Alpha Spectrometry) in accordance with A-01-R. The samples were dried on 08/08/2016, prepared on 08/09/2016 and analyzed on 08/16/2016.

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2). The sample contained rocks.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC NEPTUNIUM (ALPHA SPECTROMETRY)

Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for Isotopic Neptunium (Alpha Spectrometry) in accordance with A-01-R. The samples were dried on 08/08/2016, prepared on 08/09/2016 and analyzed on 08/12/2016.

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2). The sample contained rocks.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were dried on 08/08/2016, prepared on 08/09/2016 and analyzed on 08/12/2016.

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: YMTFA74SE001

(160-18521-1) and YMTFA75SE001 (160-18521-2). The sample contains rocks.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC THORIUM (ALPHA SPECTROMETRY)
Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for Isotopic Thorium (Alpha Spectrometry) in accordance with DOE A01R_Th. The samples were dried on 08/08/2016, prepared on 08/09/2016 and 08/16/2016 and analyzed on 08/12/2016 and 08/18/2016.

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: YMTFA75SE001 (160-18521-2). The sample contained rocks.

The following sample could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: YMTFA74SE001 (160-18521-1). The sample contained rocks and was weighed at a reduced aliquot.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)
Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were dried on 08/08/2016, prepared on 08/09/2016 and analyzed on 08/15/2016 and 08/16/2016.

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2). The sample contains rocks.

The uranium-232 tracer recovery for the following sample (15.3%) was low outside the QC limits of 30%: YMTFA74SE001 (160-18521-1). The DOE/DOD Quality Systems Manual for Environmental Laboratories (QSM Rev. 5.0) allows for reporting results as quantitative when tracer recoveries are below 30% if a) the relative uncertainty associated with the tracer recovery is less than 10% (2 sigma), b) spectral resolution requirements are met and there are no indications of spectral interferences, and c) detection limit requirements are met. All three of these criteria are met for these samples: a) a minimum of 400 counts (which leads to 10% count uncertainty at 2 sigma) in the tracer peak, b) resolution of < 100 keV is met for all peaks, and c) the activity in the sample is well above the MDC. The data have been qualified and reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM
Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for Tritium in accordance with DOE. The samples were prepared on 08/18/2016 and analyzed on 08/19/2016.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

TOTAL BETA STRONTIUM (GFPC)
Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for Total Beta Strontium (GFPC) in accordance with SR-03-RC. The samples were dried on 08/08/2016, prepared on 08/10/2016 and analyzed on 08/15/2016.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

TECHNETIUM-99 (LSC)
Samples YMTFA74SE001 (160-18521-1) and YMTFA75SE001 (160-18521-2) were analyzed for Technetium-99 (LSC) in accordance with TC_02_RC. The samples were prepared on 08/11/2016 and analyzed on 08/16/2016.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Client Sample ID: YMTFA74SE001 — Lab Sample ID: 160-18521-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
PCB-1254	0.17	J	0.033	0.0080	mg/Kg	1		8082A	Total/NA
PCB-1260	0.24		0.033	0.0080	mg/Kg	1		8082A	Total/NA
Polychlorinated biphenyls, Total	0.41		0.033	0.0080	mg/Kg	1		8082A	Total/NA
Barium	0.93		0.13	0.038	mg/L	1		6010C	TCLP
Cadmium	0.0078	J	0.013	0.0038	mg/L	1		6010C	TCLP

Client Sample ID: YMTFA75SE001 — Lab Sample ID: 160-18521-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
PCB-1254	0.028	J	0.033	0.0080	mg/Kg	1		8082A	Total/NA
PCB-1260	0.081		0.033	0.0080	mg/Kg	1		8082A	Total/NA
Polychlorinated biphenyls, Total	0.11		0.033	0.0080	mg/Kg	1		8082A	Total/NA
Barium	0.69		0.13	0.038	mg/L	1		6010C	TCLP

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Client Sample ID: YMTFA74SE001

Date Collected: 08/05/16 07:50
Date Received: 08/06/16 08:30

Lab Sample ID: 160-18521-1

Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.0037	U	0.050	0.0037	mg/L			08/10/16 03:28	1
1,2-Dichloroethane	0.0037	U	0.050	0.0037	mg/L			08/10/16 03:28	1
2-Butanone (MEK)	0.0039	U	0.050	0.0039	mg/L			08/10/16 03:28	1
Benzene	0.0025	U	0.050	0.0025	mg/L			08/10/16 03:28	1
Carbon tetrachloride	0.0036	U	0.050	0.0036	mg/L			08/10/16 03:28	1
Chlorobenzene	0.0038	U	0.050	0.0038	mg/L			08/10/16 03:28	1
Chloroform	0.00092	U	0.050	0.00092	mg/L			08/10/16 03:28	1
Tetrachloroethene	0.0028	U	0.050	0.0028	mg/L			08/10/16 03:28	1
Trichloroethene	0.0029	U	0.050	0.0029	mg/L			08/10/16 03:28	1
Vinyl chloride	0.0043	U	0.10	0.0043	mg/L			08/10/16 03:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*84 - 120*		*08/10/16 03:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*83 - 117*		*08/10/16 03:28*	*1*
Toluene-d8 (Surr)	*100*		*85 - 115*		*08/10/16 03:28*	*1*
Dibromofluoromethane (Surr)	*104*		*85 - 115*		*08/10/16 03:28*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:22	1
2,4-Dinitrotoluene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:22	1
Hexachlorobenzene	0.0050	U N	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:22	1
Hexachlorobutadiene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:22	1
Hexachloroethane	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:22	1
2-Methylphenol	0.010	U	0.050	0.010	mg/L		08/12/16 15:52	08/15/16 20:22	1
3 & 4 Methylphenol	0.0050	U	0.10	0.0050	mg/L		08/12/16 15:52	08/15/16 20:22	1
Nitrobenzene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:22	1
Pentachlorophenol	0.010	U	0.25	0.010	mg/L		08/12/16 15:52	08/15/16 20:22	1
Pyridine	0.025	U	0.10	0.025	mg/L		08/12/16 15:52	08/15/16 20:22	1
2,4,5-Trichlorophenol	0.010	U	0.050	0.010	mg/L		08/12/16 15:52	08/15/16 20:22	1
2,4,6-Trichlorophenol	0.010	U	0.050	0.010	mg/L		08/12/16 15:52	08/15/16 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*81*		*49 - 100*	*08/12/16 15:52*	*08/15/16 20:22*	*1*
Nitrobenzene-d5 (Surr)	*85*		*51 - 98*	*08/12/16 15:52*	*08/15/16 20:22*	*1*
Phenol-d5 (Surr)	*60*		*37 - 95*	*08/12/16 15:52*	*08/15/16 20:22*	*1*
Terphenyl-d14 (Surr)	*98*		*60 - 113*	*08/12/16 15:52*	*08/15/16 20:22*	*1*
2-Fluorobiphenyl (Surr)	*85*		*45 - 94*	*08/12/16 15:52*	*08/15/16 20:22*	*1*
2-Fluorophenol (Surr)	*67*		*46 - 92*	*08/12/16 15:52*	*08/15/16 20:22*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 16:50	1
PCB-1221	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 16:50	1
PCB-1232	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 16:50	1
PCB-1242	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 16:50	1
PCB-1248	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 16:50	1
PCB-1254	**0.17**	**J**	0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 16:50	1
PCB-1260	**0.24**		0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 16:50	1
PCB-1262	0.0080	U	0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 16:50	1

Client Sample ID: YMTFA74SE001

Date Collected: 08/05/16 07:50
Date Received: 08/06/16 08:30

Lab Sample ID: 160-18521-1

Matrix: Solid

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Polychlorinated biphenyls, Total	**0.41**		0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 16:50	1
PCB-1268	0.0080	U	0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 16:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*67*		*23 - 146*	*08/15/16 11:07*	*08/19/16 16:50*	*1*

Method: 8151A - Herbicides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	0.020	U	0.040	0.020	mg/L		08/12/16 16:02	08/18/16 21:22	1
Silvex (2,4,5-TP)	0.0030	U	0.010	0.0030	mg/L		08/12/16 16:02	08/18/16 21:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*80*		*56 - 147*	*08/12/16 16:02*	*08/18/16 21:22*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.010	U	0.025	0.010	mg/L		08/16/16 15:52	08/17/16 15:52	1
Barium	**0.93**		0.13	0.038	mg/L		08/16/16 15:52	08/17/16 15:52	1
Cadmium	**0.0078**	**J**	0.013	0.0038	mg/L		08/16/16 15:52	08/17/16 15:52	1
Chromium	0.0075	U	0.025	0.0075	mg/L		08/16/16 15:52	08/17/16 15:52	1
Lead	0.0075	U	0.025	0.0075	mg/L		08/16/16 15:52	08/17/16 15:52	1
Selenium	0.013	U	0.038	0.013	mg/L		08/16/16 15:52	08/17/16 15:52	1
Silver	0.0075	U	0.025	0.0075	mg/L		08/16/16 15:52	08/17/16 15:52	1

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	**0.140**		0.0625	0.0644	1.00	0.0475	pCi/g	08/09/16 10:32	08/16/16 16:19	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Americium-243	*69.7*		*30 - 110*	*08/09/16 10:32*	*08/16/16 16:19*	*1*

Method: A-01-R - Isotopic Neptunium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Neptunium-237	**0.0461**		0.0395	0.0397	1.00	0.0388	pCi/g	08/09/16 10:28	08/12/16 16:30	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Neptunium-239	*94.1*		*30 - 110*	*08/09/16 10:28*	*08/12/16 16:30*	*1*

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	**0.771**		0.154	0.168	1.00	0.0510	pCi/g	08/09/16 10:32	08/12/16 16:27	1
Plutonium-239/240	**0.0860**		0.0534	0.0539	1.00	0.0473	pCi/g	08/09/16 10:32	08/12/16 16:27	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Pu-242 (T)	*96.1*		*30 - 110*	*08/09/16 10:32*	*08/12/16 16:27*	*1*

Client Sample ID: YMTFA74SE001

Lab Sample ID: 160-18521-1
Date Collected: 08/05/16 07:50
Matrix: Solid
Date Received: 08/06/16 08:30

Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium-228	3.72		0.382	0.493	1.00	0.131	pCi/g	08/16/16 14:46	08/18/16 17:10	1
Thorium-230	2.60		0.316	0.385	1.00	0.0629	pCi/g	08/16/16 14:46	08/18/16 17:10	1
Thorium-232	4.65		0.421	0.575	1.00	0.0526	pCi/g	08/16/16 14:46	08/18/16 17:10	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Thorium-229	*90.6*		*30 - 110*	*08/16/16 14:46*	*08/18/16 17:10*	*1*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	44.5		1.45	4.01	1.00	0.180	pCi/g	08/09/16 10:32	08/16/16 16:13	1
Uranium-235/236	5.05		0.548	0.693	1.00	0.162	pCi/g	08/09/16 10:32	08/16/16 16:13	1
Uranium-238	299		3.75	25.4	1.00	0.199	pCi/g	08/09/16 10:32	08/16/16 16:13	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium-232	*15.3*	*S*	*30 - 110*	*08/09/16 10:32*	*08/16/16 16:13*	*1*

Method: H3-04-RC - Tritium (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0829	U	0.217	0.217	1.00	0.406	pCi/g	08/18/16 13:26	08/19/16 14:08	1

Method: SR-03-RC - Total Beta Strontium (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0876	U	0.167	0.167	3.00	0.285	pCi/g	08/10/16 21:28	08/15/16 20:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*52.8*		*40 - 110*	*08/10/16 21:28*	*08/15/16 20:49*	*1*

Method: TC-02-RC - Technetium-99 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium-99	0.228	U	0.206	0.207	1.00	0.335	pCi/g	08/11/16 16:14	08/16/16 15:39	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*91.0*		*30 - 110*	*08/11/16 16:14*	*08/16/16 15:39*	*1*

Client Sample ID: YMTFA75SE001

Lab Sample ID: 160-18521-2
Date Collected: 08/05/16 09:25
Matrix: Solid
Date Received: 08/06/16 08:30

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.0037	U	0.050	0.0037	mg/L			08/10/16 03:53	1
1,2-Dichloroethane	0.0037	U	0.050	0.0037	mg/L			08/10/16 03:53	1

Client Sample ID: YMTFA75SE001

Date Collected: 08/05/16 09:25
Date Received: 08/06/16 08:30

Lab Sample ID: 160-18521-2

Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Butanone (MEK)	0.0039	U	0.050	0.0039	mg/L			08/10/16 03:53	1
Benzene	0.0025	U	0.050	0.0025	mg/L			08/10/16 03:53	1
Carbon tetrachloride	0.0036	U	0.050	0.0036	mg/L			08/10/16 03:53	1
Chlorobenzene	0.0038	U	0.050	0.0038	mg/L			08/10/16 03:53	1
Chloroform	0.00092	U	0.050	0.00092	mg/L			08/10/16 03:53	1
Tetrachloroethene	0.0028	U	0.050	0.0028	mg/L			08/10/16 03:53	1
Trichloroethene	0.0029	U	0.050	0.0029	mg/L			08/10/16 03:53	1
Vinyl chloride	0.0043	U	0.10	0.0043	mg/L			08/10/16 03:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*84 - 120*		*08/10/16 03:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*83 - 117*		*08/10/16 03:53*	*1*
Toluene-d8 (Surr)	*98*		*85 - 115*		*08/10/16 03:53*	*1*
Dibromofluoromethane (Surr)	*99*		*85 - 115*		*08/10/16 03:53*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:56	1
2,4-Dinitrotoluene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:56	1
Hexachlorobenzene	0.0050	U N	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:56	1
Hexachlorobutadiene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:56	1
Hexachloroethane	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:56	1
2-Methylphenol	0.010	U	0.050	0.010	mg/L		08/12/16 15:52	08/15/16 20:56	1
3 & 4 Methylphenol	0.0050	U	0.10	0.0050	mg/L		08/12/16 15:52	08/15/16 20:56	1
Nitrobenzene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 20:56	1
Pentachlorophenol	0.010	U	0.25	0.010	mg/L		08/12/16 15:52	08/15/16 20:56	1
Pyridine	0.025	U	0.10	0.025	mg/L		08/12/16 15:52	08/15/16 20:56	1
2,4,5-Trichlorophenol	0.010	U	0.050	0.010	mg/L		08/12/16 15:52	08/15/16 20:56	1
2,4,6-Trichlorophenol	0.010	U	0.050	0.010	mg/L		08/12/16 15:52	08/15/16 20:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*81*		*49 - 100*	*08/12/16 15:52*	*08/15/16 20:56*	*1*
Nitrobenzene-d5 (Surr)	*81*		*51 - 98*	*08/12/16 15:52*	*08/15/16 20:56*	*1*
Phenol-d5 (Surr)	*59*		*37 - 95*	*08/12/16 15:52*	*08/15/16 20:56*	*1*
Terphenyl-d14 (Surr)	*100*		*60 - 113*	*08/12/16 15:52*	*08/15/16 20:56*	*1*
2-Fluorobiphenyl (Surr)	*81*		*45 - 94*	*08/12/16 15:52*	*08/15/16 20:56*	*1*
2-Fluorophenol (Surr)	*65*		*46 - 92*	*08/12/16 15:52*	*08/15/16 20:56*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 17:13	1
PCB-1221	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 17:13	1
PCB-1232	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 17:13	1
PCB-1242	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 17:13	1
PCB-1248	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/19/16 17:13	1
PCB-1254	**0.028**	**J**	0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 17:13	1
PCB-1260	**0.081**		0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 17:13	1
PCB-1262	0.0080	U	0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 17:13	1
Polychlorinated biphenyls, Total	**0.11**		0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 17:13	1
PCB-1268	0.0080	U	0.033	0.0080	mg/Kg		08/15/16 11:07	08/19/16 17:13	1

Client Sample ID: YMTFA75SE001

Date Collected: 08/05/16 09:25
Date Received: 08/06/16 08:30

Lab Sample ID: 160-18521-2

Matrix: Solid

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*91*		*23 - 146*	*08/15/16 11:07*	*08/19/16 17:13*	*1*

Method: 8151A - Herbicides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	0.020	U	0.040	0.020	mg/L		08/12/16 16:02	08/18/16 21:52	1
Silvex (2,4,5-TP)	0.0030	U	0.010	0.0030	mg/L		08/12/16 16:02	08/18/16 21:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*104*		*56 - 147*	*08/12/16 16:02*	*08/18/16 21:52*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.010	U	0.025	0.010	mg/L		08/16/16 15:52	08/17/16 15:57	1
Barium	**0.69**		0.13	0.038	mg/L		08/16/16 15:52	08/17/16 15:57	1
Cadmium	0.0038	U	0.013	0.0038	mg/L		08/16/16 15:52	08/17/16 15:57	1
Chromium	0.0075	U	0.025	0.0075	mg/L		08/16/16 15:52	08/17/16 15:57	1
Lead	0.0075	U	0.025	0.0075	mg/L		08/16/16 15:52	08/17/16 15:57	1
Selenium	0.013	U	0.038	0.013	mg/L		08/16/16 15:52	08/17/16 15:57	1
Silver	0.0075	U	0.025	0.0075	mg/L		08/16/16 15:52	08/17/16 15:57	1

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	**0.0434**		0.0289	0.0293	1.00	0.0145	pCi/g	08/09/16 10:32	08/16/16 16:19	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Americium-243	*97.2*		*30 - 110*	*08/09/16 10:32*	*08/16/16 16:19*	*1*

Method: A-01-R - Isotopic Neptunium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Neptunium-237	0.0178	U	0.0282	0.0282	1.00	0.0489	pCi/g	08/09/16 10:28	08/12/16 16:30	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Neptunium-239	*93.5*		*30 - 110*	*08/09/16 10:28*	*08/12/16 16:30*	*1*

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0349	U	0.0331	0.0332	1.00	0.0356	pCi/g	08/09/16 10:32	08/12/16 16:27	1
Plutonium-239/240	0.0221	U	0.0303	0.0304	1.00	0.0492	pCi/g	08/09/16 10:32	08/12/16 16:27	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Pu-242 (T)	*104*		*30 - 110*	*08/09/16 10:32*	*08/12/16 16:27*	*1*

Client Sample Results

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Client Sample ID: YMTFA75SE001

Date Collected: 08/05/16 09:25
Date Received: 08/06/16 08:30

Lab Sample ID: 160-18521-2

Matrix: Solid

Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium-228	**1.10**		0.201	0.221	1.00	0.0932	pCi/g	08/09/16 10:28	08/12/16 16:24	1
Thorium-230	**0.773**		0.165	0.178	1.00	0.0427	pCi/g	08/09/16 10:28	08/12/16 16:24	1
Thorium-232	**1.11**		0.197	0.218	1.00	0.0263	pCi/g	08/09/16 10:28	08/12/16 16:24	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Thorium-229	*81.7*		*30 - 110*	*08/09/16 10:28*	*08/12/16 16:24*	*1*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	**1.71**		0.241	0.281	1.00	0.0525	pCi/g	08/09/16 10:32	08/15/16 17:30	1
Uranium-235/236	0.0634	U	0.0569	0.0571	1.00	0.0705	pCi/g	08/09/16 10:32	08/15/16 17:30	1
Uranium-238	**2.04**		0.263	0.314	1.00	0.0254	pCi/g	08/09/16 10:32	08/15/16 17:30	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium-232	*83.7*		*30 - 110*	*08/09/16 10:32*	*08/15/16 17:30*	*1*

Method: H3-04-RC - Tritium (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0886	U	0.210	0.210	1.00	0.391	pCi/g	08/18/16 13:26	08/19/16 14:54	1

Method: SR-03-RC - Total Beta Strontium (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.00725	U	0.155	0.155	3.00	0.281	pCi/g	08/10/16 21:28	08/15/16 20:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*52.3*		*40 - 110*	*08/10/16 21:28*	*08/15/16 20:49*	*1*

Method: TC-02-RC - Technetium-99 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium-99	0.235	U	0.289	0.290	1.00	0.478	pCi/g	08/11/16 16:14	08/16/16 15:59	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*90.3*		*30 - 110*	*08/11/16 16:14*	*08/16/16 15:59*	*1*

Default Detection Limits

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

Leach: 1311

Analyte	RL	MDL	Units	Method
1,1-Dichloroethene	0.050	0.0037	mg/L	8260C
1,2-Dichloroethane	0.050	0.0037	mg/L	8260C
2-Butanone (MEK)	0.050	0.0039	mg/L	8260C
Benzene	0.050	0.0025	mg/L	8260C
Carbon tetrachloride	0.050	0.0036	mg/L	8260C
Chlorobenzene	0.050	0.0038	mg/L	8260C
Chloroform	0.050	0.00092	mg/L	8260C
Tetrachloroethene	0.050	0.0028	mg/L	8260C
Trichloroethene	0.050	0.0029	mg/L	8260C
Vinyl chloride	0.10	0.0043	mg/L	8260C

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Prep: 3510C
Leach: 1311

Analyte	RL	MDL	Units	Method
1,4-Dichlorobenzene	0.050	0.0050	mg/L	8270D
2,4,5-Trichlorophenol	0.050	0.010	mg/L	8270D
2,4,6-Trichlorophenol	0.050	0.010	mg/L	8270D
2,4-Dinitrotoluene	0.050	0.0050	mg/L	8270D
2-Methylphenol	0.050	0.010	mg/L	8270D
3 & 4 Methylphenol	0.10	0.0050	mg/L	8270D
Hexachlorobenzene	0.050	0.0050	mg/L	8270D
Hexachlorobutadiene	0.050	0.0050	mg/L	8270D
Hexachloroethane	0.050	0.0050	mg/L	8270D
Nitrobenzene	0.050	0.0050	mg/L	8270D
Pentachlorophenol	0.25	0.010	mg/L	8270D
Pyridine	0.10	0.025	mg/L	8270D

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Prep: 3550C

Analyte	RL	MDL	Units	Method
PCB-1016	0.033	0.0096	mg/Kg	8082A
PCB-1221	0.033	0.0096	mg/Kg	8082A
PCB-1232	0.033	0.0096	mg/Kg	8082A
PCB-1242	0.033	0.0096	mg/Kg	8082A
PCB-1248	0.033	0.0096	mg/Kg	8082A
PCB-1254	0.033	0.0080	mg/Kg	8082A
PCB-1260	0.033	0.0080	mg/Kg	8082A
PCB-1262	0.033	0.0080	mg/Kg	8082A
PCB-1268	0.033	0.0080	mg/Kg	8082A
Polychlorinated biphenyls, Total	0.033	0.0080	mg/Kg	8082A

Method: 8151A - Herbicides (GC) - TCLP

Prep: 8151A
Leach: 1311

Analyte	RL	MDL	Units	Method
2,4-D	0.040	0.020	mg/L	8151A
Silvex (2,4,5-TP)	0.010	0.0030	mg/L	8151A

Default Detection Limits

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Method: 6010C - Metals (ICP) - TCLP

Prep: 3010A
Leach: 1311

Analyte	RL	MDL	Units	Method
Arsenic	0.025	0.010	mg/L	6010C
Barium	0.13	0.038	mg/L	6010C
Cadmium	0.013	0.0038	mg/L	6010C
Chromium	0.025	0.0075	mg/L	6010C
Lead	0.025	0.0075	mg/L	6010C
Selenium	0.038	0.013	mg/L	6010C
Silver	0.025	0.0075	mg/L	6010C

Surrogate Summary

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	12DCE	TOL	DBFM
Lab Sample ID	Client Sample ID	(84-120)	(83-117)	(85-115)	(85-115)
LCS 160-264101/12	Lab Control Sample	97	102	99	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	12DCE	TOL	DBFM
Lab Sample ID	Client Sample ID	(84-120)	(83-117)	(85-115)	(85-115)
160-18521-1	YMTFA74SE001	99	110	100	104
160-18521-2	YMTFA75SE001	97	108	98	99
160-18521-2 MS	YMTFA75SE001	96	106	97	102
160-18521-2 MSD	YMTFA75SE001	94	103	97	99
LB 160-263916/1-A	Method Blank	97	102	97	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	NBZ	PHL	TPH	FBP	2FP
Lab Sample ID	Client Sample ID	(49-100)	(51-98)	(37-95)	(60-113)	(45-94)	(46-92)
LCS 160-264673/2-A	Lab Control Sample	92	84	78	104	87	79

Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPH = Terphenyl-d14 (Surr)
FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	NBZ	PHL	TPH	FBP	2FP
Lab Sample ID	Client Sample ID	(49-100)	(51-98)	(37-95)	(60-113)	(45-94)	(46-92)
160-18420-B-1-G MS	Matrix Spike	84	79	70	102	80	67
160-18420-B-1-H MSD	Matrix Spike Duplicate	76	76	68	98	80	64

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	NBZ	PHL	TPH	FBP	2FP
Lab Sample ID	Client Sample ID	(49-100)	(51-98)	(37-95)	(60-113)	(45-94)	(46-92)
160-18521-1	YMTFA74SE001	81	85	60	98	85	67
160-18521-2	YMTFA75SE001	81	81	59	100	81	65
LB 160-264502/1-B	Method Blank	101 S	93	82	112	92	84

Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPH = Terphenyl-d14 (Surr)
FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCB1
Lab Sample ID	Client Sample ID	(23-146)
160-18504-E-1-B MS	Matrix Spike	76 J
160-18504-E-1-C MSD	Matrix Spike Duplicate	101
160-18521-1	YMTFA74SE001	67
160-18521-2	YMTFA75SE001	91
LCS 160-264775/2-A	Lab Control Sample	106
MB 160-264775/1-A	Method Blank	101

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)

Method: 8151A - Herbicides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCPA2
Lab Sample ID	Client Sample ID	(56-147)
LCS 160-264676/2-A	Lab Control Sample	115

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Method: 8151A - Herbicides (GC)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)
		DCPA2
Lab Sample ID	Client Sample ID	(56-147)
160-18504-C-1-E MS	Matrix Spike	94
160-18504-C-1-F MSD	Matrix Spike Duplicate	107
160-18521-1	YMTFA74SE001	80
160-18521-2	YMTFA75SE001	104
LB 160-264502/1-C	Method Blank	78

Surrogate Summary

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Tracer/Carrier Summary

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Matrix: Solid **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	**Client Sample ID**	**Am-243 (30-110)**
160-18504-F-1-F DU	Duplicate	77.9
160-18521-1	YMTFA74SE001	69.7
160-18521-2	YMTFA75SE001	97.2
LCS 160-264041/2-A	Lab Control Sample	47.2
MB 160-264041/1-A	Method Blank	42.6

Tracer/Carrier Legend

Am-243 = Americium-243

Method: A-01-R - Isotopic Neptunium (Alpha Spectrometry)

Matrix: Solid **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	**Client Sample ID**	**Np-239 (30-110)**
160-18504-F-1-D DU	Duplicate	102
160-18521-1	YMTFA74SE001	94.1
160-18521-2	YMTFA75SE001	93.5
LCS 160-264040/2-A	Lab Control Sample	108
MB 160-264040/1-A	Method Blank	97.2

Tracer/Carrier Legend

Np-239 = Neptunium-239

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Matrix: Solid **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	**Client Sample ID**	**Pu-242 (T) (30-110)**
160-18504-F-1-H DU	Duplicate	109
160-18521-1	YMTFA74SE001	96.1
160-18521-2	YMTFA75SE001	104
LCS 160-264055/2-A	Lab Control Sample	104
MB 160-264055/1-A	Method Blank	98.8

Tracer/Carrier Legend

Pu-242 (T) = Pu-242 (T)

Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Matrix: Solid **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	**Client Sample ID**	**Th-229 (30-110)**
160-18504-F-1-L DU	Duplicate	44.1
160-18521-1	YMTFA74SE001	90.6
160-18521-1 DU	YMTFA74SE001	84.5
160-18521-2	YMTFA75SE001	81.7
LCS 160-264058/2-A	Lab Control Sample	87.7

Method: A-01-R - Isotopic Thorium (Alpha Spectrometry) (Continued)

Matrix: Solid **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	**Client Sample ID**	**Th-229 (30-110)**
LCS 160-265068/2-A	Lab Control Sample	86.7
MB 160-264058/1-A	Method Blank	87.6
MB 160-265068/1-A	Method Blank	88.1

Tracer/Carrier Legend

Th-229 = Thorium-229

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Solid **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	**Client Sample ID**	**U-232 (30-110)**
160-18504-F-1-J DU	Duplicate	59.6
160-18521-1	YMTFA74SE001	15.3 S
160-18521-2	YMTFA75SE001	83.7
LCS 160-264056/2-A	Lab Control Sample	75.0
MB 160-264056/1-A	Method Blank	79.0

Tracer/Carrier Legend

U-232 = Uranium-232

Method: SR-03-RC - Total Beta Strontium (GFPC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	**Client Sample ID**	**Sr (C) (40-110)**
160-18504-F-1-N DU	Duplicate	75.1
160-18521-1	YMTFA74SE001	52.8
160-18521-2	YMTFA75SE001	52.3
LCS 160-264358/2-A	Lab Control Sample	89.5
MB 160-264358/1-A	Method Blank	62.9

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Method: TC-02-RC - Technetium-99 (LSC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	**Client Sample ID**	**Tc-99m (30-110)**
160-18504-C-3-C DU	Duplicate	93.9
160-18521-1	YMTFA74SE001	91.0
160-18521-2	YMTFA75SE001	90.3
LCS 160-264549/2-A	Lab Control Sample	90.7
MB 160-264549/1-A	Method Blank	98.7

Tracer/Carrier Legend

Tc-99m = Tc-99m

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: LCS 160-264101/12
Matrix: Solid
Analysis Batch: 264101

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.500	0.487		mg/L		97	79 - 117
1,2-Dichloroethane	0.500	0.498		mg/L		100	80 - 115
2-Butanone (MEK)	0.500	0.495		mg/L		99	64 - 117
Benzene	0.500	0.482		mg/L		96	85 - 115
Carbon tetrachloride	0.500	0.494		mg/L		99	79 - 119
Chlorobenzene	0.500	0.496		mg/L		99	85 - 115
Chloroform	0.500	0.482		mg/L		96	85 - 115
Tetrachloroethene	0.500	0.495		mg/L		99	79 - 116
Trichloroethene	0.500	0.486		mg/L		97	85 - 115
Vinyl chloride	0.500	0.550		mg/L		110	72 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*84 - 120*
1,2-Dichloroethane-d4 (Surr)	*102*		*83 - 117*
Toluene-d8 (Surr)	*99*		*85 - 115*
Dibromofluoromethane (Surr)	*100*		*85 - 115*

Lab Sample ID: LB 160-263916/1-A
Matrix: Solid
Analysis Batch: 264101

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.0037	U	0.050	0.0037	mg/L			08/10/16 00:32	1
1,2-Dichloroethane	0.0037	U	0.050	0.0037	mg/L			08/10/16 00:32	1
2-Butanone (MEK)	0.0039	U	0.050	0.0039	mg/L			08/10/16 00:32	1
Benzene	0.0025	U	0.050	0.0025	mg/L			08/10/16 00:32	1
Carbon tetrachloride	0.0036	U	0.050	0.0036	mg/L			08/10/16 00:32	1
Chlorobenzene	0.0038	U	0.050	0.0038	mg/L			08/10/16 00:32	1
Chloroform	0.00092	U	0.050	0.00092	mg/L			08/10/16 00:32	1
Tetrachloroethene	0.0028	U	0.050	0.0028	mg/L			08/10/16 00:32	1
Trichloroethene	0.0029	U	0.050	0.0029	mg/L			08/10/16 00:32	1
Vinyl chloride	0.0043	U	0.10	0.0043	mg/L			08/10/16 00:32	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*84 - 120*		*08/10/16 00:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*83 - 117*		*08/10/16 00:32*	*1*
Toluene-d8 (Surr)	*97*		*85 - 115*		*08/10/16 00:32*	*1*
Dibromofluoromethane (Surr)	*100*		*85 - 115*		*08/10/16 00:32*	*1*

Lab Sample ID: 160-18521-2 MS
Matrix: Solid
Analysis Batch: 264101

Client Sample ID: YMTFA75SE001
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.0037	U	0.500	0.475		mg/L		95	80 - 115
1,2-Dichloroethane	0.0037	U	0.500	0.519		mg/L		104	85 - 115
2-Butanone (MEK)	0.0039	U	0.500	0.505		mg/L		101	67 - 117

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 160-18521-2 MS
Matrix: Solid
Analysis Batch: 264101

Client Sample ID: YMTFA75SE001
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0025	U	0.500	0.484		mg/L		97	85 - 115
Carbon tetrachloride	0.0036	U	0.500	0.500		mg/L		100	79 - 117
Chlorobenzene	0.0038	U	0.500	0.488		mg/L		98	85 - 115
Chloroform	0.00092	U	0.500	0.491		mg/L		98	85 - 115
Tetrachloroethene	0.0028	U	0.500	0.487		mg/L		97	82 - 115
Trichloroethene	0.0029	U	0.500	0.490		mg/L		98	84 - 115
Vinyl chloride	0.0043	U	0.500	0.532		mg/L		106	75 - 132

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*84 - 120*
1,2-Dichloroethane-d4 (Surr)	*106*		*83 - 117*
Toluene-d8 (Surr)	*97*		*85 - 115*
Dibromofluoromethane (Surr)	*102*		*85 - 115*

Lab Sample ID: 160-18521-2 MSD
Matrix: Solid
Analysis Batch: 264101

Client Sample ID: YMTFA75SE001
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	0.0037	U	0.500	0.480		mg/L		96	80 - 115	1	20
1,2-Dichloroethane	0.0037	U	0.500	0.498		mg/L		100	85 - 115	4	20
2-Butanone (MEK)	0.0039	U	0.500	0.485		mg/L		97	67 - 117	4	20
Benzene	0.0025	U	0.500	0.478		mg/L		96	85 - 115	1	20
Carbon tetrachloride	0.0036	U	0.500	0.497		mg/L		99	79 - 117	0	20
Chlorobenzene	0.0038	U	0.500	0.487		mg/L		97	85 - 115	0	20
Chloroform	0.00092	U	0.500	0.484		mg/L		97	85 - 115	2	20
Tetrachloroethene	0.0028	U	0.500	0.492		mg/L		98	82 - 115	1	20
Trichloroethene	0.0029	U	0.500	0.486		mg/L		97	84 - 115	1	20
Vinyl chloride	0.0043	U	0.500	0.545		mg/L		109	75 - 132	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*84 - 120*
1,2-Dichloroethane-d4 (Surr)	*103*		*83 - 117*
Toluene-d8 (Surr)	*97*		*85 - 115*
Dibromofluoromethane (Surr)	*99*		*85 - 115*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: LCS 160-264673/2-A
Matrix: Solid
Analysis Batch: 264877

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264673

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.500	0.385		mg/L		77	36 - 93
2,4-Dinitrotoluene	0.500	0.415		mg/L		83	51 - 90
Hexachlorobenzene	0.500	0.509	N	mg/L		102	52 - 93
Hexachlorobutadiene	0.500	0.388		mg/L		78	37 - 92

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 160-264673/2-A
Matrix: Solid
Analysis Batch: 264877

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264673

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachloroethane	0.500	0.379		mg/L		76	36 - 95
2-Methylphenol	0.500	0.401		mg/L		80	51 - 100
3 & 4 Methylphenol	0.500	0.361		mg/L		72	46 - 95
Nitrobenzene	0.500	0.404		mg/L		81	51 - 93
Pentachlorophenol	0.500	0.428		mg/L		86	41 - 96
Pyridine	0.500	0.275		mg/L		55	10 - 80
2,4,5-Trichlorophenol	0.500	0.441		mg/L		88	49 - 96
2,4,6-Trichlorophenol	0.500	0.457		mg/L		91	48 - 93

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*92*		*49 - 100*
Nitrobenzene-d5 (Surr)	*84*		*51 - 98*
Phenol-d5 (Surr)	*78*		*37 - 95*
Terphenyl-d14 (Surr)	*104*		*60 - 113*
2-Fluorobiphenyl (Surr)	*87*		*45 - 94*
2-Fluorophenol (Surr)	*79*		*46 - 92*

Lab Sample ID: LB 160-264502/1-B
Matrix: Solid
Analysis Batch: 264877

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 264673

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 17:03	1
2,4-Dinitrotoluene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 17:03	1
Hexachlorobenzene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 17:03	1
Hexachlorobutadiene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 17:03	1
Hexachloroethane	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 17:03	1
2-Methylphenol	0.010	U	0.050	0.010	mg/L		08/12/16 15:52	08/15/16 17:03	1
3 & 4 Methylphenol	0.0050	U	0.10	0.0050	mg/L		08/12/16 15:52	08/15/16 17:03	1
Nitrobenzene	0.0050	U	0.050	0.0050	mg/L		08/12/16 15:52	08/15/16 17:03	1
Pentachlorophenol	0.010	U S	0.25	0.010	mg/L		08/12/16 15:52	08/15/16 17:03	1
Pyridine	0.025	U	0.10	0.025	mg/L		08/12/16 15:52	08/15/16 17:03	1
2,4,5-Trichlorophenol	0.010	U S	0.050	0.010	mg/L		08/12/16 15:52	08/15/16 17:03	1
2,4,6-Trichlorophenol	0.010	U S	0.050	0.010	mg/L		08/12/16 15:52	08/15/16 17:03	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*101*	*S*	*49 - 100*	*08/12/16 15:52*	*08/15/16 17:03*	*1*
Nitrobenzene-d5 (Surr)	*93*		*51 - 98*	*08/12/16 15:52*	*08/15/16 17:03*	*1*
Phenol-d5 (Surr)	*82*		*37 - 95*	*08/12/16 15:52*	*08/15/16 17:03*	*1*
Terphenyl-d14 (Surr)	*112*		*60 - 113*	*08/12/16 15:52*	*08/15/16 17:03*	*1*
2-Fluorobiphenyl (Surr)	*92*		*45 - 94*	*08/12/16 15:52*	*08/15/16 17:03*	*1*
2-Fluorophenol (Surr)	*84*		*46 - 92*	*08/12/16 15:52*	*08/15/16 17:03*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 160-18420-B-1-G MS
Matrix: Solid
Analysis Batch: 264877

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 264673

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0050	U	0.500	0.356		mg/L		71	46 - 88
2,4-Dinitrotoluene	0.0050	U S	0.500	0.390		mg/L		78	52 - 97
Hexachlorobenzene	0.0050	U S N	0.500	0.489	N	mg/L		98	56 - 90
Hexachlorobutadiene	0.0050	U	0.500	0.348		mg/L		70	43 - 92
Hexachloroethane	0.0050	U	0.500	0.342		mg/L		68	44 - 91
2-Methylphenol	0.010	U	0.500	0.377		mg/L		75	55 - 97
3 & 4 Methylphenol	0.0050	U	0.500	0.337		mg/L		67	46 - 94
Nitrobenzene	0.0050	U	0.500	0.387		mg/L		77	53 - 97
Pentachlorophenol	0.010	U	0.500	0.408		mg/L		82	39 - 103
Pyridine	0.025	U	0.500	0.278		mg/L		56	10 - 82
2,4,5-Trichlorophenol	0.010	U	0.500	0.412		mg/L		82	52 - 98
2,4,6-Trichlorophenol	0.010	U	0.500	0.421		mg/L		84	52 - 94

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*84*		*49 - 100*
Nitrobenzene-d5 (Surr)	*79*		*51 - 98*
Phenol-d5 (Surr)	*70*		*37 - 95*
Terphenyl-d14 (Surr)	*102*		*60 - 113*
2-Fluorobiphenyl (Surr)	*80*		*45 - 94*
2-Fluorophenol (Surr)	*67*		*46 - 92*

Lab Sample ID: 160-18420-B-1-H MSD
Matrix: Solid
Analysis Batch: 264877

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP
Prep Batch: 264673

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.0050	U	0.500	0.345		mg/L		69	46 - 88	3	20
2,4-Dinitrotoluene	0.0050	U S	0.500	0.367		mg/L		73	52 - 97	6	20
Hexachlorobenzene	0.0050	U S N	0.500	0.450		mg/L		90	56 - 90	8	20
Hexachlorobutadiene	0.0050	U	0.500	0.347		mg/L		69	43 - 92	0	20
Hexachloroethane	0.0050	U	0.500	0.335		mg/L		67	44 - 91	2	20
2-Methylphenol	0.010	U	0.500	0.376		mg/L		75	55 - 97	0	20
3 & 4 Methylphenol	0.0050	U	0.500	0.337		mg/L		67	46 - 94	0	20
Nitrobenzene	0.0050	U	0.500	0.375		mg/L		75	53 - 97	3	20
Pentachlorophenol	0.010	U	0.500	0.353		mg/L		71	39 - 103	14	20
Pyridine	0.025	U	0.500	0.286		mg/L		57	10 - 82	3	20
2,4,5-Trichlorophenol	0.010	U	0.500	0.397		mg/L		79	52 - 98	4	20
2,4,6-Trichlorophenol	0.010	U	0.500	0.413		mg/L		83	52 - 94	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*76*		*49 - 100*
Nitrobenzene-d5 (Surr)	*76*		*51 - 98*
Phenol-d5 (Surr)	*68*		*37 - 95*
Terphenyl-d14 (Surr)	*98*		*60 - 113*
2-Fluorobiphenyl (Surr)	*80*		*45 - 94*
2-Fluorophenol (Surr)	*64*		*46 - 92*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 160-264775/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265137 — **Prep Batch: 264775**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/17/16 11:06	1
PCB-1221	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/17/16 11:06	1
PCB-1232	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/17/16 11:06	1
PCB-1242	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/17/16 11:06	1
PCB-1248	0.0096	U	0.033	0.0096	mg/Kg		08/15/16 11:07	08/17/16 11:06	1
PCB-1254	0.0080	U	0.033	0.0080	mg/Kg		08/15/16 11:07	08/17/16 11:06	1
PCB-1260	0.0080	U	0.033	0.0080	mg/Kg		08/15/16 11:07	08/17/16 11:06	1
PCB-1262	0.0080	U	0.033	0.0080	mg/Kg		08/15/16 11:07	08/17/16 11:06	1
Polychlorinated biphenyls, Total	0.0080	U	0.033	0.0080	mg/Kg		08/15/16 11:07	08/17/16 11:06	1
PCB-1268	0.0080	U	0.033	0.0080	mg/Kg		08/15/16 11:07	08/17/16 11:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*101*		*23 - 146*	*08/15/16 11:07*	*08/17/16 11:06*	*1*

Lab Sample ID: LCS 160-264775/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265137 — **Prep Batch: 264775**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	0.167	0.153		mg/Kg		92	52 - 134
PCB-1260	0.167	0.158		mg/Kg		95	50 - 132

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*106*		*23 - 146*

Lab Sample ID: 160-18504-E-1-B MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265549 — **Prep Batch: 264775**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	0.0095	U	0.167	0.156	J	mg/Kg		93	23 - 140
PCB-1260	0.17		0.167	0.234		mg/Kg		36	20 - 131

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*76*	*J*	*23 - 146*

Lab Sample ID: 160-18504-E-1-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265549 — **Prep Batch: 264775**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	0.0095	U	0.166	0.168	J	mg/Kg		101	23 - 140	7	30
PCB-1260	0.17		0.166	0.250		mg/Kg		45	20 - 131	7	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*101*		*23 - 146*

Method: 8151A - Herbicides (GC)

Lab Sample ID: LCS 160-264676/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265408 — **Prep Batch: 264676**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-D	0.200	0.237		mg/L		119	46 - 140
Silvex (2,4,5-TP)	0.0500	0.0641		mg/L		128	42 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*115*		*56 - 147*

Lab Sample ID: LB 160-264502/1-C — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 265408 — **Prep Batch: 264676**

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-D	0.020	U	0.040	0.020	mg/L		08/12/16 16:02	08/18/16 14:40	1
Silvex (2,4,5-TP)	0.0030	U	0.010	0.0030	mg/L		08/12/16 16:02	08/18/16 14:40	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*78*		*56 - 147*	*08/12/16 16:02*	*08/18/16 14:40*	*1*

Lab Sample ID: 160-18504-C-1-E MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 265408 — **Prep Batch: 264676**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-D	0.020	U	0.200	0.171		mg/L		86	52 - 150
Silvex (2,4,5-TP)	0.0030	U	0.0500	0.0459		mg/L		92	45 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*94*		*56 - 147*

Lab Sample ID: 160-18504-C-1-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 265408 — **Prep Batch: 264676**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4-D	0.020	U	0.200	0.188		mg/L		94	52 - 150	9	20
Silvex (2,4,5-TP)	0.0030	U	0.0500	0.0514		mg/L		103	45 - 150	11	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*107*		*56 - 147*

Method: 6010C - Metals (ICP)

Lab Sample ID: LCS 160-265083/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265391 — **Prep Batch: 265083**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.50	2.51		mg/L		100	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 160-265083/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265391 — **Prep Batch: 265083**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	2.50	2.49		mg/L		99	80 - 120
Cadmium	2.50	2.52		mg/L		101	80 - 120
Chromium	2.50	2.54		mg/L		102	80 - 120
Lead	2.50	2.47		mg/L		99	80 - 120
Selenium	1.25	1.27		mg/L		101	80 - 120
Silver	0.500	0.567		mg/L		113	80 - 120

Lab Sample ID: LB 160-264502/1-D — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 265391 — **Prep Batch: 265083**

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.010	U	0.025	0.010	mg/L		08/16/16 15:50	08/17/16 14:39	1
Barium	0.038	U	0.13	0.038	mg/L		08/16/16 15:50	08/17/16 14:39	1
Cadmium	0.0038	U	0.013	0.0038	mg/L		08/16/16 15:50	08/17/16 14:39	1
Chromium	0.0075	U	0.025	0.0075	mg/L		08/16/16 15:50	08/17/16 14:39	1
Lead	0.0075	U	0.025	0.0075	mg/L		08/16/16 15:50	08/17/16 14:39	1
Selenium	0.013	U	0.038	0.013	mg/L		08/16/16 15:50	08/17/16 14:39	1
Silver	0.0075	U	0.025	0.0075	mg/L		08/16/16 15:50	08/17/16 14:39	1

Lab Sample ID: 160-18570-C-1-E MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 265391 — **Prep Batch: 265083**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.010	U	2.50	2.45		mg/L		98	75 - 125
Barium	0.59		2.50	3.00		mg/L		96	75 - 125
Cadmium	0.0038	U	2.50	2.45		mg/L		98	75 - 125
Chromium	0.0075	U	2.50	2.46		mg/L		99	75 - 125
Lead	0.0075	U	2.50	2.40		mg/L		96	75 - 125
Selenium	0.013	U	1.25	1.24		mg/L		99	75 - 125
Silver	0.0075	U	0.500	0.548		mg/L		110	75 - 125

Lab Sample ID: 160-18570-C-1-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 265391 — **Prep Batch: 265083**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.010	U	2.50	2.62		mg/L		105	75 - 125	7	20
Barium	0.59		2.50	3.23		mg/L		106	75 - 125	7	20
Cadmium	0.0038	U	2.50	2.62		mg/L		105	75 - 125	7	20
Chromium	0.0075	U	2.50	2.64		mg/L		105	75 - 125	7	20
Lead	0.0075	U	2.50	2.56		mg/L		103	75 - 125	7	20
Selenium	0.013	U	1.25	1.32		mg/L		105	75 - 125	6	20
Silver	0.0075	U	0.500	0.587		mg/L		117	75 - 125	7	20

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LRC 160-265391/10 — **Client Sample ID: Lab Control Sample**
Matrix: Solid
Analysis Batch: 265391

Analyte	Spike Added	LRC Result	LRC Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10000	9560		ug/L		96	90 - 110
Barium	10000	10200		ug/L		102	90 - 110
Cadmium	10000	9690		ug/L		97	90 - 110
Chromium	10000	9660		ug/L		97	90 - 110
Lead	10000	9560		ug/L		96	90 - 110
Selenium	2000	1910		ug/L		95	90 - 110
Silver	2000	1950		ug/L		97	90 - 110

Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Lab Sample ID: MB 160-264058/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 264793 — **Prep Batch: 264058**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium-228	0.02579	U	0.0495	0.0495	1.00	0.0910	pCi/g	08/09/16 10:28	08/12/16 16:24	1
Thorium-230	0.1384		0.0704	0.0714	1.00	0.0425	pCi/g	08/09/16 10:28	08/12/16 16:24	1
Thorium-232	0.004372	U	0.0185	0.0186	1.00	0.0490	pCi/g	08/09/16 10:28	08/12/16 16:24	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Thorium-229	*87.6*		*30 - 110*	*08/09/16 10:28*	*08/12/16 16:24*	*1*

Lab Sample ID: LCS 160-264058/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 264794 — **Prep Batch: 264058**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Thorium-230	24.5	26.28		2.58	1.00	0.121	pCi/g	107	81 - 118

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Thorium-229	*87.7*		*30 - 110*

Lab Sample ID: 160-18504-F-1-L DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 264961 — **Prep Batch: 264058**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Thorium-228	1.79		1.497		0.212	1.00	0.0959	pCi/g	0.64	1
Thorium-230	1.70		1.632		0.219	1.00	0.0426	pCi/g	0.15	1
Thorium-232	1.63		1.335		0.190	1.00	0.0133	pCi/g	0.72	1

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Thorium-229	*44.1*		*30 - 110*

Method: A-01-R - Isotopic Thorium (Alpha Spectrometry) (Continued)

Lab Sample ID: MB 160-265068/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265586 — **Prep Batch: 265068**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium-228	0.06388	U	0.0868	0.0870	1.00	0.146	pCi/g	08/16/16 14:46	08/18/16 17:10	1
Thorium-230	0.1530		0.0815	0.0826	1.00	0.0577	pCi/g	08/16/16 14:46	08/18/16 17:10	1
Thorium-232	0.02079	U	0.0294	0.0294	1.00	0.0312	pCi/g	08/16/16 14:46	08/18/16 17:10	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Thorium-229	*88.1*		*30 - 110*	*08/16/16 14:46*	*08/18/16 17:10*	*1*

Lab Sample ID: LCS 160-265068/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265587 — **Prep Batch: 265068**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Thorium-230			24.5	25.76		2.39	1.00	0.0541	pCi/g	105	81 - 118		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Thorium-229	*86.7*		*30 - 110*

Lab Sample ID: 160-18521-1 DU — **Client Sample ID: YMTFA74SE001**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265589 — **Prep Batch: 265068**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Thorium-228	3.72			4.177		0.554	1.00	0.131	pCi/g			0.44	1
Thorium-230	2.60			3.081		0.447	1.00	0.0596	pCi/g			0.57	1
Thorium-232	4.65			5.980		0.714	1.00	0.0792	pCi/g			1.03	1

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Thorium-229	*84.5*		*30 - 110*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-264056/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265017 — **Prep Batch: 264056**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.02300	U	0.0325	0.0326	1.00	0.0515	pCi/g	08/09/16 10:32	08/15/16 17:30	1
Uranium-235/236	-0.002862	U	0.00572	0.00573	1.00	0.0554	pCi/g	08/09/16 10:32	08/15/16 17:30	1
Uranium-238	0.03443	U	0.0370	0.0371	1.00	0.0444	pCi/g	08/09/16 10:32	08/15/16 17:30	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium-232	*79.0*		*30 - 110*	*08/09/16 10:32*	*08/15/16 17:30*	*1*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-264056/2-A
Matrix: Solid
Analysis Batch: 265018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264056

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Uranium-233/234			6.37	6.057		0.707	1.00	0.0704	pCi/g	95	84 - 120		
Uranium-238			6.51	6.566		0.751	1.00	0.0553	pCi/g	101	82 - 122		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Uranium-232	*75.0*		*30 - 110*

Lab Sample ID: 160-18504-F-1-J DU
Matrix: Solid
Analysis Batch: 265020

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 264056

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Uranium-233/234	7.92			7.255		0.844	1.00	0.0659	pCi/g			0.38	1
Uranium-235/236	0.600			0.6150		0.197	1.00	0.0439	pCi/g			0.04	1
Uranium-238	23.4			21.01		2.03	1.00	0.0352	pCi/g			0.56	1

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Uranium-232	*59.6*		*30 - 110*

Method: A-01-R - Isotopic Neptunium (Alpha Spectrometry)

Lab Sample ID: MB 160-264040/1-A
Matrix: Solid
Analysis Batch: 264848

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264040

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Neptunium-237	0.003880	U	0.0165	0.0165	1.00	0.0435	pCi/g	08/09/16 10:28	08/12/16 16:30	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Neptunium-239	*97.2*		*30 - 110*	*08/09/16 10:28*	*08/12/16 16:30*	*1*

Lab Sample ID: LCS 160-264040/2-A
Matrix: Solid
Analysis Batch: 264849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264040

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Neptunium-237			3.88	3.798		0.458	1.00	0.0533	pCi/g	98	39 - 134		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Neptunium-239	*108*		*30 - 110*

Method: A-01-R - Isotopic Neptunium (Alpha Spectrometry) (Continued)

Lab Sample ID: 160-18504-F-1-D DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 264851 — **Prep Batch: 264040**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Neptunium-237	0.0245	U		0.01784	U	0.0253	1.00	0.0400	pCi/g			0.11	1

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Neptunium-239	*102*		*30 - 110*

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Lab Sample ID: MB 160-264055/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 264839 — **Prep Batch: 264055**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.01879	U	0.0394	0.0394	1.00	0.0743	pCi/g	08/09/16 10:32	08/12/16 16:27	1
Plutonium-239/240	0.003761	U	0.0160	0.0160	1.00	0.0421	pCi/g	08/09/16 10:32	08/12/16 16:27	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Pu-242 (T)	*98.8*		*30 - 110*	*08/09/16 10:32*	*08/12/16 16:27*	*1*

Lab Sample ID: LCS 160-264055/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 264840 — **Prep Batch: 264055**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Plutonium-238			5.38	5.292		0.591	1.00	0.0688	pCi/g	98	80 - 127		
Plutonium-239/240			6.60	6.834		0.725	1.00	0.0401	pCi/g	103	81 - 129		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Pu-242 (T)	*104*		*30 - 110*

Lab Sample ID: 160-18504-F-1-H DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 264842 — **Prep Batch: 264055**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Plutonium-238	0.313			0.2976		0.0955	1.00	0.0513	pCi/g			0.08	1
Plutonium-239/240	0.0669			0.06678		0.0464	1.00	0.0487	pCi/g			0	1

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Pu-242 (T)	*109*		*30 - 110*

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Lab Sample ID: MB 160-264041/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265256 — **Prep Batch: 264041**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.04711	U	0.0705	0.0707	1.00	0.121	pCi/g	08/09/16 10:32	08/16/16 16:19	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Americium-243	*42.6*		*30 - 110*	*08/09/16 10:32*	*08/16/16 16:19*	*1*

Lab Sample ID: LCS 160-264041/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265229 — **Prep Batch: 264041**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Americium-241			3.73	3.269		0.508	1.00	0.113	pCi/g	88	67 - 120		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Americium-243	*47.2*		*30 - 110*

Lab Sample ID: 160-18504-F-1-F DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265231 — **Prep Batch: 264041**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Americium-241	0.123			0.09345		0.0520	1.00	0.0508	pCi/g			0.26	1

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Americium-243	*77.9*		*30 - 110*

Method: H3-04-RC - Tritium (LSC)

Lab Sample ID: MB 160-265449/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265808 — **Prep Batch: 265449**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.04562	U	0.203	0.203	1.00	0.376	pCi/g	08/18/16 13:26	08/19/16 13:23	1

Lab Sample ID: LCS 160-265449/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265808 — **Prep Batch: 265449**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Tritium			10.1	9.231		1.04	1.00	0.356	pCi/g	91	80 - 114		

Method: H3-04-RC - Tritium (LSC) (Continued)

Lab Sample ID: 160-18521-2 MS — **Client Sample ID: YMTFA75SE001**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265808 — **Prep Batch: 265449**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Tritium	-0.0886	U	10.1	9.555		1.11	1.00	0.418	pCi/g	94	78 - 122		

Lab Sample ID: 160-18521-1 DU — **Client Sample ID: YMTFA74SE001**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265808 — **Prep Batch: 265449**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Tritium	-0.0829	U		-0.1258	U	0.210	1.00	0.399	pCi/g			0.10	1

Method: SR-03-RC - Total Beta Strontium (GFPC)

Lab Sample ID: MB 160-264358/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 264773 — **Prep Batch: 264358**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.1155	U	0.180	0.180	3.00	0.302	pCi/g	08/10/16 21:28	08/15/16 20:49	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*62.9*		*40 - 110*	*08/10/16 21:28*	*08/15/16 20:49*	*1*

Lab Sample ID: LCS 160-264358/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265358 — **Prep Batch: 264358**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Strontium 89/90			8.61	7.395		0.634	3.00	0.135	pCi/g	86	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Sr Carrier	*89.5*		*40 - 110*

Lab Sample ID: 160-18504-F-1-N DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 264773 — **Prep Batch: 264358**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Strontium 89/90	-0.00786	U		0.03261	U	0.144	3.00	0.252	pCi/g			0.13	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Sr Carrier	*75.1*		*40 - 110*

Method: TC-02-RC - Technetium-99 (LSC)

Lab Sample ID: MB 160-264549/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265093 — **Prep Batch: 264549**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium-99	-0.06754	U	0.258	0.258	1.00	0.455	pCi/g	08/11/16 16:14	08/16/16 13:13	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*98.7*		*30 - 110*	*08/11/16 16:14*	*08/16/16 13:13*	*1*

Lab Sample ID: LCS 160-264549/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265093 — **Prep Batch: 264549**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Technetium-99			33.9	35.41		3.59	1.00	0.497	pCi/g	104	75 - 125		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Tc-99m	*90.7*		*30 - 110*

Lab Sample ID: 160-18504-C-3-C DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 265093 — **Prep Batch: 264549**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Technetium-99	0.261	U		0.3121	U	0.208	1.00	0.327	pCi/g			0.12	1

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Tc-99m	*93.9*		*30 - 110*

QC Association Summary

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

GC/MS VOA

Leach Batch: 263916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	1311	
160-18521-2	YMTFA75SE001	TCLP	Solid	1311	
LB 160-263916/1-A	Method Blank	TCLP	Solid	1311	
160-18521-2 MS	YMTFA75SE001	TCLP	Solid	1311	
160-18521-2 MSD	YMTFA75SE001	TCLP	Solid	1311	

Analysis Batch: 264101

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	8260C	263916
160-18521-2	YMTFA75SE001	TCLP	Solid	8260C	263916
LB 160-263916/1-A	Method Blank	TCLP	Solid	8260C	263916
LCS 160-264101/12	Lab Control Sample	Total/NA	Solid	8260C	
160-18521-2 MS	YMTFA75SE001	TCLP	Solid	8260C	263916
160-18521-2 MSD	YMTFA75SE001	TCLP	Solid	8260C	263916

GC/MS Semi VOA

Leach Batch: 264009

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18420-B-1-G MS	Matrix Spike	TCLP	Solid	1311	
160-18420-B-1-H MSD	Matrix Spike Duplicate	TCLP	Solid	1311	

Leach Batch: 264502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	1311	
160-18521-2	YMTFA75SE001	TCLP	Solid	1311	
LB 160-264502/1-B	Method Blank	TCLP	Solid	1311	

Prep Batch: 264673

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	3510C	264502
160-18521-2	YMTFA75SE001	TCLP	Solid	3510C	264502
LB 160-264502/1-B	Method Blank	TCLP	Solid	3510C	264502
LCS 160-264673/2-A	Lab Control Sample	Total/NA	Solid	3510C	
160-18420-B-1-G MS	Matrix Spike	TCLP	Solid	3510C	264009
160-18420-B-1-H MSD	Matrix Spike Duplicate	TCLP	Solid	3510C	264009

Analysis Batch: 264877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	8270D	264673
160-18521-2	YMTFA75SE001	TCLP	Solid	8270D	264673
LB 160-264502/1-B	Method Blank	TCLP	Solid	8270D	264673
LCS 160-264673/2-A	Lab Control Sample	Total/NA	Solid	8270D	264673
160-18420-B-1-G MS	Matrix Spike	TCLP	Solid	8270D	264673
160-18420-B-1-H MSD	Matrix Spike Duplicate	TCLP	Solid	8270D	264673

GC Semi VOA

Leach Batch: 263996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18504-C-1-E MS	Matrix Spike	TCLP	Solid	1311	
160-18504-C-1-F MSD	Matrix Spike Duplicate	TCLP	Solid	1311	

Leach Batch: 264502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	1311	
160-18521-2	YMTFA75SE001	TCLP	Solid	1311	
LB 160-264502/1-C	Method Blank	TCLP	Solid	1311	

Prep Batch: 264676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	8151A	264502
160-18521-2	YMTFA75SE001	TCLP	Solid	8151A	264502
LB 160-264502/1-C	Method Blank	TCLP	Solid	8151A	264502
LCS 160-264676/2-A	Lab Control Sample	Total/NA	Solid	8151A	
160-18504-C-1-E MS	Matrix Spike	TCLP	Solid	8151A	263996
160-18504-C-1-F MSD	Matrix Spike Duplicate	TCLP	Solid	8151A	263996

Prep Batch: 264775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	3550C	
160-18521-2	YMTFA75SE001	Total/NA	Solid	3550C	
MB 160-264775/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 160-264775/2-A	Lab Control Sample	Total/NA	Solid	3550C	
160-18504-E-1-B MS	Matrix Spike	Total/NA	Solid	3550C	
160-18504-E-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	3550C	

Analysis Batch: 265137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-264775/1-A	Method Blank	Total/NA	Solid	8082A	264775
LCS 160-264775/2-A	Lab Control Sample	Total/NA	Solid	8082A	264775

Analysis Batch: 265408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	8151A	264676
160-18521-2	YMTFA75SE001	TCLP	Solid	8151A	264676
LB 160-264502/1-C	Method Blank	TCLP	Solid	8151A	264676
LCS 160-264676/2-A	Lab Control Sample	Total/NA	Solid	8151A	264676
160-18504-C-1-E MS	Matrix Spike	TCLP	Solid	8151A	264676
160-18504-C-1-F MSD	Matrix Spike Duplicate	TCLP	Solid	8151A	264676

Analysis Batch: 265549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	8082A	264775
160-18521-2	YMTFA75SE001	Total/NA	Solid	8082A	264775
160-18504-E-1-B MS	Matrix Spike	Total/NA	Solid	8082A	264775
160-18504-E-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8082A	264775

QC Association Summary

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Metals

Leach Batch: 264502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	1311	
160-18521-2	YMTFA75SE001	TCLP	Solid	1311	
LB 160-264502/1-D	Method Blank	TCLP	Solid	1311	
160-18570-C-1-E MS	Matrix Spike	TCLP	Solid	1311	
160-18570-C-1-F MSD	Matrix Spike Duplicate	TCLP	Solid	1311	

Prep Batch: 265083

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	3010A	264502
160-18521-2	YMTFA75SE001	TCLP	Solid	3010A	264502
LB 160-264502/1-D	Method Blank	TCLP	Solid	3010A	264502
LCS 160-265083/2-A	Lab Control Sample	Total/NA	Solid	3010A	
160-18570-C-1-E MS	Matrix Spike	TCLP	Solid	3010A	264502
160-18570-C-1-F MSD	Matrix Spike Duplicate	TCLP	Solid	3010A	264502

Analysis Batch: 265391

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	TCLP	Solid	6010C	265083
160-18521-2	YMTFA75SE001	TCLP	Solid	6010C	265083
LB 160-264502/1-D	Method Blank	TCLP	Solid	6010C	265083
LCS 160-265083/2-A	Lab Control Sample	Total/NA	Solid	6010C	265083
LRC 160-265391/10	Lab Control Sample		Solid	6010C	
160-18570-C-1-E MS	Matrix Spike	TCLP	Solid	6010C	265083
160-18570-C-1-F MSD	Matrix Spike Duplicate	TCLP	Solid	6010C	265083

General Chemistry

Analysis Batch: 263991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	Moisture	
160-18521-2	YMTFA75SE001	Total/NA	Solid	Moisture	
160-18461-A-2 DU	Duplicate	Total/NA	Solid	Moisture	

Rad

Leach Batch: 263822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	Dry and Grind	
160-18521-2	YMTFA75SE001	Total/NA	Solid	Dry and Grind	
160-18521-1 DU	YMTFA74SE001	Total/NA	Solid	Dry and Grind	

Leach Batch: 263919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18504-F-1-D DU	Duplicate	Total/NA	Solid	Dry and Grind	
160-18504-F-1-F DU	Duplicate	Total/NA	Solid	Dry and Grind	
160-18504-F-1-H DU	Duplicate	Total/NA	Solid	Dry and Grind	
160-18504-F-1-J DU	Duplicate	Total/NA	Solid	Dry and Grind	
160-18504-F-1-L DU	Duplicate	Total/NA	Solid	Dry and Grind	
160-18504-F-1-N DU	Duplicate	Total/NA	Solid	Dry and Grind	

Rad (Continued)

Prep Batch: 264040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	A-01-R	263822
160-18521-2	YMTFA75SE001	Total/NA	Solid	A-01-R	263822
MB 160-264040/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-264040/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	
160-18504-F-1-D DU	Duplicate	Total/NA	Solid	A-01-R	263919

Prep Batch: 264041

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	ExtChrom	263822
160-18521-2	YMTFA75SE001	Total/NA	Solid	ExtChrom	263822
MB 160-264041/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-264041/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	
160-18504-F-1-F DU	Duplicate	Total/NA	Solid	ExtChrom	263919

Prep Batch: 264055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	ExtChrom	263822
160-18521-2	YMTFA75SE001	Total/NA	Solid	ExtChrom	263822
MB 160-264055/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-264055/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	
160-18504-F-1-H DU	Duplicate	Total/NA	Solid	ExtChrom	263919

Prep Batch: 264056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	ExtChrom	263822
160-18521-2	YMTFA75SE001	Total/NA	Solid	ExtChrom	263822
MB 160-264056/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-264056/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	
160-18504-F-1-J DU	Duplicate	Total/NA	Solid	ExtChrom	263919

Prep Batch: 264058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-2	YMTFA75SE001	Total/NA	Solid	ExtChrom	263822
MB 160-264058/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-264058/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	
160-18504-F-1-L DU	Duplicate	Total/NA	Solid	ExtChrom	263919

Prep Batch: 264358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	DPS-0	263822
160-18521-2	YMTFA75SE001	Total/NA	Solid	DPS-0	263822
MB 160-264358/1-A	Method Blank	Total/NA	Solid	DPS-0	
LCS 160-264358/2-A	Lab Control Sample	Total/NA	Solid	DPS-0	
160-18504-F-1-N DU	Duplicate	Total/NA	Solid	DPS-0	263919

Prep Batch: 264549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	Ext_Chrom_LSC	
160-18521-2	YMTFA75SE001	Total/NA	Solid	Ext_Chrom_LSC	
MB 160-264549/1-A	Method Blank	Total/NA	Solid	Ext_Chrom_LSC	
LCS 160-264549/2-A	Lab Control Sample	Total/NA	Solid	Ext_Chrom_LSC	

Rad (Continued)

Prep Batch: 264549 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18504-C-3-C DU	Duplicate	Total/NA	Solid	Ext_Chrom_LSC	

Prep Batch: 265068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	ExtChrom	263822
MB 160-265068/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-265068/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	
160-18521-1 DU	YMTFA74SE001	Total/NA	Solid	ExtChrom	263822

Prep Batch: 265449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18521-1	YMTFA74SE001	Total/NA	Solid	LSC_Dist_Susp	
160-18521-2	YMTFA75SE001	Total/NA	Solid	LSC_Dist_Susp	
MB 160-265449/1-A	Method Blank	Total/NA	Solid	LSC_Dist_Susp	
LCS 160-265449/2-A	Lab Control Sample	Total/NA	Solid	LSC_Dist_Susp	
160-18521-2 MS	YMTFA75SE001	Total/NA	Solid	LSC_Dist_Susp	
160-18521-1 DU	YMTFA74SE001	Total/NA	Solid	LSC_Dist_Susp	

Client Sample ID: YMTFA74SE001 — Lab Sample ID: 160-18521-1

Date Collected: 08/05/16 07:50 — **Matrix: Solid**
Date Received: 08/06/16 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			263916	08/08/16 11:07	JWM	TAL SL
TCLP	Analysis	8260C		1	264101	08/10/16 03:28	JDH	TAL SL
TCLP	Leach	1311			264502	08/11/16 13:18	JWM	TAL SL
TCLP	Prep	3510C			264673	08/12/16 15:52	CNS	TAL SL
TCLP	Analysis	8270D		1	264877	08/15/16 20:22	MAK	TAL SL
Total/NA	Prep	3550C			264775	08/15/16 11:07	KKA	TAL SL
Total/NA	Analysis	8082A		1	265549	08/19/16 16:50	GLB	TAL SL
TCLP	Leach	1311			264502	08/11/16 13:18	JWM	TAL SL
TCLP	Prep	8151A			264676	08/12/16 16:02	CNS	TAL SL
TCLP	Analysis	8151A		1	265408	08/18/16 21:22	DEK	TAL SL
TCLP	Leach	1311			264502	08/11/16 13:18	JWM	TAL SL
TCLP	Prep	3010A			265083	08/16/16 15:52	SFF	TAL SL
TCLP	Analysis	6010C		1	265391	08/17/16 15:52	LKJ	TAL SL
Total/NA	Analysis	Moisture		1	263991	08/09/16 01:21	SDB	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	ExtChrom			264055	08/09/16 10:32	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	264846	08/12/16 16:27	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	A-01-R			264040	08/09/16 10:28	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	264855	08/12/16 16:30	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	ExtChrom			264056	08/09/16 10:32	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	265201	08/16/16 16:13	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	ExtChrom			264041	08/09/16 10:32	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	265235	08/16/16 16:19	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	ExtChrom			265068	08/16/16 14:46	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	265588	08/18/16 17:10	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			265449	08/18/16 13:26	JDL	TAL SL
Total/NA	Analysis	H3-04-RC		1	265808	08/19/16 14:08	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	DPS-0			264358	08/10/16 21:28	MCJ	TAL SL
Total/NA	Analysis	SR-03-RC		1	264773	08/15/16 20:49	JLW	TAL SL
Total/NA	Prep	Ext_Chrom_LSC			264549	08/11/16 16:14	MFM	TAL SL
Total/NA	Analysis	TC-02-RC		1	265093	08/16/16 15:39	RTM	TAL SL

Client Sample ID: YMTFA75SE001 — Lab Sample ID: 160-18521-2

Date Collected: 08/05/16 09:25 — **Matrix: Solid**
Date Received: 08/06/16 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			263916	08/08/16 11:07	JWM	TAL SL
TCLP	Analysis	8260C		1	264101	08/10/16 03:53	JDH	TAL SL

Lab Chronicle

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Client Sample ID: YMTFA75SE001

Date Collected: 08/05/16 09:25
Date Received: 08/06/16 08:30

Lab Sample ID: 160-18521-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			264502	08/11/16 13:18	JWM	TAL SL
TCLP	Prep	3510C			264673	08/12/16 15:52	CNS	TAL SL
TCLP	Analysis	8270D		1	264877	08/15/16 20:56	MAK	TAL SL
Total/NA	Prep	3550C			264775	08/15/16 11:07	KKA	TAL SL
Total/NA	Analysis	8082A		1	265549	08/19/16 17:13	GLB	TAL SL
TCLP	Leach	1311			264502	08/11/16 13:18	JWM	TAL SL
TCLP	Prep	8151A			264676	08/12/16 16:02	CNS	TAL SL
TCLP	Analysis	8151A		1	265408	08/18/16 21:52	DEK	TAL SL
TCLP	Leach	1311			264502	08/11/16 13:18	JWM	TAL SL
TCLP	Prep	3010A			265083	08/16/16 15:52	SFF	TAL SL
TCLP	Analysis	6010C		1	265391	08/17/16 15:57	LKJ	TAL SL
Total/NA	Analysis	Moisture		1	263991	08/09/16 01:21	SDB	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	ExtChrom			264058	08/09/16 10:28	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	264802	08/12/16 16:24	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	ExtChrom			264055	08/09/16 10:32	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	264847	08/12/16 16:27	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	A-01-R			264040	08/09/16 10:28	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	264856	08/12/16 16:30	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	ExtChrom			264056	08/09/16 10:32	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	265025	08/15/16 17:30	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	ExtChrom			264041	08/09/16 10:32	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	265236	08/16/16 16:19	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			265449	08/18/16 13:26	JDL	TAL SL
Total/NA	Analysis	H3-04-RC		1	265808	08/19/16 14:54	RTM	TAL SL
Total/NA	Leach	Dry and Grind			263822	08/08/16 09:07	DRO	TAL SL
Total/NA	Prep	DPS-0			264358	08/10/16 21:28	MCJ	TAL SL
Total/NA	Analysis	SR-03-RC		1	264773	08/15/16 20:49	JLW	TAL SL
Total/NA	Prep	Ext_Chrom_LSC			264549	08/11/16 16:14	MFM	TAL SL
Total/NA	Analysis	TC-02-RC		1	265093	08/16/16 15:59	RTM	TAL SL

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Certification Summary

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Laboratory: TestAmerica St. Louis

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Louisiana	NELAP	6	04080	06-30-17

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
8082A	3550C	Solid	PCB-1262
8082A	3550C	Solid	PCB-1268
8082A	3550C	Solid	Polychlorinated biphenyls, Total
SR-03-RC	DPS-0	Solid	Strontium 89/90

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
A-01-R	A-01-R	Solid	Neptunium-237
A-01-R	ExtChrom	Solid	Americium-241
A-01-R	ExtChrom	Solid	Thorium-228
A-01-R	ExtChrom	Solid	Thorium-230
A-01-R	ExtChrom	Solid	Thorium-232
A-01-R	ExtChrom	Solid	Uranium-235/236
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids
TC-02-RC	Ext_Chrom_LSC	Solid	Technetium-99

Laboratory: TestAmerica Richland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA-LAP, LLC	IHLAP		187436	10-01-17
Arizona	State Program	9	AZ0709	07-02-17 *
California	State Program	9	2425	05-31-18
Colorado	State Program	8	N/A	09-30-16
Florida	NELAP	4	E87829	06-30-17
Hawaii	State Program	9	N/A	01-09-17
L-A-B	DoD ELAP		L2291	06-30-17
Nevada	State Program	9	WA011162015-1	07-31-16 *
New Mexico	State Program	6	WA00023	01-09-17
Oregon	NELAP	10	WA100002	01-09-17
Pennsylvania	NELAP	3	68-04849	08-31-16
Tennessee	State Program	4	TN04011	01-09-17
Texas	NELAP	6	T104704493-15-6	12-31-16
USDA	Federal		P330-14-00085	03-06-17
Utah	NELAP	8	QUAN8	01-31-17
Virginia	State Program	3	460273	03-14-17
Washington	State Program	10	C565	08-13-17
Washington (CLIA)	State Program	10	50D0661626	06-30-17

* Certification renewal pending - certification considered valid.

Method Summary

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SL
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SL
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL SL
8151A	Herbicides (GC)	SW846	TAL SL
6010C	Metals (ICP)	SW846	TAL SL
Moisture	Percent Moisture	EPA	TAL SL
A-01-R	Isotopic Neptunium Tracer	DOE	TAL SL
A-01-R	Isotopic Neptunium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Curium and/or Americium 241 (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Plutonium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Thorium (Alpha Spectrometry)	DOE	TAL SL
H3-04-RC	Tritium (LSC)	DOE	TAL SL
SR-03-RC	Total Beta Strontium (GFPC)	DOE	TAL SL
TC-02-RC	Technetium-99 Tracers	DOE	TAL SL
TC-02-RC	Technetium-99 (LSC)	DOE	TAL SL
C-14	General Sub Contract Method	NONE	TAL RCH

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency
NONE = NONE
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Alliant Corporation
Project/Site: ORNL Y-12 Outfall 200 Characterization

TestAmerica Job ID: 160-18521-1
SDG: Headworks/9720-8

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-18521-1	YMTFA74SE001	Solid	08/05/16 07:50	08/06/16 08:30
160-18521-2	YMTFA75SE001	Solid	08/05/16 09:25	08/06/16 08:30

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: VMSL Analysis Batch Number: 259855

Lab Sample ID: IC 160-259855/3 Client Sample ID:

Date Analyzed: 07/11/16 09:07 Lab File ID: LICL3534.D GC Column: RTXVMS30 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,4-Dioxane	9.95	Missed Peak	rhoadess	07/11/16 13:20
2-Chloroethyl vinyl ether	10.25	Missed Peak	rhoadess	07/11/16 13:20
1,1,2,2-Tetrachloroethane	13.18	Missed Peak	rhoadess	07/11/16 13:20
trans-1,4-Dichloro-2-butene	13.35	Missed Peak	rhoadess	07/11/16 13:20
Benzyl chloride	14.34	Missed Peak	rhoadess	07/11/16 13:20

Lab Sample ID: IC 160-259855/4 Client Sample ID:

Date Analyzed: 07/11/16 09:31 Lab File ID: LICL3535.D GC Column: RTXVMS30 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	07/11/16 13:22

Lab Sample ID: IC 160-259855/5 Client Sample ID:

Date Analyzed: 07/11/16 09:56 Lab File ID: LICL3536.D GC Column: RTXVMS30 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	07/11/16 13:25

Lab Sample ID: IC 160-259855/6 Client Sample ID:

Date Analyzed: 07/11/16 10:21 Lab File ID: LICL3537.D GC Column: RTXVMS30 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Ethanol	5.58	Peak Tail	rhoadess	07/11/16 13:52

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: VMSL Analysis Batch Number: 259855

Lab Sample ID: IC 160-259855/7 Client Sample ID:

Date Analyzed: 07/11/16 10:46 Lab File ID: LICL3538.D GC Column: RTXVMS30 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	07/11/16 13:35
Ethanol	5.60	Peak Tail	rhoadess	07/11/16 13:54

Lab Sample ID: IC 160-259855/9 Client Sample ID:

Date Analyzed: 07/11/16 11:36 Lab File ID: LICL3540.D GC Column: RTXVMS30 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	07/11/16 13:37

Lab Sample ID: ICV 160-259855/12 Client Sample ID:

Date Analyzed: 07/11/16 12:50 Lab File ID: LICV3543.D GC Column: RTXVMS30 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	07/11/16 13:40

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: VMSL Analysis Batch Number: 264101

Lab Sample ID: CCVIS 160-264101/2 Client Sample ID:

Date Analyzed: 08/09/16 18:00 Lab File ID: LCCV4339.D GC Column: RTXVMS30 ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	hannj	08/16/16 22:32

8260C

GC/MS SEMI VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SMSI Analysis Batch Number: 264049

Lab Sample ID: ICIS 160-264049/3 Client Sample ID:

Date Analyzed: 08/09/16 12:25 Lab File ID: I1960.D GC Column: RXI5SiiMS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Indeno[1,2,3-cd]pyrene	23.23	Incomplete Integration	kuessnerm	08/09/16 13:50
Dibenz(a,h)anthracene	23.30	Incomplete Integration	kuessnerm	08/09/16 13:50

Lab Sample ID: IC 160-264049/4 Client Sample ID:

Date Analyzed: 08/09/16 12:58 Lab File ID: I1961.D GC Column: RXI5SiiMS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
N-Nitrosodi-n-propylamine	6.09	Incomplete Integration	kuessnerm	08/09/16 14:10
Dibenz(a,h)anthracene	23.30	Incomplete Integration	kuessnerm	08/09/16 14:10

Lab Sample ID: IC 160-264049/5 Client Sample ID:

Date Analyzed: 08/09/16 13:31 Lab File ID: I1962.D GC Column: RXI5SiiMS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Indeno[1,2,3-cd]pyrene	23.21	Incomplete Integration	kuessnerm	08/09/16 14:11
Dibenz(a,h)anthracene	23.29	Incomplete Integration	kuessnerm	08/09/16 14:11

Lab Sample ID: IC 160-264049/6 Client Sample ID:

Date Analyzed: 08/09/16 14:04 Lab File ID: I1963.D GC Column: RXI5SiiMS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Indeno[1,2,3-cd]pyrene	23.23	Incomplete Integration	kuessnerm	08/10/16 10:20
Dibenz(a,h)anthracene	23.31	Incomplete Integration	kuessnerm	08/10/16 10:20

GC/MS SEMI VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SMSI Analysis Batch Number: 264049

Lab Sample ID: IC 160-264049/7 Client Sample ID:

Date Analyzed: 08/09/16 14:37 Lab File ID: I1964.D GC Column: RXI5SiiMS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Indeno[1,2,3-cd]pyrene	23.20	Incomplete Integration	kuessnerm	08/10/16 10:21

Lab Sample ID: IC 160-264049/9 Client Sample ID:

Date Analyzed: 08/09/16 15:43 Lab File ID: I1966.D GC Column: RXI5SiiMS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Indeno[1,2,3-cd]pyrene	23.15	Incomplete Integration	kuessnerm	08/10/16 10:24

Lab Sample ID: ICV 160-264049/10 Client Sample ID:

Date Analyzed: 08/09/16 16:16 Lab File ID: I1967.D GC Column: RXI5SiiMS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Indeno[1,2,3-cd]pyrene	23.19	Incomplete Integration	kuessnerm	08/10/16 10:35
Dibenz(a,h)anthracene	23.26	Incomplete Integration	kuessnerm	08/10/16 10:35

GC/MS SEMI VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SMSI Analysis Batch Number: 264877

Lab Sample ID: CCVIS 160-264877/3 Client Sample ID:

Date Analyzed: 08/15/16 16:31 Lab File ID: I2062.D GC Column: RXI5SiiMS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Indeno[1,2,3-cd]pyrene	23.13	Incomplete Integration	kuessnerm	08/15/16 16:59
Dibenz(a,h)anthracene	23.20	Incomplete Integration	kuessnerm	08/15/16 16:59

PCBS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCV Analysis Batch Number: 263102

Lab Sample ID: IC 160-263102/6 Client Sample ID:

Date Analyzed: 08/03/16 12:13 Lab File ID: VICL646.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
PCB-1248 Peak 1	6.76	Baseline Smoothing	bonkoskig	08/04/16 08:57
PCB-1248 Peak 2	7.29	Baseline Smoothing	bonkoskig	08/04/16 08:57
PCB-1248 Peak 3	7.62	Baseline Smoothing	bonkoskig	08/04/16 08:57
PCB-1248 Peak 4	8.28	Baseline Smoothing	bonkoskig	08/04/16 08:57
PCB-1248 Peak 5	8.60	Baseline Smoothing	bonkoskig	08/04/16 08:57

Lab Sample ID: IC 160-263102/9 Client Sample ID:

Date Analyzed: 08/03/16 13:21 Lab File ID: VICL649.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
PCB-1254 Peak 1	8.21	Baseline Smoothing	bonkoskig	08/04/16 07:44
PCB-1254 Peak 2	8.61	Baseline Smoothing	bonkoskig	08/04/16 07:44
PCB-1254 Peak 3	9.18	Baseline Smoothing	bonkoskig	08/04/16 07:44
PCB-1254 Peak 4	9.86	Baseline Smoothing	bonkoskig	08/04/16 07:44
PCB-1254 Peak 5	10.24	Baseline Smoothing	bonkoskig	08/04/16 07:44

Lab Sample ID: ICV 160-263102/14 Client Sample ID:

Date Analyzed: 08/03/16 15:14 Lab File ID: VICL654.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
PCB-1254 Peak 1	8.21	Baseline Smoothing	bonkoskig	08/04/16 08:43
PCB-1254 Peak 2	8.61	Baseline Smoothing	bonkoskig	08/04/16 08:43
PCB-1254 Peak 3	9.18	Baseline Smoothing	bonkoskig	08/04/16 08:43
PCB-1254 Peak 4	9.86	Baseline Smoothing	bonkoskig	08/04/16 08:43
PCB-1254 Peak 5	10.24	Baseline Smoothing	bonkoskig	08/04/16 08:43

PCBS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCV Analysis Batch Number: 265137

Lab Sample ID: CCV 160-265137/4 Client Sample ID:

Date Analyzed: 08/17/16 10:43 Lab File ID: VCCV904.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1-Bromo-2-nitrobenzene	3.11	Peak Tail	bonkoskig	08/19/16 10:06
PCB-1221 Peak 1	5.03	Baseline Smoothing	bonkoskig	08/19/16 10:06
PCB-1221 Peak 2	5.30	Baseline Smoothing	bonkoskig	08/19/16 10:06
PCB-1221 Peak 3	5.37	Baseline Smoothing	bonkoskig	08/19/16 10:06

Lab Sample ID: CCV 160-265137/4 Client Sample ID:

Date Analyzed: 08/17/16 10:43 Lab File ID: VCCV904.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1-Bromo-2-nitrobenzene	3.91	Peak Tail	bonkoskig	08/19/16 10:06
PCB-1221 Peak 1	6.38	Peak Tail	bonkoskig	08/19/16 10:06
PCB-1221 Peak 2	6.64	Baseline Smoothing	bonkoskig	08/19/16 10:06
PCB-1221 Peak 3	6.74	Peak Tail	bonkoskig	08/19/16 10:06

Lab Sample ID: CCV 160-265137/15 Client Sample ID:

Date Analyzed: 08/17/16 15:00 Lab File ID: VCCV915.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
PCB-1260 Peak 1	10.94	Baseline Smoothing	bonkoskig	08/19/16 06:12
PCB-1260 Peak 2	11.19	Baseline Smoothing	bonkoskig	08/19/16 06:12
PCB-1260 Peak 3	11.59	Baseline Smoothing	bonkoskig	08/19/16 06:12
PCB-1260 Peak 4	12.27	Baseline Smoothing	bonkoskig	08/19/16 06:12
PCB-1260 Peak 5	12.63	Baseline Smoothing	bonkoskig	08/19/16 06:12

PCBS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCV Analysis Batch Number: 265137

Lab Sample ID: CCV 160-265137/16 Client Sample ID:

Date Analyzed: 08/17/16 15:23 Lab File ID: VCCV916.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
PCB-1254 Peak 1	8.23	Baseline Smoothing	bonkoskig	08/19/16 06:13
PCB-1254 Peak 2	8.63	Baseline Smoothing	bonkoskig	08/19/16 06:13
PCB-1254 Peak 3	9.20	Baseline Smoothing	bonkoskig	08/19/16 06:13
PCB-1254 Peak 4	9.88	Baseline Smoothing	bonkoskig	08/19/16 06:13
PCB-1254 Peak 5	10.26	Baseline Smoothing	bonkoskig	08/19/16 06:13

PCBS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCV Analysis Batch Number: 265549

Lab Sample ID: CCV 160-265549/4 Client Sample ID:

Date Analyzed: 08/19/16 09:43 Lab File ID: VCCV944.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
PCB-1254 Peak 1	9.79	Baseline Smoothing	bonkoskig	08/19/16 10:48
PCB-1254 Peak 2	10.08	Baseline Smoothing	bonkoskig	08/19/16 10:48
PCB-1254 Peak 3	10.69	Baseline Smoothing	bonkoskig	08/19/16 10:48
PCB-1254 Peak 4	11.38	Baseline Smoothing	bonkoskig	08/19/16 10:48
PCB-1254 Peak 5	11.60	Baseline Smoothing	bonkoskig	08/19/16 10:48

HERBICIDES MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCM Analysis Batch Number: 264929

Lab Sample ID: IC 160-264929/3 Client Sample ID:

Date Analyzed: 08/16/16 10:17 Lab File ID: MICL1727.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dalapon	1.68	Incomplete Integration	konopkad	08/16/16 14:41

Lab Sample ID: IC 160-264929/3 Client Sample ID:

Date Analyzed: 08/16/16 10:17 Lab File ID: MICL1727.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dalapon	1.81	Incomplete Integration	konopkad	08/16/16 14:41
2,4-DB	17.37	Peak not integrated	konopkad	08/16/16 14:41

Lab Sample ID: IC 160-264929/4 Client Sample ID:

Date Analyzed: 08/16/16 10:51 Lab File ID: MICL1728.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dalapon	1.68	Incomplete Integration	konopkad	08/16/16 14:41
2,4-Dichlorophenylacetic acid	11.00	Peak not integrated	konopkad	08/16/16 14:36
MCPA	11.83	Peak not integrated	konopkad	08/16/16 14:36
MCPP	12.13	Peak not integrated	konopkad	08/16/16 14:36
Dichlorprop	12.81	Peak not integrated	konopkad	08/16/16 14:36
2,4-D	13.24	Peak not integrated	konopkad	08/16/16 14:36
Pentachlorophenol	13.37	Peak not integrated	konopkad	08/16/16 14:36
Silvex (2,4,5-TP)	14.68	Peak not integrated	konopkad	08/16/16 14:36
2,4,5-T	15.16	Peak not integrated	konopkad	08/16/16 14:36
2,4-DB	16.06	Peak not integrated	konopkad	08/16/16 14:36

HERBICIDES MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCM Analysis Batch Number: 264929

Lab Sample ID: IC 160-264929/4 Client Sample ID:

Date Analyzed: 08/16/16 10:51 Lab File ID: MICL1728.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dalapon	1.81	Incomplete Integration	konopkad	08/16/16 14:41
MCPA	12.85	Peak not integrated	konopkad	08/16/16 14:36
MCPP	13.30	Peak not integrated	konopkad	08/16/16 14:36

Lab Sample ID: IC 160-264929/5 Client Sample ID:

Date Analyzed: 08/16/16 11:24 Lab File ID: MICL1729.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dalapon	1.68	Baseline Smoothing	konopkad	08/16/16 14:42

Lab Sample ID: IC 160-264929/5 Client Sample ID:

Date Analyzed: 08/16/16 11:24 Lab File ID: MICL1729.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dalapon	1.81	Baseline Smoothing	konopkad	08/16/16 14:42
MCPA	12.85	Peak not integrated	konopkad	08/16/16 14:42

Lab Sample ID: IC 160-264929/6 Client Sample ID:

Date Analyzed: 08/16/16 11:58 Lab File ID: MICL1730.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-DB	16.06	Peak not integrated	konopkad	08/16/16 14:32

HERBICIDES MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCM Analysis Batch Number: 264929

Lab Sample ID: IC 160-264929/6 Client Sample ID:

Date Analyzed: 08/16/16 11:58 Lab File ID: MICL1730.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Dalapon	1.81	Incomplete Integration	konopkad	08/16/16 14:43

HERBICIDES MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCM Analysis Batch Number: 265408

Lab Sample ID: CCV 160-265408/3 Client Sample ID:

Date Analyzed: 08/18/16 14:07 Lab File ID: MCCV1796.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
MCPA	11.83	Incomplete Integration	konopkad	08/18/16 15:36
2,4,5-T	15.15	Incomplete Integration	konopkad	08/18/16 15:36

Lab Sample ID: CCV 160-265408/3 Client Sample ID:

Date Analyzed: 08/18/16 14:07 Lab File ID: MCCV1796.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-DB	17.36	Split Peak	konopkad	08/18/16 15:36

Lab Sample ID: LB 160-264502/1-C Client Sample ID:

Date Analyzed: 08/18/16 14:40 Lab File ID: MBLK1797.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-Dichlorophenylacetic acid	12.18	Split Peak	konopkad	08/19/16 09:13

Lab Sample ID: LCS 160-264676/2-A Client Sample ID:

Date Analyzed: 08/18/16 15:14 Lab File ID: MLCS1798.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-Dichlorophenylacetic acid	10.99	Split Peak	konopkad	08/19/16 09:14

Lab Sample ID: LCS 160-264676/2-A Client Sample ID:

Date Analyzed: 08/18/16 15:14 Lab File ID: MLCS1798.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-Dichlorophenylacetic acid	12.18	Split Peak	konopkad	08/19/16 09:14

8151A

HERBICIDES MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCM Analysis Batch Number: 265408

Lab Sample ID: CCV 160-265408/15 Client Sample ID:

Date Analyzed: 08/18/16 19:55 Lab File ID: MCCV1807.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-DB	16.05	Split Peak	konopkad	08/18/16 21:15

Lab Sample ID: CCV 160-265408/15 Client Sample ID:

Date Analyzed: 08/18/16 19:55 Lab File ID: MCCV1807.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-DB	17.36	Split Peak	konopkad	08/18/16 21:15

Lab Sample ID: 160-18521-1 Client Sample ID: YMTFA74SE001

Date Analyzed: 08/18/16 21:22 Lab File ID: MSMP1810.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-Dichlorophenylacetic acid	10.99	Split Peak	konopkad	08/19/16 09:18

Lab Sample ID: 160-18521-2 Client Sample ID: YMTFA75SE001

Date Analyzed: 08/18/16 21:52 Lab File ID: MSMP1811.D GC Column: RTXCLP1 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-Dichlorophenylacetic acid	10.99	Split Peak	konopkad	08/19/16 09:18

Lab Sample ID: 160-18521-2 Client Sample ID: YMTFA75SE001

Date Analyzed: 08/18/16 21:52 Lab File ID: MSMP1811.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-Dichlorophenylacetic acid	12.18	Split Peak	konopkad	08/19/16 09:18

HERBICIDES MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCM Analysis Batch Number: 265408

Lab Sample ID: CCV 160-265408/20 Client Sample ID:

Date Analyzed: 08/18/16 22:20 Lab File ID: MCCV1812.D GC Column: RTXCLP2 ID: 0.53(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,4-DB	17.36	Split Peak	konopkad	08/19/16 08:56

8151A

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
10 ppm 8270_00009	01/25/17	07/25/16	MeCl2, Lot 143066	1 mL	200ppm List 1_00009	0.05 mL	2,4,6-Tribromophenol (Surr)	10 ppm
							2-Fluorobiphenyl (Surr)	10 ppm
							2-Fluorophenol (Surr)	10 ppm
							Nitrobenzene-d5 (Surr)	10 ppm
							Phenol-d5 (Surr)	10 ppm
							Terphenyl-d14 (Surr)	10 ppm
							Benzoic acid	10 ppm
							Cyclohexanol	10 ppm
							1,1'-Biphenyl	10 ppm
							1,2,4,5-Tetrachlorobenzene	10 ppm
							1,2,4-Trichlorobenzene	10 ppm
							1,2-Dichlorobenzene	10 ppm
							1,3-Dichlorobenzene	10 ppm
							1,3-Dinitrobenzene	10 ppm
							1,4-Dichlorobenzene	10 ppm
							1,4-Dioxane	10 ppm
							1-Methylnaphthalene	10 ppm
							2,2'-oxybis[1-chloropropane]	10 ppm
							2,3,4,6-Tetrachlorophenol	10 ppm
							2,4,5-Trichlorophenol	10 ppm
							2,4,6-Trichlorophenol	10 ppm
							2,4-Dichlorophenol	10 ppm
							2,4-Dimethylphenol	10 ppm
							2,4-Dinitrophenol	20 ppm
							2,4-Dinitrotoluene	10 ppm
							2,6-Dichlorophenol	10 ppm
							2,6-Dinitrotoluene	10 ppm
							2-Chloronaphthalene	10 ppm
							2-Chlorophenol	10 ppm
							2-Methylnaphthalene	10 ppm
							2-Methylphenol	10 ppm
							2-Nitroaniline	10 ppm
							2-Nitrophenol	10 ppm
							3 & 4 Methylphenol	10 ppm
							3-Nitroaniline	10 ppm
							4,6-Dinitro-2-methylphenol	20 ppm
							4-Bromophenyl phenyl ether	10 ppm
							4-Chloro-3-methylphenol	10 ppm
							4-Chloroaniline	10 ppm
							4-Chlorophenyl phenyl ether	10 ppm
							4-Nitroaniline	10 ppm
							4-Nitrophenol	20 ppm
							Acenaphthene	10 ppm
							Acenaphthylene	10 ppm
							Acetophenone	10 ppm
							Aniline	10 ppm
							Anthracene	10 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Azobenzene	10 ppm
							Benzo[a]anthracene	10 ppm
							Benzo[a]pyrene	10 ppm
							Benzo[b]fluoranthene	10 ppm
							Benzo[g,h,i]perylene	10 ppm
							Benzo[k]fluoranthene	10 ppm
							Benzyl alcohol	10 ppm
							Bis(2-chloroethoxy)methane	10 ppm
							Bis(2-chloroethyl)ether	10 ppm
							Bis(2-ethylhexyl) phthalate	10 ppm
							Butyl benzyl phthalate	10 ppm
							Carbazole	10 ppm
							Chrysene	10 ppm
							Di-n-butyl phthalate	10 ppm
							Di-n-octyl phthalate	10 ppm
							Dibenz(a,h)anthracene	10 ppm
							Dibenzofuran	10 ppm
							Diethyl phthalate	10 ppm
							Dimethyl phthalate	10 ppm
							Diphenylamine	8.55 ppm
							Fluoranthene	10 ppm
							Fluorene	10 ppm
							Hexachlorobenzene	10 ppm
							Hexachlorobutadiene	10 ppm
							Hexachlorocyclopentadiene	10 ppm
							Hexachloroethane	10 ppm
							Indeno[1,2,3-cd]pyrene	10 ppm
							Isophorone	10 ppm
							N-Nitrosodi-n-propylamine	10 ppm
							N-Nitrosodimethylamine	10 ppm
							N-Nitrosodiphenylamine	10 ppm
							Naphthalene	10 ppm
							Nitrobenzene	10 ppm
							Pentachlorophenol	20 ppm
							Phenanthrene	10 ppm
							Phenol	10 ppm
							Pyrene	10 ppm
							Pyridine	10 ppm
							3,3'-Dichlorobenzidine	10 ppm
							Benzidine	10 ppm
							Dimethylformamide	10 ppm
					800 ppm I Std_00147	0.05 mL	1,4-Dichlorobenzene-d4	40 ppm
							Acenaphthene-d10	40 ppm
							Chrysene-d12	40 ppm
							Naphthalene-d8	40 ppm
							Perylene-d12	40 ppm
							Phenanthrene-d10	40 ppm
.200ppm List 1_00009	01/25/17	07/25/16	MeCl2, Lot 143066	10 mL	8270 Surr Std_00071	0.4 mL	2,4,6-Tribromophenol (Surr)	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Fluorobiphenyl (Surr)	200 ppm
							2-Fluorophenol (Surr)	200 ppm
							Nitrobenzene-d5 (Surr)	200 ppm
							Phenol-d5 (Surr)	200 ppm
							Terphenyl-d14 (Surr)	200 ppm
					Benzoic Acid_00014	1 mL	Benzoic acid	200 ppm
					Cyclohexanol_00032	1 mL	Cyclohexanol	200 ppm
					List 1 Std 1_00026	2 mL	1,1'-Biphenyl	200 ppm
							1,2,4,5-Tetrachlorobenzene	200 ppm
							1,2,4-Trichlorobenzene	200 ppm
							1,2-Dichlorobenzene	200 ppm
							1,3-Dichlorobenzene	200 ppm
							1,3-Dinitrobenzene	200 ppm
							1,4-Dichlorobenzene	200 ppm
							1,4-Dioxane	200 ppm
							1-Methylnaphthalene	200 ppm
							2,2'-oxybis[1-chloropropane]	200 ppm
							2,3,4,6-Tetrachlorophenol	200 ppm
							2,4,5-Trichlorophenol	200 ppm
							2,4,6-Trichlorophenol	200 ppm
							2,4-Dichlorophenol	200 ppm
							2,4-Dimethylphenol	200 ppm
							2,4-Dinitrophenol	400 ppm
							2,4-Dinitrotoluene	200 ppm
							2,6-Dichlorophenol	200 ppm
							2,6-Dinitrotoluene	200 ppm
							2-Chloronaphthalene	200 ppm
							2-Chlorophenol	200 ppm
							2-Methylnaphthalene	200 ppm
							2-Methylphenol	200 ppm
							2-Nitroaniline	200 ppm
							2-Nitrophenol	200 ppm
							3 & 4 Methylphenol	200 ppm
							3-Nitroaniline	200 ppm
							4,6-Dinitro-2-methylphenol	400 ppm
							4-Bromophenyl phenyl ether	200 ppm
							4-Chloro-3-methylphenol	200 ppm
							4-Chloroaniline	200 ppm
							4-Chlorophenyl phenyl ether	200 ppm
							4-Nitroaniline	200 ppm
							4-Nitrophenol	400 ppm
							Acenaphthene	200 ppm
							Acenaphthylene	200 ppm
							Acetophenone	200 ppm
							Aniline	200 ppm
							Anthracene	200 ppm
							Azobenzene	200 ppm
							Benzo[a]anthracene	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzo[a]pyrene	200 ppm
							Benzo[b]fluoranthene	200 ppm
							Benzo[g,h,i]perylene	200 ppm
							Benzo[k]fluoranthene	200 ppm
							Benzyl alcohol	200 ppm
							Bis(2-chloroethoxy)methane	200 ppm
							Bis(2-chloroethyl)ether	200 ppm
							Bis(2-ethylhexyl) phthalate	200 ppm
							Butyl benzyl phthalate	200 ppm
							Carbazole	200 ppm
							Chrysene	200 ppm
							Di-n-butyl phthalate	200 ppm
							Di-n-octyl phthalate	200 ppm
							Dibenz(a,h)anthracene	200 ppm
							Dibenzofuran	200 ppm
							Diethyl phthalate	200 ppm
							Dimethyl phthalate	200 ppm
							Diphenylamine	171 ppm
							Fluoranthene	200 ppm
							Fluorene	200 ppm
							Hexachlorobenzene	200 ppm
							Hexachlorobutadiene	200 ppm
							Hexachlorocyclopentadiene	200 ppm
							Hexachloroethane	200 ppm
							Indeno[1,2,3-cd]pyrene	200 ppm
							Isophorone	200 ppm
							N-Nitrosodi-n-propylamine	200 ppm
							N-Nitrosodimethylamine	200 ppm
							N-Nitrosodiphenylamine	200 ppm
							Naphthalene	200 ppm
							Nitrobenzene	200 ppm
							Pentachlorophenol	400 ppm
							Phenanthrene	200 ppm
							Phenol	200 ppm
							Pyrene	200 ppm
							Pyridine	200 ppm
					List 1 Std 9_00010	1 mL	3,3'-Dichlorobenzidine	200 ppm
							Benzidine	200 ppm
					NN_DMF_00027	0.4 mL	Dimethylformamide	200 ppm
..8270 Surr Std_00071	01/25/17	Restek, Lot A0103615			(Purchased Reagent)		2,4,6-Tribromophenol (Surr)	5000 ppm
							2-Fluorobiphenyl (Surr)	5000 ppm
							2-Fluorophenol (Surr)	5000 ppm
							Nitrobenzene-d5 (Surr)	5000 ppm
							Phenol-d5 (Surr)	5000 ppm
							Terphenyl-d14 (Surr)	5000 ppm
..Benzoic Acid_00014	03/31/19	Restek, Lot A0109720			(Purchased Reagent)		Benzoic acid	2000 ppm
..Cyclohexanol_00032	08/13/17	Accustandard, Lot 214081290			(Purchased Reagent)		Cyclohexanol	2000 ppm
..List 1 Std 1_00026	04/30/17	Restek, Lot A0114832			(Purchased Reagent)		1,1'-Biphenyl	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,4,5-Tetrachlorobenzene	1000 ppm
							1,2,4-Trichlorobenzene	1000 ppm
							1,2-Dichlorobenzene	1000 ppm
							1,3-Dichlorobenzene	1000 ppm
							1,3-Dinitrobenzene	1000 ppm
							1,4-Dichlorobenzene	1000 ppm
							1,4-Dioxane	1000 ppm
							1-Methylnaphthalene	1000 ppm
							2,2'-oxybis[1-chloropropane]	1000 ppm
							2,3,4,6-Tetrachlorophenol	1000 ppm
							2,4,5-Trichlorophenol	1000 ppm
							2,4,6-Trichlorophenol	1000 ppm
							2,4-Dichlorophenol	1000 ppm
							2,4-Dimethylphenol	1000 ppm
							2,4-Dinitrophenol	2000 ppm
							2,4-Dinitrotoluene	1000 ppm
							2,6-Dichlorophenol	1000 ppm
							2,6-Dinitrotoluene	1000 ppm
							2-Chloronaphthalene	1000 ppm
							2-Chlorophenol	1000 ppm
							2-Methylnaphthalene	1000 ppm
							2-Methylphenol	1000 ppm
							2-Nitroaniline	1000 ppm
							2-Nitrophenol	1000 ppm
							3 & 4 Methylphenol	1000 ppm
							3-Nitroaniline	1000 ppm
							4,6-Dinitro-2-methylphenol	2000 ppm
							4-Bromophenyl phenyl ether	1000 ppm
							4-Chloro-3-methylphenol	1000 ppm
							4-Chloroaniline	1000 ppm
							4-Chlorophenyl phenyl ether	1000 ppm
							4-Nitroaniline	1000 ppm
							4-Nitrophenol	2000 ppm
							Acenaphthene	1000 ppm
							Acenaphthylene	1000 ppm
							Acetophenone	1000 ppm
							Aniline	1000 ppm
							Anthracene	1000 ppm
							Azobenzene	1000 ppm
							Benzo[a]anthracene	1000 ppm
							Benzo[a]pyrene	1000 ppm
							Benzo[b]fluoranthene	1000 ppm
							Benzo[g,h,i]perylene	1000 ppm
							Benzo[k]fluoranthene	1000 ppm
							Benzyl alcohol	1000 ppm
							Bis(2-chloroethoxy)methane	1000 ppm
							Bis(2-chloroethyl)ether	1000 ppm
							Bis(2-ethylhexyl) phthalate	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Butyl benzyl phthalate	1000 ppm
							Carbazole	1000 ppm
							Chrysene	1000 ppm
							Di-n-butyl phthalate	1000 ppm
							Di-n-octyl phthalate	1000 ppm
							Dibenz(a,h)anthracene	1000 ppm
							Dibenzofuran	1000 ppm
							Diethyl phthalate	1000 ppm
							Dimethyl phthalate	1000 ppm
							Diphenylamine	855 ppm
							Fluoranthene	1000 ppm
							Fluorene	1000 ppm
							Hexachlorobenzene	1000 ppm
							Hexachlorobutadiene	1000 ppm
							Hexachlorocyclopentadiene	1000 ppm
							Hexachloroethane	1000 ppm
							Indeno[1,2,3-cd]pyrene	1000 ppm
							Isophorone	1000 ppm
							N-Nitrosodi-n-propylamine	1000 ppm
							N-Nitrosodimethylamine	1000 ppm
							N-Nitrosodiphenylamine	1000 ppm
							Naphthalene	1000 ppm
							Nitrobenzene	1000 ppm
							Pentachlorophenol	2000 ppm
							Phenanthrene	1000 ppm
							Phenol	1000 ppm
							Pyrene	1000 ppm
							Pyridine	1000 ppm
..List 1 Std 9_00010	01/31/17	Restek, Lot A0112567			(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ppm
							Benzidine	2000 ppm
..NN_DMF_00027	01/25/18	Accustandard, Lot 210021264-02			(Purchased Reagent)		Dimethylformamide	5000 ppm
.800 ppm I Std_00147	01/25/17	07/25/16	MeCl2, Lot 143066	2.5 mL	Internal Std_00007	1 mL	1,4-Dichlorobenzene-d4	800 ppm
							Acenaphthene-d10	800 ppm
							Chrysene-d12	800 ppm
							Naphthalene-d8	800 ppm
							Perylene-d12	800 ppm
							Phenanthrene-d10	800 ppm
..Internal Std_00007	01/25/17	Restek, Lot A093676			(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ppm
							Acenaphthene-d10	2000 ppm
							Chrysene-d12	2000 ppm
							Naphthalene-d8	2000 ppm
							Perylene-d12	2000 ppm
							Phenanthrene-d10	2000 ppm
1016/1260Cal2_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1016/1260 Cal_00012	25 uL	DCB Decachlorobiphenyl (Surr)	0.005 ug/mL
							PCB-1016 Peak 1	0.1 ug/mL
							PCB-1016 Peak 2	0.1 ug/mL
							PCB-1016 Peak 3	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							PCB-1016 Peak 4	0.1 ug/mL
							PCB-1016 Peak 5	0.1 ug/mL
							PCB-1260 Peak 1	0.10005 ug/mL
							PCB-1260 Peak 2	0.10005 ug/mL
							PCB-1260 Peak 3	0.10005 ug/mL
							PCB-1260 Peak 4	0.10005 ug/mL
							PCB-1260 Peak 5	0.10005 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1016/1260 Cal_00012	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 16/60.sec_00008	100 uL	PCB-1016 Peak 1	4 ug/mL
							PCB-1016 Peak 2	4 ug/mL
							PCB-1016 Peak 3	4 ug/mL
							PCB-1016 Peak 4	4 ug/mL
							PCB-1016 Peak 5	4 ug/mL
							PCB-1260 Peak 1	4.002 ug/mL
							PCB-1260 Peak 2	4.002 ug/mL
							PCB-1260 Peak 3	4.002 ug/mL
							PCB-1260 Peak 4	4.002 ug/mL
							PCB-1260 Peak 5	4.002 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 16/60.sec_00008	01/18/17	Restek, Lot A094336			(Purchased Reagent)		PCB-1016 Peak 1	1000 ug/mL
							PCB-1016 Peak 2	1000 ug/mL
							PCB-1016 Peak 3	1000 ug/mL
							PCB-1016 Peak 4	1000 ug/mL
							PCB-1016 Peak 5	1000 ug/mL
							PCB-1260 Peak 1	1000.5 ug/mL
							PCB-1260 Peak 2	1000.5 ug/mL
							PCB-1260 Peak 3	1000.5 ug/mL
							PCB-1260 Peak 4	1000.5 ug/mL
							PCB-1260 Peak 5	1000.5 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1016/1260Cal3_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1016/1260 Cal_00012	50 uL	DCB Decachlorobiphenyl (Surr)	0.01 ug/mL
							PCB-1016 Peak 1	0.2 ug/mL
							PCB-1016 Peak 2	0.2 ug/mL
							PCB-1016 Peak 3	0.2 ug/mL
							PCB-1016 Peak 4	0.2 ug/mL
							PCB-1016 Peak 5	0.2 ug/mL
							PCB-1260 Peak 1	0.2001 ug/mL
							PCB-1260 Peak 2	0.2001 ug/mL
							PCB-1260 Peak 3	0.2001 ug/mL
							PCB-1260 Peak 4	0.2001 ug/mL
							PCB-1260 Peak 5	0.2001 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1016/1260 Cal_00012	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 16/60.sec_00008	100 uL	PCB-1016 Peak 1	4 ug/mL
							PCB-1016 Peak 2	4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							PCB-1016 Peak 3	4 ug/mL
							PCB-1016 Peak 4	4 ug/mL
							PCB-1016 Peak 5	4 ug/mL
							PCB-1260 Peak 1	4.002 ug/mL
							PCB-1260 Peak 2	4.002 ug/mL
							PCB-1260 Peak 3	4.002 ug/mL
							PCB-1260 Peak 4	4.002 ug/mL
							PCB-1260 Peak 5	4.002 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 16/60.sec_00008	01/18/17	Restek, Lot A094336			(Purchased Reagent)		PCB-1016 Peak 1	1000 ug/mL
							PCB-1016 Peak 2	1000 ug/mL
							PCB-1016 Peak 3	1000 ug/mL
							PCB-1016 Peak 4	1000 ug/mL
							PCB-1016 Peak 5	1000 ug/mL
							PCB-1260 Peak 1	1000.5 ug/mL
							PCB-1260 Peak 2	1000.5 ug/mL
							PCB-1260 Peak 3	1000.5 ug/mL
							PCB-1260 Peak 4	1000.5 ug/mL
							PCB-1260 Peak 5	1000.5 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1016/1260Cal4_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1016/1260 Cal_00012	125 uL	DCB Decachlorobiphenyl (Surr)	0.025 ug/mL
							PCB-1016 Peak 1	0.5 ug/mL
							PCB-1016 Peak 2	0.5 ug/mL
							PCB-1016 Peak 3	0.5 ug/mL
							PCB-1016 Peak 4	0.5 ug/mL
							PCB-1016 Peak 5	0.5 ug/mL
							PCB-1260 Peak 1	0.50025 ug/mL
							PCB-1260 Peak 2	0.50025 ug/mL
							PCB-1260 Peak 3	0.50025 ug/mL
							PCB-1260 Peak 4	0.50025 ug/mL
							PCB-1260 Peak 5	0.50025 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1016/1260 Cal_00012	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 16/60.sec_00008	100 uL	PCB-1016 Peak 1	4 ug/mL
							PCB-1016 Peak 2	4 ug/mL
							PCB-1016 Peak 3	4 ug/mL
							PCB-1016 Peak 4	4 ug/mL
							PCB-1016 Peak 5	4 ug/mL
							PCB-1260 Peak 1	4.002 ug/mL
							PCB-1260 Peak 2	4.002 ug/mL
							PCB-1260 Peak 3	4.002 ug/mL
							PCB-1260 Peak 4	4.002 ug/mL
							PCB-1260 Peak 5	4.002 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 16/60.sec_00008	01/18/17	Restek, Lot A094336			(Purchased Reagent)		PCB-1016 Peak 1	1000 ug/mL
							PCB-1016 Peak 2	1000 ug/mL

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							PCB-1016 Peak 3	1000 ug/mL
							PCB-1016 Peak 4	1000 ug/mL
							PCB-1016 Peak 5	1000 ug/mL
							PCB-1260 Peak 1	1000.5 ug/mL
							PCB-1260 Peak 2	1000.5 ug/mL
							PCB-1260 Peak 3	1000.5 ug/mL
							PCB-1260 Peak 4	1000.5 ug/mL
							PCB-1260 Peak 5	1000.5 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17		Restek, Lot A0113173		(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1016/1260Cal5_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1016/1260 Cal_00012	250 uL	DCB Decachlorobiphenyl (Surr)	0.05 ug/mL
							PCB-1016 Peak 1	1 ug/mL
							PCB-1016 Peak 2	1 ug/mL
							PCB-1016 Peak 3	1 ug/mL
							PCB-1016 Peak 4	1 ug/mL
							PCB-1016 Peak 5	1 ug/mL
							PCB-1260 Peak 1	1.0005 ug/mL
							PCB-1260 Peak 2	1.0005 ug/mL
							PCB-1260 Peak 3	1.0005 ug/mL
							PCB-1260 Peak 4	1.0005 ug/mL
							PCB-1260 Peak 5	1.0005 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1016/1260 Cal_00012	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 16/60.sec_00008	100 uL	PCB-1016 Peak 1	4 ug/mL
							PCB-1016 Peak 2	4 ug/mL
							PCB-1016 Peak 3	4 ug/mL
							PCB-1016 Peak 4	4 ug/mL
							PCB-1016 Peak 5	4 ug/mL
							PCB-1260 Peak 1	4.002 ug/mL
							PCB-1260 Peak 2	4.002 ug/mL
							PCB-1260 Peak 3	4.002 ug/mL
							PCB-1260 Peak 4	4.002 ug/mL
							PCB-1260 Peak 5	4.002 ug/mL
..8082 Surr DCB_00023	01/18/17		Ultra Scientific, Lot CK-4355		(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 16/60.sec_00008	01/18/17		Restek, Lot A094336		(Purchased Reagent)		PCB-1016 Peak 1	1000 ug/mL
							PCB-1016 Peak 2	1000 ug/mL
							PCB-1016 Peak 3	1000 ug/mL
							PCB-1016 Peak 4	1000 ug/mL
							PCB-1016 Peak 5	1000 ug/mL
							PCB-1260 Peak 1	1000.5 ug/mL
							PCB-1260 Peak 2	1000.5 ug/mL
							PCB-1260 Peak 3	1000.5 ug/mL
							PCB-1260 Peak 4	1000.5 ug/mL
							PCB-1260 Peak 5	1000.5 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17		Restek, Lot A0113173		(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1016/1260Cal6_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1016/1260 Cal_00012	500 uL	DCB Decachlorobiphenyl (Surr)	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							PCB-1016 Peak 1	2 ug/mL
							PCB-1016 Peak 2	2 ug/mL
							PCB-1016 Peak 3	2 ug/mL
							PCB-1016 Peak 4	2 ug/mL
							PCB-1016 Peak 5	2 ug/mL
							PCB-1260 Peak 1	2.001 ug/mL
							PCB-1260 Peak 2	2.001 ug/mL
							PCB-1260 Peak 3	2.001 ug/mL
							PCB-1260 Peak 4	2.001 ug/mL
							PCB-1260 Peak 5	2.001 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1016/1260 Cal_00012	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 16/60.sec_00008	100 uL	PCB-1016 Peak 1	4 ug/mL
							PCB-1016 Peak 2	4 ug/mL
							PCB-1016 Peak 3	4 ug/mL
							PCB-1016 Peak 4	4 ug/mL
							PCB-1016 Peak 5	4 ug/mL
							PCB-1260 Peak 1	4.002 ug/mL
							PCB-1260 Peak 2	4.002 ug/mL
							PCB-1260 Peak 3	4.002 ug/mL
							PCB-1260 Peak 4	4.002 ug/mL
							PCB-1260 Peak 5	4.002 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 16/60.sec_00008	01/18/17	Restek, Lot A094336			(Purchased Reagent)		PCB-1016 Peak 1	1000 ug/mL
							PCB-1016 Peak 2	1000 ug/mL
							PCB-1016 Peak 3	1000 ug/mL
							PCB-1016 Peak 4	1000 ug/mL
							PCB-1016 Peak 5	1000 ug/mL
							PCB-1260 Peak 1	1000.5 ug/mL
							PCB-1260 Peak 2	1000.5 ug/mL
							PCB-1260 Peak 3	1000.5 ug/mL
							PCB-1260 Peak 4	1000.5 ug/mL
							PCB-1260 Peak 5	1000.5 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1016/1260Cal7_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1016/1260 Cal_00012	1000 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
							PCB-1016 Peak 1	4 ug/mL
							PCB-1016 Peak 2	4 ug/mL
							PCB-1016 Peak 3	4 ug/mL
							PCB-1016 Peak 4	4 ug/mL
							PCB-1016 Peak 5	4 ug/mL
							PCB-1260 Peak 1	4.002 ug/mL
							PCB-1260 Peak 2	4.002 ug/mL
							PCB-1260 Peak 3	4.002 ug/mL
							PCB-1260 Peak 4	4.002 ug/mL
							PCB-1260 Peak 5	4.002 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.1016/1260 Cal_00012	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 16/60.sec_00008	100 uL	PCB-1016 Peak 1	4 ug/mL
							PCB-1016 Peak 2	4 ug/mL
							PCB-1016 Peak 3	4 ug/mL
							PCB-1016 Peak 4	4 ug/mL
							PCB-1016 Peak 5	4 ug/mL
							PCB-1260 Peak 1	4.002 ug/mL
							PCB-1260 Peak 2	4.002 ug/mL
							PCB-1260 Peak 3	4.002 ug/mL
							PCB-1260 Peak 4	4.002 ug/mL
							PCB-1260 Peak 5	4.002 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 16/60.sec_00008	01/18/17	Restek, Lot A094336			(Purchased Reagent)		PCB-1016 Peak 1	1000 ug/mL
							PCB-1016 Peak 2	1000 ug/mL
							PCB-1016 Peak 3	1000 ug/mL
							PCB-1016 Peak 4	1000 ug/mL
							PCB-1016 Peak 5	1000 ug/mL
							PCB-1260 Peak 1	1000.5 ug/mL
							PCB-1260 Peak 2	1000.5 ug/mL
							PCB-1260 Peak 3	1000.5 ug/mL
							PCB-1260 Peak 4	1000.5 ug/mL
							PCB-1260 Peak 5	1000.5 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1016/1260CCV_00004	01/18/17	08/16/16	Hexane, Lot 749938	1 mL	8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1016/1260CCV_00004	01/18/17	08/16/16	Hexane, Lot 749938	1 mL	1016/1260 Cal_00012	250 uL	DCB Decachlorobiphenyl (Surr)	0.05 ug/mL
							PCB-1016	1 ug/mL
							PCB-1260	1.0005 ug/mL
.1016/1260 Cal_00012	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 16/60.sec_00008	100 uL	PCB-1016	4 ug/mL
							PCB-1260	4.002 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 16/60.sec_00008	01/18/17	Restek, Lot A094336			(Purchased Reagent)		PCB-1016	1000 ug/mL
							PCB-1260	1000.5 ug/mL
120 ppm 8270_00009	01/25/17	07/25/16	MeCl2, Lot 143066	1 mL	200ppm List 1_00009	0.6 mL	2,4,6-Tribromophenol (Surr)	120 ppm
							2-Fluorobiphenyl (Surr)	120 ppm
							2-Fluorophenol (Surr)	120 ppm
							Nitrobenzene-d5 (Surr)	120 ppm
							Phenol-d5 (Surr)	120 ppm
							Terphenyl-d14 (Surr)	120 ppm
							Benzoic acid	120 ppm
							Cyclohexanol	120 ppm
							1,1'-Biphenyl	120 ppm
							1,2,4,5-Tetrachlorobenzene	120 ppm
							1,2,4-Trichlorobenzene	120 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2-Dichlorobenzene	120 ppm
							1,3-Dichlorobenzene	120 ppm
							1,3-Dinitrobenzene	120 ppm
							1,4-Dichlorobenzene	120 ppm
							1,4-Dioxane	120 ppm
							1-Methylnaphthalene	120 ppm
							2,2'-oxybis[1-chloropropane]	120 ppm
							2,3,4,6-Tetrachlorophenol	120 ppm
							2,4,5-Trichlorophenol	120 ppm
							2,4,6-Trichlorophenol	120 ppm
							2,4-Dichlorophenol	120 ppm
							2,4-Dimethylphenol	120 ppm
							2,4-Dinitrophenol	240 ppm
							2,4-Dinitrotoluene	120 ppm
							2,6-Dichlorophenol	120 ppm
							2,6-Dinitrotoluene	120 ppm
							2-Chloronaphthalene	120 ppm
							2-Chlorophenol	120 ppm
							2-Methylnaphthalene	120 ppm
							2-Methylphenol	120 ppm
							2-Nitroaniline	120 ppm
							2-Nitrophenol	120 ppm
							3 & 4 Methylphenol	120 ppm
							3-Nitroaniline	120 ppm
							4,6-Dinitro-2-methylphenol	240 ppm
							4-Bromophenyl phenyl ether	120 ppm
							4-Chloro-3-methylphenol	120 ppm
							4-Chloroaniline	120 ppm
							4-Chlorophenyl phenyl ether	120 ppm
							4-Nitroaniline	120 ppm
							4-Nitrophenol	240 ppm
							Acenaphthene	120 ppm
							Acenaphthylene	120 ppm
							Acetophenone	120 ppm
							Aniline	120 ppm
							Anthracene	120 ppm
							Azobenzene	120 ppm
							Benzo[a]anthracene	120 ppm
							Benzo[a]pyrene	120 ppm
							Benzo[b]fluoranthene	120 ppm
							Benzo[g,h,i]perylene	120 ppm
							Benzo[k]fluoranthene	120 ppm
							Benzyl alcohol	120 ppm
							Bis(2-chloroethoxy)methane	120 ppm
							Bis(2-chloroethyl)ether	120 ppm
							Bis(2-ethylhexyl) phthalate	120 ppm
							Butyl benzyl phthalate	120 ppm
							Carbazole	120 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Chrysene	120 ppm
							Di-n-butyl phthalate	120 ppm
							Di-n-octyl phthalate	120 ppm
							Dibenz(a,h)anthracene	120 ppm
							Dibenzofuran	120 ppm
							Diethyl phthalate	120 ppm
							Dimethyl phthalate	120 ppm
							Diphenylamine	102.6 ppm
							Fluoranthene	120 ppm
							Fluorene	120 ppm
							Hexachlorobenzene	120 ppm
							Hexachlorobutadiene	120 ppm
							Hexachlorocyclopentadiene	120 ppm
							Hexachloroethane	120 ppm
							Indeno[1,2,3-cd]pyrene	120 ppm
							Isophorone	120 ppm
							N-Nitrosodi-n-propylamine	120 ppm
							N-Nitrosodimethylamine	120 ppm
							N-Nitrosodiphenylamine	120 ppm
							Naphthalene	120 ppm
							Nitrobenzene	120 ppm
							Pentachlorophenol	240 ppm
							Phenanthrene	120 ppm
							Phenol	120 ppm
							Pyrene	120 ppm
							Pyridine	120 ppm
							3,3'-Dichlorobenzidine	120 ppm
							Benzidine	120 ppm
							Dimethylformamide	120 ppm
					800 ppm I Std_00147	0.05 mL	1,4-Dichlorobenzene-d4	40 ppm
							Acenaphthene-d10	40 ppm
							Chrysene-d12	40 ppm
							Naphthalene-d8	40 ppm
							Perylene-d12	40 ppm
							Phenanthrene-d10	40 ppm
.200ppm List 1_00009	01/25/17	07/25/16	MeCl2, Lot 143066	10 mL	8270 Surr Std_00071	0.4 mL	2,4,6-Tribromophenol (Surr)	200 ppm
							2-Fluorobiphenyl (Surr)	200 ppm
							2-Fluorophenol (Surr)	200 ppm
							Nitrobenzene-d5 (Surr)	200 ppm
							Phenol-d5 (Surr)	200 ppm
							Terphenyl-d14 (Surr)	200 ppm
					Benzoic Acid_00014	1 mL	Benzoic acid	200 ppm
					Cyclohexanol_00032	1 mL	Cyclohexanol	200 ppm
					List 1 Std 1_00026	2 mL	1,1'-Biphenyl	200 ppm
							1,2,4,5-Tetrachlorobenzene	200 ppm
							1,2,4-Trichlorobenzene	200 ppm
							1,2-Dichlorobenzene	200 ppm
							1,3-Dichlorobenzene	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,3-Dinitrobenzene	200 ppm
							1,4-Dichlorobenzene	200 ppm
							1,4-Dioxane	200 ppm
							1-Methylnaphthalene	200 ppm
							2,2'-oxybis[1-chloropropane]	200 ppm
							2,3,4,6-Tetrachlorophenol	200 ppm
							2,4,5-Trichlorophenol	200 ppm
							2,4,6-Trichlorophenol	200 ppm
							2,4-Dichlorophenol	200 ppm
							2,4-Dimethylphenol	200 ppm
							2,4-Dinitrophenol	400 ppm
							2,4-Dinitrotoluene	200 ppm
							2,6-Dichlorophenol	200 ppm
							2,6-Dinitrotoluene	200 ppm
							2-Chloronaphthalene	200 ppm
							2-Chlorophenol	200 ppm
							2-Methylnaphthalene	200 ppm
							2-Methylphenol	200 ppm
							2-Nitroaniline	200 ppm
							2-Nitrophenol	200 ppm
							3 & 4 Methylphenol	200 ppm
							3-Nitroaniline	200 ppm
							4,6-Dinitro-2-methylphenol	400 ppm
							4-Bromophenyl phenyl ether	200 ppm
							4-Chloro-3-methylphenol	200 ppm
							4-Chloroaniline	200 ppm
							4-Chlorophenyl phenyl ether	200 ppm
							4-Nitroaniline	200 ppm
							4-Nitrophenol	400 ppm
							Acenaphthene	200 ppm
							Acenaphthylene	200 ppm
							Acetophenone	200 ppm
							Aniline	200 ppm
							Anthracene	200 ppm
							Azobenzene	200 ppm
							Benzo[a]anthracene	200 ppm
							Benzo[a]pyrene	200 ppm
							Benzo[b]fluoranthene	200 ppm
							Benzo[g,h,i]perylene	200 ppm
							Benzo[k]fluoranthene	200 ppm
							Benzyl alcohol	200 ppm
							Bis(2-chloroethoxy)methane	200 ppm
							Bis(2-chloroethyl)ether	200 ppm
							Bis(2-ethylhexyl) phthalate	200 ppm
							Butyl benzyl phthalate	200 ppm
							Carbazole	200 ppm
							Chrysene	200 ppm
							Di-n-butyl phthalate	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Di-n-octyl phthalate	200 ppm
							Dibenz(a,h)anthracene	200 ppm
							Dibenzofuran	200 ppm
							Diethyl phthalate	200 ppm
							Dimethyl phthalate	200 ppm
							Diphenylamine	171 ppm
							Fluoranthene	200 ppm
							Fluorene	200 ppm
							Hexachlorobenzene	200 ppm
							Hexachlorobutadiene	200 ppm
							Hexachlorocyclopentadiene	200 ppm
							Hexachloroethane	200 ppm
							Indeno[1,2,3-cd]pyrene	200 ppm
							Isophorone	200 ppm
							N-Nitrosodi-n-propylamine	200 ppm
							N-Nitrosodimethylamine	200 ppm
							N-Nitrosodiphenylamine	200 ppm
							Naphthalene	200 ppm
							Nitrobenzene	200 ppm
							Pentachlorophenol	400 ppm
							Phenanthrene	200 ppm
							Phenol	200 ppm
							Pyrene	200 ppm
							Pyridine	200 ppm
					List 1 Std 9_00010	1 mL	3,3'-Dichlorobenzidine	200 ppm
							Benzidine	200 ppm
					NN_DMF_00027	0.4 mL	Dimethylformamide	200 ppm
..8270 Surr Std_00071	01/25/17	Restek, Lot A0103615			(Purchased Reagent)		2,4,6-Tribromophenol (Surr)	5000 ppm
							2-Fluorobiphenyl (Surr)	5000 ppm
							2-Fluorophenol (Surr)	5000 ppm
							Nitrobenzene-d5 (Surr)	5000 ppm
							Phenol-d5 (Surr)	5000 ppm
							Terphenyl-d14 (Surr)	5000 ppm
..Benzoic Acid_00014	03/31/19	Restek, Lot A0109720			(Purchased Reagent)		Benzoic acid	2000 ppm
..Cyclohexanol_00032	08/13/17	Accustandard, Lot 214081290			(Purchased Reagent)		Cyclohexanol	2000 ppm
..List 1 Std 1_00026	04/30/17	Restek, Lot A0114832			(Purchased Reagent)		1,1'-Biphenyl	1000 ppm
							1,2,4,5-Tetrachlorobenzene	1000 ppm
							1,2,4-Trichlorobenzene	1000 ppm
							1,2-Dichlorobenzene	1000 ppm
							1,3-Dichlorobenzene	1000 ppm
							1,3-Dinitrobenzene	1000 ppm
							1,4-Dichlorobenzene	1000 ppm
							1,4-Dioxane	1000 ppm
							1-Methylnaphthalene	1000 ppm
							2,2'-oxybis[1-chloropropane]	1000 ppm
							2,3,4,6-Tetrachlorophenol	1000 ppm
							2,4,5-Trichlorophenol	1000 ppm
							2,4,6-Trichlorophenol	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,4-Dichlorophenol	1000 ppm
							2,4-Dimethylphenol	1000 ppm
							2,4-Dinitrophenol	2000 ppm
							2,4-Dinitrotoluene	1000 ppm
							2,6-Dichlorophenol	1000 ppm
							2,6-Dinitrotoluene	1000 ppm
							2-Chloronaphthalene	1000 ppm
							2-Chlorophenol	1000 ppm
							2-Methylnaphthalene	1000 ppm
							2-Methylphenol	1000 ppm
							2-Nitroaniline	1000 ppm
							2-Nitrophenol	1000 ppm
							3 & 4 Methylphenol	1000 ppm
							3-Nitroaniline	1000 ppm
							4,6-Dinitro-2-methylphenol	2000 ppm
							4-Bromophenyl phenyl ether	1000 ppm
							4-Chloro-3-methylphenol	1000 ppm
							4-Chloroaniline	1000 ppm
							4-Chlorophenyl phenyl ether	1000 ppm
							4-Nitroaniline	1000 ppm
							4-Nitrophenol	2000 ppm
							Acenaphthene	1000 ppm
							Acenaphthylene	1000 ppm
							Acetophenone	1000 ppm
							Aniline	1000 ppm
							Anthracene	1000 ppm
							Azobenzene	1000 ppm
							Benzo[a]anthracene	1000 ppm
							Benzo[a]pyrene	1000 ppm
							Benzo[b]fluoranthene	1000 ppm
							Benzo[g,h,i]perylene	1000 ppm
							Benzo[k]fluoranthene	1000 ppm
							Benzyl alcohol	1000 ppm
							Bis(2-chloroethoxy)methane	1000 ppm
							Bis(2-chloroethyl)ether	1000 ppm
							Bis(2-ethylhexyl) phthalate	1000 ppm
							Butyl benzyl phthalate	1000 ppm
							Carbazole	1000 ppm
							Chrysene	1000 ppm
							Di-n-butyl phthalate	1000 ppm
							Di-n-octyl phthalate	1000 ppm
							Dibenz(a,h)anthracene	1000 ppm
							Dibenzofuran	1000 ppm
							Diethyl phthalate	1000 ppm
							Dimethyl phthalate	1000 ppm
							Diphenylamine	855 ppm
							Fluoranthene	1000 ppm
							Fluorene	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Hexachlorobenzene	1000 ppm
							Hexachlorobutadiene	1000 ppm
							Hexachlorocyclopentadiene	1000 ppm
							Hexachloroethane	1000 ppm
							Indeno[1,2,3-cd]pyrene	1000 ppm
							Isophorone	1000 ppm
							N-Nitrosodi-n-propylamine	1000 ppm
							N-Nitrosodimethylamine	1000 ppm
							N-Nitrosodiphenylamine	1000 ppm
							Naphthalene	1000 ppm
							Nitrobenzene	1000 ppm
							Pentachlorophenol	2000 ppm
							Phenanthrene	1000 ppm
							Phenol	1000 ppm
							Pyrene	1000 ppm
							Pyridine	1000 ppm
..List 1 Std 9_00010	01/31/17	Restek, Lot A0112567			(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ppm
							Benzidine	2000 ppm
..NN_DMF_00027	01/25/18	Accustandard, Lot 210021264-02			(Purchased Reagent)		Dimethylformamide	5000 ppm
.800 ppm I Std_00147	01/25/17	07/25/16	MeCl2, Lot 143066	2.5 mL	Internal Std_00007	1 mL	1,4-Dichlorobenzene-d4	800 ppm
							Acenaphthene-d10	800 ppm
							Chrysene-d12	800 ppm
							Naphthalene-d8	800 ppm
							Perylene-d12	800 ppm
							Phenanthrene-d10	800 ppm
..Internal Std_00007	01/25/17	Restek, Lot A093676			(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ppm
							Acenaphthene-d10	2000 ppm
							Chrysene-d12	2000 ppm
							Naphthalene-d8	2000 ppm
							Perylene-d12	2000 ppm
							Phenanthrene-d10	2000 ppm
1221/1254Cal2_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1221/1254 CAL_00002	25 uL	DCB Decachlorobiphenyl (Surr)	0.005 ug/mL
							PCB-1221 Peak 1	0.1008 ug/mL
							PCB-1221 Peak 2	0.1008 ug/mL
							PCB-1221 Peak 3	0.1008 ug/mL
							PCB-1254 Peak 1	0.1008 ug/mL
							PCB-1254 Peak 2	0.1008 ug/mL
							PCB-1254 Peak 3	0.1008 ug/mL
							PCB-1254 Peak 4	0.1008 ug/mL
							PCB-1254 Peak 5	0.1008 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1221/1254 CAL_00002	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					AR 21/54_00003	100 uL	PCB-1221 Peak 1	4.032 ug/mL
							PCB-1221 Peak 2	4.032 ug/mL
							PCB-1221 Peak 3	4.032 ug/mL
							PCB-1254 Peak 1	4.032 ug/mL
							PCB-1254 Peak 2	4.032 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							PCB-1254 Peak 3	4.032 ug/mL
							PCB-1254 Peak 4	4.032 ug/mL
							PCB-1254 Peak 5	4.032 ug/mL
..8082 Surr DCB_00023	01/18/17		Ultra Scientific, Lot CK-4355		(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..AR 21/54_00003	01/18/17		Restek, Lot A0110124		(Purchased Reagent)		PCB-1221 Peak 1	1008 ug/mL
							PCB-1221 Peak 2	1008 ug/mL
							PCB-1221 Peak 3	1008 ug/mL
							PCB-1254 Peak 1	1008 ug/mL
							PCB-1254 Peak 2	1008 ug/mL
							PCB-1254 Peak 3	1008 ug/mL
							PCB-1254 Peak 4	1008 ug/mL
							PCB-1254 Peak 5	1008 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17		Restek, Lot A0113173		(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1221/1254Cal3_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1221/1254 CAL_00002	50 uL	DCB Decachlorobiphenyl (Surr)	0.01 ug/mL
							PCB-1221 Peak 1	0.2016 ug/mL
							PCB-1221 Peak 2	0.2016 ug/mL
							PCB-1221 Peak 3	0.2016 ug/mL
							PCB-1254 Peak 1	0.2016 ug/mL
							PCB-1254 Peak 2	0.2016 ug/mL
							PCB-1254 Peak 3	0.2016 ug/mL
							PCB-1254 Peak 4	0.2016 ug/mL
							PCB-1254 Peak 5	0.2016 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1221/1254 CAL_00002	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					AR 21/54_00003	100 uL	PCB-1221 Peak 1	4.032 ug/mL
							PCB-1221 Peak 2	4.032 ug/mL
							PCB-1221 Peak 3	4.032 ug/mL
							PCB-1254 Peak 1	4.032 ug/mL
							PCB-1254 Peak 2	4.032 ug/mL
							PCB-1254 Peak 3	4.032 ug/mL
							PCB-1254 Peak 4	4.032 ug/mL
							PCB-1254 Peak 5	4.032 ug/mL
..8082 Surr DCB_00023	01/18/17		Ultra Scientific, Lot CK-4355		(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..AR 21/54_00003	01/18/17		Restek, Lot A0110124		(Purchased Reagent)		PCB-1221 Peak 1	1008 ug/mL
							PCB-1221 Peak 2	1008 ug/mL
							PCB-1221 Peak 3	1008 ug/mL
							PCB-1254 Peak 1	1008 ug/mL
							PCB-1254 Peak 2	1008 ug/mL
							PCB-1254 Peak 3	1008 ug/mL
							PCB-1254 Peak 4	1008 ug/mL
							PCB-1254 Peak 5	1008 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17		Restek, Lot A0113173		(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1221/1254Cal4_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1221/1254 CAL_00002	125 uL	DCB Decachlorobiphenyl (Surr)	0.025 ug/mL
							PCB-1221 Peak 1	0.504 ug/mL
							PCB-1221 Peak 2	0.504 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							PCB-1221 Peak 3	0.504 ug/mL
							PCB-1254 Peak 1	0.504 ug/mL
							PCB-1254 Peak 2	0.504 ug/mL
							PCB-1254 Peak 3	0.504 ug/mL
							PCB-1254 Peak 4	0.504 ug/mL
							PCB-1254 Peak 5	0.504 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1221/1254 CAL_00002	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					AR 21/54_00003	100 uL	PCB-1221 Peak 1	4.032 ug/mL
							PCB-1221 Peak 2	4.032 ug/mL
							PCB-1221 Peak 3	4.032 ug/mL
							PCB-1254 Peak 1	4.032 ug/mL
							PCB-1254 Peak 2	4.032 ug/mL
							PCB-1254 Peak 3	4.032 ug/mL
							PCB-1254 Peak 4	4.032 ug/mL
							PCB-1254 Peak 5	4.032 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..AR 21/54_00003	01/18/17	Restek, Lot A0110124			(Purchased Reagent)		PCB-1221 Peak 1	1008 ug/mL
							PCB-1221 Peak 2	1008 ug/mL
							PCB-1221 Peak 3	1008 ug/mL
							PCB-1254 Peak 1	1008 ug/mL
							PCB-1254 Peak 2	1008 ug/mL
							PCB-1254 Peak 3	1008 ug/mL
							PCB-1254 Peak 4	1008 ug/mL
							PCB-1254 Peak 5	1008 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1221/1254Cal5_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1221/1254 CAL_00002	250 uL	DCB Decachlorobiphenyl (Surr)	0.05 ug/mL
							PCB-1221 Peak 1	1.008 ug/mL
							PCB-1221 Peak 2	1.008 ug/mL
							PCB-1221 Peak 3	1.008 ug/mL
							PCB-1254 Peak 1	1.008 ug/mL
							PCB-1254 Peak 2	1.008 ug/mL
							PCB-1254 Peak 3	1.008 ug/mL
							PCB-1254 Peak 4	1.008 ug/mL
							PCB-1254 Peak 5	1.008 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1221/1254 CAL_00002	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					AR 21/54_00003	100 uL	PCB-1221 Peak 1	4.032 ug/mL
							PCB-1221 Peak 2	4.032 ug/mL
							PCB-1221 Peak 3	4.032 ug/mL
							PCB-1254 Peak 1	4.032 ug/mL
							PCB-1254 Peak 2	4.032 ug/mL
							PCB-1254 Peak 3	4.032 ug/mL
							PCB-1254 Peak 4	4.032 ug/mL
							PCB-1254 Peak 5	4.032 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..AR 21/54_00003	01/18/17		Restek, Lot A0110124		(Purchased Reagent)		PCB-1221 Peak 1	1008 ug/mL
							PCB-1221 Peak 2	1008 ug/mL
							PCB-1221 Peak 3	1008 ug/mL
							PCB-1254 Peak 1	1008 ug/mL
							PCB-1254 Peak 2	1008 ug/mL
							PCB-1254 Peak 3	1008 ug/mL
							PCB-1254 Peak 4	1008 ug/mL
							PCB-1254 Peak 5	1008 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17		Restek, Lot A0113173		(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1221/1254Cal6_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1221/1254 CAL_00002	500 uL	DCB Decachlorobiphenyl (Surr)	0.1 ug/mL
							PCB-1221 Peak 1	2.016 ug/mL
							PCB-1221 Peak 2	2.016 ug/mL
							PCB-1221 Peak 3	2.016 ug/mL
							PCB-1254 Peak 1	2.016 ug/mL
							PCB-1254 Peak 2	2.016 ug/mL
							PCB-1254 Peak 3	2.016 ug/mL
							PCB-1254 Peak 4	2.016 ug/mL
							PCB-1254 Peak 5	2.016 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1221/1254 CAL_00002	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					AR 21/54_00003	100 uL	PCB-1221 Peak 1	4.032 ug/mL
							PCB-1221 Peak 2	4.032 ug/mL
							PCB-1221 Peak 3	4.032 ug/mL
							PCB-1254 Peak 1	4.032 ug/mL
							PCB-1254 Peak 2	4.032 ug/mL
							PCB-1254 Peak 3	4.032 ug/mL
							PCB-1254 Peak 4	4.032 ug/mL
							PCB-1254 Peak 5	4.032 ug/mL
..8082 Surr DCB_00023	01/18/17		Ultra Scientific, Lot CK-4355		(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..AR 21/54_00003	01/18/17		Restek, Lot A0110124		(Purchased Reagent)		PCB-1221 Peak 1	1008 ug/mL
							PCB-1221 Peak 2	1008 ug/mL
							PCB-1221 Peak 3	1008 ug/mL
							PCB-1254 Peak 1	1008 ug/mL
							PCB-1254 Peak 2	1008 ug/mL
							PCB-1254 Peak 3	1008 ug/mL
							PCB-1254 Peak 4	1008 ug/mL
							PCB-1254 Peak 5	1008 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17		Restek, Lot A0113173		(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1221/1254Cal7_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1221/1254 CAL_00002	1000 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
							PCB-1221 Peak 1	4.032 ug/mL
							PCB-1221 Peak 2	4.032 ug/mL
							PCB-1221 Peak 3	4.032 ug/mL
							PCB-1254 Peak 1	4.032 ug/mL
							PCB-1254 Peak 2	4.032 ug/mL
							PCB-1254 Peak 3	4.032 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							PCB-1254 Peak 4	4.032 ug/mL
							PCB-1254 Peak 5	4.032 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1221/1254 CAL_00002	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					AR 21/54_00003	100 uL	PCB-1221 Peak 1	4.032 ug/mL
							PCB-1221 Peak 2	4.032 ug/mL
							PCB-1221 Peak 3	4.032 ug/mL
							PCB-1254 Peak 1	4.032 ug/mL
							PCB-1254 Peak 2	4.032 ug/mL
							PCB-1254 Peak 3	4.032 ug/mL
							PCB-1254 Peak 4	4.032 ug/mL
							PCB-1254 Peak 5	4.032 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..AR 21/54_00003	01/18/17	Restek, Lot A0110124			(Purchased Reagent)		PCB-1221 Peak 1	1008 ug/mL
							PCB-1221 Peak 2	1008 ug/mL
							PCB-1221 Peak 3	1008 ug/mL
							PCB-1254 Peak 1	1008 ug/mL
							PCB-1254 Peak 2	1008 ug/mL
							PCB-1254 Peak 3	1008 ug/mL
							PCB-1254 Peak 4	1008 ug/mL
							PCB-1254 Peak 5	1008 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1221/1254CCV_00004	01/18/17	08/16/16	Hexane, Lot 749938	1 mL	8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1221/1254CCV_00004	01/18/17	08/16/16	Hexane, Lot 749938	1 mL	1221/1254 CAL_00002	250 uL	DCB Decachlorobiphenyl (Surr)	0.05 ug/mL
							PCB-1221	1.008 ug/mL
							PCB-1254	1.008 ug/mL
.1221/1254 CAL_00002	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					AR 21/54_00003	100 uL	PCB-1221	4.032 ug/mL
							PCB-1254	4.032 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..AR 21/54_00003	01/18/17	Restek, Lot A0110124			(Purchased Reagent)		PCB-1221	1008 ug/mL
							PCB-1254	1008 ug/mL
1232/1262Cal5_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1232/1262 CAL_00002	250 uL	DCB Decachlorobiphenyl (Surr)	0.05 ug/mL
							PCB-1232 Peak 1	1 ug/mL
							PCB-1232 Peak 2	1 ug/mL
							PCB-1232 Peak 3	1 ug/mL
							PCB-1232 Peak 4	1 ug/mL
							PCB-1232 Peak 5	1 ug/mL
							PCB-1262 Peak 1	1 ug/mL
							PCB-1262 Peak 2	1 ug/mL
							PCB-1262 Peak 3	1 ug/mL
							PCB-1262 Peak 4	1 ug/mL
							PCB-1262 Peak 5	1 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.1232/1262 CAL_00002	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 32/62_00003	100 uL	PCB-1232 Peak 1	4 ug/mL
							PCB-1232 Peak 2	4 ug/mL
							PCB-1232 Peak 3	4 ug/mL
							PCB-1232 Peak 4	4 ug/mL
							PCB-1232 Peak 5	4 ug/mL
							PCB-1262 Peak 1	4 ug/mL
							PCB-1262 Peak 2	4 ug/mL
							PCB-1262 Peak 3	4 ug/mL
							PCB-1262 Peak 4	4 ug/mL
							PCB-1262 Peak 5	4 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 32/62_00003	01/18/17	Resek, Lot A0110127			(Purchased Reagent)		PCB-1232 Peak 1	1000 ug/mL
							PCB-1232 Peak 2	1000 ug/mL
							PCB-1232 Peak 3	1000 ug/mL
							PCB-1232 Peak 4	1000 ug/mL
							PCB-1232 Peak 5	1000 ug/mL
							PCB-1262 Peak 1	1000 ug/mL
							PCB-1262 Peak 2	1000 ug/mL
							PCB-1262 Peak 3	1000 ug/mL
							PCB-1262 Peak 4	1000 ug/mL
							PCB-1262 Peak 5	1000 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1242/1268Cal5_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1242/1268 CAL_00002	250 uL	DCB Decachlorobiphenyl (Surr)	0.05 ug/mL
							PCB-1242 Peak 1	1.004 ug/mL
							PCB-1242 Peak 2	1.004 ug/mL
							PCB-1242 Peak 3	1.004 ug/mL
							PCB-1242 Peak 4	1.004 ug/mL
							PCB-1242 Peak 5	1.004 ug/mL
							PCB-1268 Peak 1	1 ug/mL
							PCB-1268 Peak 2	1 ug/mL
							PCB-1268 Peak 3	1 ug/mL
							PCB-1268 Peak 4	1 ug/mL
							PCB-1268 Peak 5	1 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1242/1268 CAL_00002	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 42/68_00003	100 uL	PCB-1242 Peak 1	4.016 ug/mL
							PCB-1242 Peak 2	4.016 ug/mL
							PCB-1242 Peak 3	4.016 ug/mL
							PCB-1242 Peak 4	4.016 ug/mL
							PCB-1242 Peak 5	4.016 ug/mL
							PCB-1268 Peak 1	4 ug/mL
							PCB-1268 Peak 2	4 ug/mL
							PCB-1268 Peak 3	4 ug/mL
							PCB-1268 Peak 4	4 ug/mL
							PCB-1268 Peak 5	4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 42/68_00003	01/18/17	Restek, Lot A0110803			(Purchased Reagent)		PCB-1242 Peak 1	1004 ug/mL
							PCB-1242 Peak 2	1004 ug/mL
							PCB-1242 Peak 3	1004 ug/mL
							PCB-1242 Peak 4	1004 ug/mL
							PCB-1242 Peak 5	1004 ug/mL
							PCB-1268 Peak 1	1000 ug/mL
							PCB-1268 Peak 2	1000 ug/mL
							PCB-1268 Peak 3	1000 ug/mL
							PCB-1268 Peak 4	1000 ug/mL
							PCB-1268 Peak 5	1000 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
1248Cal5_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1248 Cal Std_00010	250 uL	DCB Decachlorobiphenyl (Surr)	0.05 ug/mL
							PCB-1248 Peak 1	1.0032 ug/mL
							PCB-1248 Peak 2	1.0032 ug/mL
							PCB-1248 Peak 3	1.0032 ug/mL
							PCB-1248 Peak 4	1.0032 ug/mL
							PCB-1248 Peak 5	1.0032 ug/mL
					8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.1248 Cal Std_00010	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 1248_00006	100 uL	PCB-1248 Peak 1	4.0128 ug/mL
							PCB-1248 Peak 2	4.0128 ug/mL
							PCB-1248 Peak 3	4.0128 ug/mL
							PCB-1248 Peak 4	4.0128 ug/mL
							PCB-1248 Peak 5	4.0128 ug/mL
..8082 Surr DCB_00023	01/18/17	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 1248_00006	01/18/17	Restek, Lot A0110957			(Purchased Reagent)		PCB-1248 Peak 1	1003.2 ug/mL
							PCB-1248 Peak 2	1003.2 ug/mL
							PCB-1248 Peak 3	1003.2 ug/mL
							PCB-1248 Peak 4	1003.2 ug/mL
							PCB-1248 Peak 5	1003.2 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
150ppmBNASurr_00040	11/16/16	06/24/16	Methanol, Lot 920634	250 mL	8270 Surr Std_00078	2.5 mL	2,4,6-Tribromophenol (Surr)	150 ppm
							2-Fluorobiphenyl (Surr)	150 ppm
							2-Fluorophenol (Surr)	150 ppm
							Nitrobenzene-d5 (Surr)	150 ppm
							Phenol-d5 (Surr)	150 ppm
							Terphenyl-d14 (Surr)	150 ppm
					8270 Surr Std_00079	5 mL	2,4,6-Tribromophenol (Surr)	150 ppm
							2-Fluorobiphenyl (Surr)	150 ppm
							2-Fluorophenol (Surr)	150 ppm
							Nitrobenzene-d5 (Surr)	150 ppm
							Phenol-d5 (Surr)	150 ppm
							Terphenyl-d14 (Surr)	150 ppm
.8270 Surr Std_00078	11/16/16	Restek, Lot A0103960			(Purchased Reagent)		2,4,6-Tribromophenol (Surr)	5000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Fluorobiphenyl (Surr)	5000 ppm
							2-Fluorophenol (Surr)	5000 ppm
							Nitrobenzene-d5 (Surr)	5000 ppm
							Phenol-d5 (Surr)	5000 ppm
							Terphenyl-d14 (Surr)	5000 ppm
.8270 Surr Std_00079	06/01/19		Restek, Lot A0103960		(Purchased Reagent)		2,4,6-Tribromophenol (Surr)	5000 ppm
							2-Fluorobiphenyl (Surr)	5000 ppm
							2-Fluorophenol (Surr)	5000 ppm
							Nitrobenzene-d5 (Surr)	5000 ppm
							Phenol-d5 (Surr)	5000 ppm
							Terphenyl-d14 (Surr)	5000 ppm
16/60ICVw/IS_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	8082_IS_1ppm_00008	50 uL	1-Bromo-2-nitrobenzene	0.0504 ug/mL
.8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
..8082 IS Std_00006	01/18/17		Restek, Lot A0113173		(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
16/60ICVw/IS_00002	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1016/1260 ICV_00011	250 uL	DCB Decachlorobiphenyl (Surr)	0.05 ug/mL
							PCB-1016	1 ug/mL
							PCB-1260	1.0005 ug/mL
.1016/1260 ICV_00011	01/18/17	07/18/16	Hexane, Lot 825070	25 mL	8082 Surr DCB_00023	5 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 16/60.sec_00008	100 uL	PCB-1016	4 ug/mL
							PCB-1260	4.002 ug/mL
..8082 Surr DCB_00023	01/18/17		Ultra Scientific, Lot CK-4355		(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 16/60.sec_00008	01/18/17		Restek, Lot A094336		(Purchased Reagent)		PCB-1016	1000 ug/mL
							PCB-1260	1000.5 ug/mL
160 ppm 8270_00009	01/25/17	07/25/16	MeCl2, Lot 143066	1 mL	200ppm List 1_00009	0.8 mL	2,4,6-Tribromophenol (Surr)	160 ppm
							2-Fluorobiphenyl (Surr)	160 ppm
							2-Fluorophenol (Surr)	160 ppm
							Nitrobenzene-d5 (Surr)	160 ppm
							Phenol-d5 (Surr)	160 ppm
							Terphenyl-d14 (Surr)	160 ppm
							Benzoic acid	160 ppm
							Cyclohexanol	160 ppm
							1,1'-Biphenyl	160 ppm
							1,2,4,5-Tetrachlorobenzene	160 ppm
							1,2,4-Trichlorobenzene	160 ppm
							1,2-Dichlorobenzene	160 ppm
							1,3-Dichlorobenzene	160 ppm
							1,3-Dinitrobenzene	160 ppm
							1,4-Dichlorobenzene	160 ppm
							1,4-Dioxane	160 ppm
							1-Methylnaphthalene	160 ppm
							2,2'-oxybis[1-chloropropane]	160 ppm
							2,3,4,6-Tetrachlorophenol	160 ppm
							2,4,5-Trichlorophenol	160 ppm
							2,4,6-Trichlorophenol	160 ppm
							2,4-Dichlorophenol	160 ppm
							2,4-Dimethylphenol	160 ppm
							2,4-Dinitrophenol	320 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,4-Dinitrotoluene	160 ppm
							2,6-Dichlorophenol	160 ppm
							2,6-Dinitrotoluene	160 ppm
							2-Chloronaphthalene	160 ppm
							2-Chlorophenol	160 ppm
							2-Methylnaphthalene	160 ppm
							2-Methylphenol	160 ppm
							2-Nitroaniline	160 ppm
							2-Nitrophenol	160 ppm
							3 & 4 Methylphenol	160 ppm
							3-Nitroaniline	160 ppm
							4,6-Dinitro-2-methylphenol	320 ppm
							4-Bromophenyl phenyl ether	160 ppm
							4-Chloro-3-methylphenol	160 ppm
							4-Chloroaniline	160 ppm
							4-Chlorophenyl phenyl ether	160 ppm
							4-Nitroaniline	160 ppm
							4-Nitrophenol	320 ppm
							Acenaphthene	160 ppm
							Acenaphthylene	160 ppm
							Acetophenone	160 ppm
							Aniline	160 ppm
							Anthracene	160 ppm
							Azobenzene	160 ppm
							Benzo[a]anthracene	160 ppm
							Benzo[a]pyrene	160 ppm
							Benzo[b]fluoranthene	160 ppm
							Benzo[g,h,i]perylene	160 ppm
							Benzo[k]fluoranthene	160 ppm
							Benzyl alcohol	160 ppm
							Bis(2-chloroethoxy)methane	160 ppm
							Bis(2-chloroethyl)ether	160 ppm
							Bis(2-ethylhexyl) phthalate	160 ppm
							Butyl benzyl phthalate	160 ppm
							Carbazole	160 ppm
							Chrysene	160 ppm
							Di-n-butyl phthalate	160 ppm
							Di-n-octyl phthalate	160 ppm
							Dibenz(a,h)anthracene	160 ppm
							Dibenzofuran	160 ppm
							Diethyl phthalate	160 ppm
							Dimethyl phthalate	160 ppm
							Diphenylamine	136.8 ppm
							Fluoranthene	160 ppm
							Fluorene	160 ppm
							Hexachlorobenzene	160 ppm
							Hexachlorobutadiene	160 ppm
							Hexachlorocyclopentadiene	160 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Hexachloroethane	160 ppm
							Indeno[1,2,3-cd]pyrene	160 ppm
							Isophorone	160 ppm
							N-Nitrosodi-n-propylamine	160 ppm
							N-Nitrosodimethylamine	160 ppm
							N-Nitrosodiphenylamine	160 ppm
							Naphthalene	160 ppm
							Nitrobenzene	160 ppm
							Pentachlorophenol	320 ppm
							Phenanthrene	160 ppm
							Phenol	160 ppm
							Pyrene	160 ppm
							Pyridine	160 ppm
							3,3'-Dichlorobenzidine	160 ppm
							Benzidine	160 ppm
							Dimethylformamide	160 ppm
					800 ppm I Std_00147	0.05 mL	1,4-Dichlorobenzene-d4	40 ppm
							Acenaphthene-d10	40 ppm
							Chrysene-d12	40 ppm
							Naphthalene-d8	40 ppm
							Perylene-d12	40 ppm
							Phenanthrene-d10	40 ppm
.200ppm List 1_00009	01/25/17	07/25/16	MeCl2, Lot 143066	10 mL	8270 Surr Std_00071	0.4 mL	2,4,6-Tribromophenol (Surr)	200 ppm
							2-Fluorobiphenyl (Surr)	200 ppm
							2-Fluorophenol (Surr)	200 ppm
							Nitrobenzene-d5 (Surr)	200 ppm
							Phenol-d5 (Surr)	200 ppm
							Terphenyl-d14 (Surr)	200 ppm
					Benzoic Acid_00014	1 mL	Benzoic acid	200 ppm
					Cyclohexanol_00032	1 mL	Cyclohexanol	200 ppm
					List 1 Std 1_00026	2 mL	1,1'-Biphenyl	200 ppm
							1,2,4,5-Tetrachlorobenzene	200 ppm
							1,2,4-Trichlorobenzene	200 ppm
							1,2-Dichlorobenzene	200 ppm
							1,3-Dichlorobenzene	200 ppm
							1,3-Dinitrobenzene	200 ppm
							1,4-Dichlorobenzene	200 ppm
							1,4-Dioxane	200 ppm
							1-Methylnaphthalene	200 ppm
							2,2'-oxybis[1-chloropropane]	200 ppm
							2,3,4,6-Tetrachlorophenol	200 ppm
							2,4,5-Trichlorophenol	200 ppm
							2,4,6-Trichlorophenol	200 ppm
							2,4-Dichlorophenol	200 ppm
							2,4-Dimethylphenol	200 ppm
							2,4-Dinitrophenol	400 ppm
							2,4-Dinitrotoluene	200 ppm
							2,6-Dichlorophenol	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,6-Dinitrotoluene	200 ppm
							2-Chloronaphthalene	200 ppm
							2-Chlorophenol	200 ppm
							2-Methylnaphthalene	200 ppm
							2-Methylphenol	200 ppm
							2-Nitroaniline	200 ppm
							2-Nitrophenol	200 ppm
							3 & 4 Methylphenol	200 ppm
							3-Nitroaniline	200 ppm
							4,6-Dinitro-2-methylphenol	400 ppm
							4-Bromophenyl phenyl ether	200 ppm
							4-Chloro-3-methylphenol	200 ppm
							4-Chloroaniline	200 ppm
							4-Chlorophenyl phenyl ether	200 ppm
							4-Nitroaniline	200 ppm
							4-Nitrophenol	400 ppm
							Acenaphthene	200 ppm
							Acenaphthylene	200 ppm
							Acetophenone	200 ppm
							Aniline	200 ppm
							Anthracene	200 ppm
							Azobenzene	200 ppm
							Benzo[a]anthracene	200 ppm
							Benzo[a]pyrene	200 ppm
							Benzo[b]fluoranthene	200 ppm
							Benzo[g,h,i]perylene	200 ppm
							Benzo[k]fluoranthene	200 ppm
							Benzyl alcohol	200 ppm
							Bis(2-chloroethoxy)methane	200 ppm
							Bis(2-chloroethyl)ether	200 ppm
							Bis(2-ethylhexyl) phthalate	200 ppm
							Butyl benzyl phthalate	200 ppm
							Carbazole	200 ppm
							Chrysene	200 ppm
							Di-n-butyl phthalate	200 ppm
							Di-n-octyl phthalate	200 ppm
							Dibenz(a,h)anthracene	200 ppm
							Dibenzofuran	200 ppm
							Diethyl phthalate	200 ppm
							Dimethyl phthalate	200 ppm
							Diphenylamine	171 ppm
							Fluoranthene	200 ppm
							Fluorene	200 ppm
							Hexachlorobenzene	200 ppm
							Hexachlorobutadiene	200 ppm
							Hexachlorocyclopentadiene	200 ppm
							Hexachloroethane	200 ppm
							Indeno[1,2,3-cd]pyrene	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Isophorone	200 ppm
							N-Nitrosodi-n-propylamine	200 ppm
							N-Nitrosodimethylamine	200 ppm
							N-Nitrosodiphenylamine	200 ppm
							Naphthalene	200 ppm
							Nitrobenzene	200 ppm
							Pentachlorophenol	400 ppm
							Phenanthrene	200 ppm
							Phenol	200 ppm
							Pyrene	200 ppm
							Pyridine	200 ppm
					List 1 Std 9_00010	1 mL	3,3'-Dichlorobenzidine	200 ppm
							Benzidine	200 ppm
					NN_DMF_00027	0.4 mL	Dimethylformamide	200 ppm
..8270 Surr Std_00071	01/25/17	Restek, Lot A0103615			(Purchased Reagent)		2,4,6-Tribromophenol (Surr)	5000 ppm
							2-Fluorobiphenyl (Surr)	5000 ppm
							2-Fluorophenol (Surr)	5000 ppm
							Nitrobenzene-d5 (Surr)	5000 ppm
							Phenol-d5 (Surr)	5000 ppm
							Terphenyl-d14 (Surr)	5000 ppm
..Benzoic Acid_00014	03/31/19	Restek, Lot A0109720			(Purchased Reagent)		Benzoic acid	2000 ppm
..Cyclohexanol_00032	08/13/17	Accustandard, Lot 214081290			(Purchased Reagent)		Cyclohexanol	2000 ppm
..List 1 Std 1_00026	04/30/17	Restek, Lot A0114832			(Purchased Reagent)		1,1'-Biphenyl	1000 ppm
							1,2,4,5-Tetrachlorobenzene	1000 ppm
							1,2,4-Trichlorobenzene	1000 ppm
							1,2-Dichlorobenzene	1000 ppm
							1,3-Dichlorobenzene	1000 ppm
							1,3-Dinitrobenzene	1000 ppm
							1,4-Dichlorobenzene	1000 ppm
							1,4-Dioxane	1000 ppm
							1-Methylnaphthalene	1000 ppm
							2,2'-oxybis[1-chloropropane]	1000 ppm
							2,3,4,6-Tetrachlorophenol	1000 ppm
							2,4,5-Trichlorophenol	1000 ppm
							2,4,6-Trichlorophenol	1000 ppm
							2,4-Dichlorophenol	1000 ppm
							2,4-Dimethylphenol	1000 ppm
							2,4-Dinitrophenol	2000 ppm
							2,4-Dinitrotoluene	1000 ppm
							2,6-Dichlorophenol	1000 ppm
							2,6-Dinitrotoluene	1000 ppm
							2-Chloronaphthalene	1000 ppm
							2-Chlorophenol	1000 ppm
							2-Methylnaphthalene	1000 ppm
							2-Methylphenol	1000 ppm
							2-Nitroaniline	1000 ppm
							2-Nitrophenol	1000 ppm
							3 & 4 Methylphenol	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							3-Nitroaniline	1000 ppm
							4,6-Dinitro-2-methylphenol	2000 ppm
							4-Bromophenyl phenyl ether	1000 ppm
							4-Chloro-3-methylphenol	1000 ppm
							4-Chloroaniline	1000 ppm
							4-Chlorophenyl phenyl ether	1000 ppm
							4-Nitroaniline	1000 ppm
							4-Nitrophenol	2000 ppm
							Acenaphthene	1000 ppm
							Acenaphthylene	1000 ppm
							Acetophenone	1000 ppm
							Aniline	1000 ppm
							Anthracene	1000 ppm
							Azobenzene	1000 ppm
							Benzo[a]anthracene	1000 ppm
							Benzo[a]pyrene	1000 ppm
							Benzo[b]fluoranthene	1000 ppm
							Benzo[g,h,i]perylene	1000 ppm
							Benzo[k]fluoranthene	1000 ppm
							Benzyl alcohol	1000 ppm
							Bis(2-chloroethoxy)methane	1000 ppm
							Bis(2-chloroethyl)ether	1000 ppm
							Bis(2-ethylhexyl) phthalate	1000 ppm
							Butyl benzyl phthalate	1000 ppm
							Carbazole	1000 ppm
							Chrysene	1000 ppm
							Di-n-butyl phthalate	1000 ppm
							Di-n-octyl phthalate	1000 ppm
							Dibenz(a,h)anthracene	1000 ppm
							Dibenzofuran	1000 ppm
							Diethyl phthalate	1000 ppm
							Dimethyl phthalate	1000 ppm
							Diphenylamine	855 ppm
							Fluoranthene	1000 ppm
							Fluorene	1000 ppm
							Hexachlorobenzene	1000 ppm
							Hexachlorobutadiene	1000 ppm
							Hexachlorocyclopentadiene	1000 ppm
							Hexachloroethane	1000 ppm
							Indeno[1,2,3-cd]pyrene	1000 ppm
							Isophorone	1000 ppm
							N-Nitrosodi-n-propylamine	1000 ppm
							N-Nitrosodimethylamine	1000 ppm
							N-Nitrosodiphenylamine	1000 ppm
							Naphthalene	1000 ppm
							Nitrobenzene	1000 ppm
							Pentachlorophenol	2000 ppm
							Phenanthrene	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Phenol	1000 ppm
							Pyrene	1000 ppm
							Pyridine	1000 ppm
..List 1 Std 9_00010	01/31/17	Restek, Lot A0112567			(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ppm
							Benzidine	2000 ppm
..NN_DMF_00027	01/25/18	Accustandard, Lot 210021264-02			(Purchased Reagent)		Dimethylformamide	5000 ppm
.800 ppm I Std_00147	01/25/17	07/25/16	MeCl2, Lot 143066	2.5 mL	Internal Std_00007	1 mL	1,4-Dichlorobenzene-d4	800 ppm
							Acenaphthene-d10	800 ppm
							Chrysene-d12	800 ppm
							Naphthalene-d8	800 ppm
							Perylene-d12	800 ppm
							Phenanthrene-d10	800 ppm
..Internal Std_00007	01/25/17	Restek, Lot A093676			(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ppm
							Acenaphthene-d10	2000 ppm
							Chrysene-d12	2000 ppm
							Naphthalene-d8	2000 ppm
							Perylene-d12	2000 ppm
							Phenanthrene-d10	2000 ppm
20 ppm 8270_00009	01/25/17	07/25/16	MeCl2, Lot 143066	1 mL	200ppm List 1_00009	0.1 mL	2,4,6-Tribromophenol (Surr)	20 ppm
							2-Fluorobiphenyl (Surr)	20 ppm
							2-Fluorophenol (Surr)	20 ppm
							Nitrobenzene-d5 (Surr)	20 ppm
							Phenol-d5 (Surr)	20 ppm
							Terphenyl-d14 (Surr)	20 ppm
							Benzoic acid	20 ppm
							Cyclohexanol	20 ppm
							1,1'-Biphenyl	20 ppm
							1,2,4,5-Tetrachlorobenzene	20 ppm
							1,2,4-Trichlorobenzene	20 ppm
							1,2-Dichlorobenzene	20 ppm
							1,3-Dichlorobenzene	20 ppm
							1,3-Dinitrobenzene	20 ppm
							1,4-Dichlorobenzene	20 ppm
							1,4-Dioxane	20 ppm
							1-Methylnaphthalene	20 ppm
							2,2'-oxybis[1-chloropropane]	20 ppm
							2,3,4,6-Tetrachlorophenol	20 ppm
							2,4,5-Trichlorophenol	20 ppm
							2,4,6-Trichlorophenol	20 ppm
							2,4-Dichlorophenol	20 ppm
							2,4-Dimethylphenol	20 ppm
							2,4-Dinitrophenol	40 ppm
							2,4-Dinitrotoluene	20 ppm
							2,6-Dichlorophenol	20 ppm
							2,6-Dinitrotoluene	20 ppm
							2-Chloronaphthalene	20 ppm
							2-Chlorophenol	20 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Methylnaphthalene	20 ppm
							2-Methylphenol	20 ppm
							2-Nitroaniline	20 ppm
							2-Nitrophenol	20 ppm
							3 & 4 Methylphenol	20 ppm
							3-Nitroaniline	20 ppm
							4,6-Dinitro-2-methylphenol	40 ppm
							4-Bromophenyl phenyl ether	20 ppm
							4-Chloro-3-methylphenol	20 ppm
							4-Chloroaniline	20 ppm
							4-Chlorophenyl phenyl ether	20 ppm
							4-Nitroaniline	20 ppm
							4-Nitrophenol	40 ppm
							Acenaphthene	20 ppm
							Acenaphthylene	20 ppm
							Acetophenone	20 ppm
							Aniline	20 ppm
							Anthracene	20 ppm
							Azobenzene	20 ppm
							Benzo[a]anthracene	20 ppm
							Benzo[a]pyrene	20 ppm
							Benzo[b]fluoranthene	20 ppm
							Benzo[g,h,i]perylene	20 ppm
							Benzo[k]fluoranthene	20 ppm
							Benzyl alcohol	20 ppm
							Bis(2-chloroethoxy)methane	20 ppm
							Bis(2-chloroethyl)ether	20 ppm
							Bis(2-ethylhexyl) phthalate	20 ppm
							Butyl benzyl phthalate	20 ppm
							Carbazole	20 ppm
							Chrysene	20 ppm
							Di-n-butyl phthalate	20 ppm
							Di-n-octyl phthalate	20 ppm
							Dibenz(a,h)anthracene	20 ppm
							Dibenzofuran	20 ppm
							Diethyl phthalate	20 ppm
							Dimethyl phthalate	20 ppm
							Diphenylamine	17.1 ppm
							Fluoranthene	20 ppm
							Fluorene	20 ppm
							Hexachlorobenzene	20 ppm
							Hexachlorobutadiene	20 ppm
							Hexachlorocyclopentadiene	20 ppm
							Hexachloroethane	20 ppm
							Indeno[1,2,3-cd]pyrene	20 ppm
							Isophorone	20 ppm
							N-Nitrosodi-n-propylamine	20 ppm
							N-Nitrosodimethylamine	20 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-Nitrosodiphenylamine	20 ppm
							Naphthalene	20 ppm
							Nitrobenzene	20 ppm
							Pentachlorophenol	40 ppm
							Phenanthrene	20 ppm
							Phenol	20 ppm
							Pyrene	20 ppm
							Pyridine	20 ppm
							3,3'-Dichlorobenzidine	20 ppm
							Benzidine	20 ppm
							Dimethylformamide	20 ppm
					800 ppm I Std_00147	0.05 mL	1,4-Dichlorobenzene-d4	40 ppm
							Acenaphthene-d10	40 ppm
							Chrysene-d12	40 ppm
							Naphthalene-d8	40 ppm
							Perylene-d12	40 ppm
							Phenanthrene-d10	40 ppm
.200ppm List 1_00009	01/25/17	07/25/16	MeCl2, Lot 143066	10 mL	8270 Surr Std_00071	0.4 mL	2,4,6-Tribromophenol (Surr)	200 ppm
							2-Fluorobiphenyl (Surr)	200 ppm
							2-Fluorophenol (Surr)	200 ppm
							Nitrobenzene-d5 (Surr)	200 ppm
							Phenol-d5 (Surr)	200 ppm
							Terphenyl-d14 (Surr)	200 ppm
					Benzoic Acid_00014	1 mL	Benzoic acid	200 ppm
					Cyclohexanol_00032	1 mL	Cyclohexanol	200 ppm
					List 1 Std 1_00026	2 mL	1,1'-Biphenyl	200 ppm
							1,2,4,5-Tetrachlorobenzene	200 ppm
							1,2,4-Trichlorobenzene	200 ppm
							1,2-Dichlorobenzene	200 ppm
							1,3-Dichlorobenzene	200 ppm
							1,3-Dinitrobenzene	200 ppm
							1,4-Dichlorobenzene	200 ppm
							1,4-Dioxane	200 ppm
							1-Methylnaphthalene	200 ppm
							2,2'-oxybis[1-chloropropane]	200 ppm
							2,3,4,6-Tetrachlorophenol	200 ppm
							2,4,5-Trichlorophenol	200 ppm
							2,4,6-Trichlorophenol	200 ppm
							2,4-Dichlorophenol	200 ppm
							2,4-Dimethylphenol	200 ppm
							2,4-Dinitrophenol	400 ppm
							2,4-Dinitrotoluene	200 ppm
							2,6-Dichlorophenol	200 ppm
							2,6-Dinitrotoluene	200 ppm
							2-Chloronaphthalene	200 ppm
							2-Chlorophenol	200 ppm
							2-Methylnaphthalene	200 ppm
							2-Methylphenol	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Nitroaniline	200 ppm
							2-Nitrophenol	200 ppm
							3 & 4 Methylphenol	200 ppm
							3-Nitroaniline	200 ppm
							4,6-Dinitro-2-methylphenol	400 ppm
							4-Bromophenyl phenyl ether	200 ppm
							4-Chloro-3-methylphenol	200 ppm
							4-Chloroaniline	200 ppm
							4-Chlorophenyl phenyl ether	200 ppm
							4-Nitroaniline	200 ppm
							4-Nitrophenol	400 ppm
							Acenaphthene	200 ppm
							Acenaphthylene	200 ppm
							Acetophenone	200 ppm
							Aniline	200 ppm
							Anthracene	200 ppm
							Azobenzene	200 ppm
							Benzo[a]anthracene	200 ppm
							Benzo[a]pyrene	200 ppm
							Benzo[b]fluoranthene	200 ppm
							Benzo[g,h,i]perylene	200 ppm
							Benzo[k]fluoranthene	200 ppm
							Benzyl alcohol	200 ppm
							Bis(2-chloroethoxy)methane	200 ppm
							Bis(2-chloroethyl)ether	200 ppm
							Bis(2-ethylhexyl) phthalate	200 ppm
							Butyl benzyl phthalate	200 ppm
							Carbazole	200 ppm
							Chrysene	200 ppm
							Di-n-butyl phthalate	200 ppm
							Di-n-octyl phthalate	200 ppm
							Dibenz(a,h)anthracene	200 ppm
							Dibenzofuran	200 ppm
							Diethyl phthalate	200 ppm
							Dimethyl phthalate	200 ppm
							Diphenylamine	171 ppm
							Fluoranthene	200 ppm
							Fluorene	200 ppm
							Hexachlorobenzene	200 ppm
							Hexachlorobutadiene	200 ppm
							Hexachlorocyclopentadiene	200 ppm
							Hexachloroethane	200 ppm
							Indeno[1,2,3-cd]pyrene	200 ppm
							Isophorone	200 ppm
							N-Nitrosodi-n-propylamine	200 ppm
							N-Nitrosodimethylamine	200 ppm
							N-Nitrosodiphenylamine	200 ppm
							Naphthalene	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Nitrobenzene	200 ppm
							Pentachlorophenol	400 ppm
							Phenanthrene	200 ppm
							Phenol	200 ppm
							Pyrene	200 ppm
							Pyridine	200 ppm
					List 1 Std 9_00010	1 mL	3,3'-Dichlorobenzidine	200 ppm
							Benzidine	200 ppm
					NN_DMF_00027	0.4 mL	Dimethylformamide	200 ppm
..8270 Surr Std_00071	01/25/17	Restek, Lot A0103615			(Purchased Reagent)		2,4,6-Tribromophenol (Surr)	5000 ppm
							2-Fluorobiphenyl (Surr)	5000 ppm
							2-Fluorophenol (Surr)	5000 ppm
							Nitrobenzene-d5 (Surr)	5000 ppm
							Phenol-d5 (Surr)	5000 ppm
							Terphenyl-d14 (Surr)	5000 ppm
..Benzoic Acid_00014	03/31/19	Restek, Lot A0109720			(Purchased Reagent)		Benzoic acid	2000 ppm
..Cyclohexanol_00032	08/13/17	Accustandard, Lot 214081290			(Purchased Reagent)		Cyclohexanol	2000 ppm
..List 1 Std 1_00026	04/30/17	Restek, Lot A0114832			(Purchased Reagent)		1,1'-Biphenyl	1000 ppm
							1,2,4,5-Tetrachlorobenzene	1000 ppm
							1,2,4-Trichlorobenzene	1000 ppm
							1,2-Dichlorobenzene	1000 ppm
							1,3-Dichlorobenzene	1000 ppm
							1,3-Dinitrobenzene	1000 ppm
							1,4-Dichlorobenzene	1000 ppm
							1,4-Dioxane	1000 ppm
							1-Methylnaphthalene	1000 ppm
							2,2'-oxybis[1-chloropropane]	1000 ppm
							2,3,4,6-Tetrachlorophenol	1000 ppm
							2,4,5-Trichlorophenol	1000 ppm
							2,4,6-Trichlorophenol	1000 ppm
							2,4-Dichlorophenol	1000 ppm
							2,4-Dimethylphenol	1000 ppm
							2,4-Dinitrophenol	2000 ppm
							2,4-Dinitrotoluene	1000 ppm
							2,6-Dichlorophenol	1000 ppm
							2,6-Dinitrotoluene	1000 ppm
							2-Chloronaphthalene	1000 ppm
							2-Chlorophenol	1000 ppm
							2-Methylnaphthalene	1000 ppm
							2-Methylphenol	1000 ppm
							2-Nitroaniline	1000 ppm
							2-Nitrophenol	1000 ppm
							3 & 4 Methylphenol	1000 ppm
							3-Nitroaniline	1000 ppm
							4,6-Dinitro-2-methylphenol	2000 ppm
							4-Bromophenyl phenyl ether	1000 ppm
							4-Chloro-3-methylphenol	1000 ppm
							4-Chloroaniline	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Chlorophenyl phenyl ether	1000 ppm
							4-Nitroaniline	1000 ppm
							4-Nitrophenol	2000 ppm
							Acenaphthene	1000 ppm
							Acenaphthylene	1000 ppm
							Acetophenone	1000 ppm
							Aniline	1000 ppm
							Anthracene	1000 ppm
							Azobenzene	1000 ppm
							Benzo[a]anthracene	1000 ppm
							Benzo[a]pyrene	1000 ppm
							Benzo[b]fluoranthene	1000 ppm
							Benzo[g,h,i]perylene	1000 ppm
							Benzo[k]fluoranthene	1000 ppm
							Benzyl alcohol	1000 ppm
							Bis(2-chloroethoxy)methane	1000 ppm
							Bis(2-chloroethyl)ether	1000 ppm
							Bis(2-ethylhexyl) phthalate	1000 ppm
							Butyl benzyl phthalate	1000 ppm
							Carbazole	1000 ppm
							Chrysene	1000 ppm
							Di-n-butyl phthalate	1000 ppm
							Di-n-octyl phthalate	1000 ppm
							Dibenz(a,h)anthracene	1000 ppm
							Dibenzofuran	1000 ppm
							Diethyl phthalate	1000 ppm
							Dimethyl phthalate	1000 ppm
							Diphenylamine	855 ppm
							Fluoranthene	1000 ppm
							Fluorene	1000 ppm
							Hexachlorobenzene	1000 ppm
							Hexachlorobutadiene	1000 ppm
							Hexachlorocyclopentadiene	1000 ppm
							Hexachloroethane	1000 ppm
							Indeno[1,2,3-cd]pyrene	1000 ppm
							Isophorone	1000 ppm
							N-Nitrosodi-n-propylamine	1000 ppm
							N-Nitrosodimethylamine	1000 ppm
							N-Nitrosodiphenylamine	1000 ppm
							Naphthalene	1000 ppm
							Nitrobenzene	1000 ppm
							Pentachlorophenol	2000 ppm
							Phenanthrene	1000 ppm
							Phenol	1000 ppm
							Pyrene	1000 ppm
							Pyridine	1000 ppm
..List 1 Std 9_00010	01/31/17	Restek, Lot A0112567			(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ppm
							Benzidine	2000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..NN_DMF_00027	01/25/18	Accustandard, Lot 210021264-02			(Purchased Reagent)		Dimethylformamide	5000 ppm
.800 ppm I Std_00147	01/25/17	07/25/16	MeCl2, Lot 143066	2.5 mL	Internal Std_00007	1 mL	1,4-Dichlorobenzene-d4	800 ppm
							Acenaphthene-d10	800 ppm
							Chrysene-d12	800 ppm
							Naphthalene-d8	800 ppm
							Perylene-d12	800 ppm
							Phenanthrene-d10	800 ppm
..Internal Std_00007	01/25/17	Restek, Lot A093676			(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ppm
							Acenaphthene-d10	2000 ppm
							Chrysene-d12	2000 ppm
							Naphthalene-d8	2000 ppm
							Perylene-d12	2000 ppm
							Phenanthrene-d10	2000 ppm
21/54ICVw/IS_00004	01/18/17	07/18/16	Hexane, Lot 749938	1 mL	1221/1254 ICV_00002	250 uL	DCB Decachlorobiphenyl (Surr)	0.05 ug/mL
							PCB-1221	1.008 ug/mL
							PCB-1254	0.996 ug/mL
.1221/1254 ICV_00002	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 Surr DCB_00021	10 uL	DCB Decachlorobiphenyl (Surr)	0.2 ug/mL
					Ar 21/54.sec_00002	200 uL	PCB-1221	4.032 ug/mL
							PCB-1254	3.984 ug/mL
..8082 Surr DCB_00021	01/31/18	Ultra Scientific, Lot CK-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1000 ug/mL
..Ar 21/54.sec_00002	01/18/17	Restek, Lot A0112340			(Purchased Reagent)		PCB-1221	1008 ug/mL
							PCB-1254	996 ug/mL
5 ppm 8270_00009	01/25/17	07/25/16	MeCl2, Lot 143066	1 mL	200ppm List 1_00009	0.025 mL	2,4,6-Tribromophenol (Surr)	5 ppm
							2-Fluorobiphenyl (Surr)	5 ppm
							2-Fluorophenol (Surr)	5 ppm
							Nitrobenzene-d5 (Surr)	5 ppm
							Phenol-d5 (Surr)	5 ppm
							Terphenyl-d14 (Surr)	5 ppm
							Benzoic acid	5 ppm
							Cyclohexanol	5 ppm
							1,1'-Biphenyl	5 ppm
							1,2,4,5-Tetrachlorobenzene	5 ppm
							1,2,4-Trichlorobenzene	5 ppm
							1,2-Dichlorobenzene	5 ppm
							1,3-Dichlorobenzene	5 ppm
							1,3-Dinitrobenzene	5 ppm
							1,4-Dichlorobenzene	5 ppm
							1,4-Dioxane	5 ppm
							1-Methylnaphthalene	5 ppm
							2,2'-oxybis[1-chloropropane]	5 ppm
							2,3,4,6-Tetrachlorophenol	5 ppm
							2,4,5-Trichlorophenol	5 ppm
							2,4,6-Trichlorophenol	5 ppm
							2,4-Dichlorophenol	5 ppm
							2,4-Dimethylphenol	5 ppm
							2,4-Dinitrophenol	10 ppm
							2,4-Dinitrotoluene	5 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,6-Dichlorophenol	5 ppm
							2,6-Dinitrotoluene	5 ppm
							2-Chloronaphthalene	5 ppm
							2-Chlorophenol	5 ppm
							2-Methylnaphthalene	5 ppm
							2-Methylphenol	5 ppm
							2-Nitroaniline	5 ppm
							2-Nitrophenol	5 ppm
							3 & 4 Methylphenol	5 ppm
							3-Nitroaniline	5 ppm
							4,6-Dinitro-2-methylphenol	10 ppm
							4-Bromophenyl phenyl ether	5 ppm
							4-Chloro-3-methylphenol	5 ppm
							4-Chloroaniline	5 ppm
							4-Chlorophenyl phenyl ether	5 ppm
							4-Nitroaniline	5 ppm
							4-Nitrophenol	10 ppm
							Acenaphthene	5 ppm
							Acenaphthylene	5 ppm
							Acetophenone	5 ppm
							Aniline	5 ppm
							Anthracene	5 ppm
							Azobenzene	5 ppm
							Benzo[a]anthracene	5 ppm
							Benzo[a]pyrene	5 ppm
							Benzo[b]fluoranthene	5 ppm
							Benzo[g,h,i]perylene	5 ppm
							Benzo[k]fluoranthene	5 ppm
							Benzyl alcohol	5 ppm
							Bis(2-chloroethoxy)methane	5 ppm
							Bis(2-chloroethyl)ether	5 ppm
							Bis(2-ethylhexyl) phthalate	5 ppm
							Butyl benzyl phthalate	5 ppm
							Carbazole	5 ppm
							Chrysene	5 ppm
							Di-n-butyl phthalate	5 ppm
							Di-n-octyl phthalate	5 ppm
							Dibenz(a,h)anthracene	5 ppm
							Dibenzofuran	5 ppm
							Diethyl phthalate	5 ppm
							Dimethyl phthalate	5 ppm
							Diphenylamine	4.275 ppm
							Fluoranthene	5 ppm
							Fluorene	5 ppm
							Hexachlorobenzene	5 ppm
							Hexachlorobutadiene	5 ppm
							Hexachlorocyclopentadiene	5 ppm
							Hexachloroethane	5 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Indeno[1,2,3-cd]pyrene	5 ppm
							Isophorone	5 ppm
							N-Nitrosodi-n-propylamine	5 ppm
							N-Nitrosodimethylamine	5 ppm
							N-Nitrosodiphenylamine	5 ppm
							Naphthalene	5 ppm
							Nitrobenzene	5 ppm
							Pentachlorophenol	10 ppm
							Phenanthrene	5 ppm
							Phenol	5 ppm
							Pyrene	5 ppm
							Pyridine	5 ppm
							3,3'-Dichlorobenzidine	5 ppm
							Benzidine	5 ppm
							Dimethylformamide	5 ppm
					800 ppm I Std_00147	0.05 mL	1,4-Dichlorobenzene-d4	40 ppm
							Acenaphthene-d10	40 ppm
							Chrysene-d12	40 ppm
							Naphthalene-d8	40 ppm
							Perylene-d12	40 ppm
							Phenanthrene-d10	40 ppm
.200ppm List 1_00009	01/25/17	07/25/16	MeCl2, Lot 143066	10 mL	8270 Surr Std_00071	0.4 mL	2,4,6-Tribromophenol (Surr)	200 ppm
							2-Fluorobiphenyl (Surr)	200 ppm
							2-Fluorophenol (Surr)	200 ppm
							Nitrobenzene-d5 (Surr)	200 ppm
							Phenol-d5 (Surr)	200 ppm
							Terphenyl-d14 (Surr)	200 ppm
					Benzoic Acid_00014	1 mL	Benzoic acid	200 ppm
					Cyclohexanol_00032	1 mL	Cyclohexanol	200 ppm
					List 1 Std 1_00026	2 mL	1,1'-Biphenyl	200 ppm
							1,2,4,5-Tetrachlorobenzene	200 ppm
							1,2,4-Trichlorobenzene	200 ppm
							1,2-Dichlorobenzene	200 ppm
							1,3-Dichlorobenzene	200 ppm
							1,3-Dinitrobenzene	200 ppm
							1,4-Dichlorobenzene	200 ppm
							1,4-Dioxane	200 ppm
							1-Methylnaphthalene	200 ppm
							2,2'-oxybis[1-chloropropane]	200 ppm
							2,3,4,6-Tetrachlorophenol	200 ppm
							2,4,5-Trichlorophenol	200 ppm
							2,4,6-Trichlorophenol	200 ppm
							2,4-Dichlorophenol	200 ppm
							2,4-Dimethylphenol	200 ppm
							2,4-Dinitrophenol	400 ppm
							2,4-Dinitrotoluene	200 ppm
							2,6-Dichlorophenol	200 ppm
							2,6-Dinitrotoluene	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Chloronaphthalene	200 ppm
							2-Chlorophenol	200 ppm
							2-Methylnaphthalene	200 ppm
							2-Methylphenol	200 ppm
							2-Nitroaniline	200 ppm
							2-Nitrophenol	200 ppm
							3 & 4 Methylphenol	200 ppm
							3-Nitroaniline	200 ppm
							4,6-Dinitro-2-methylphenol	400 ppm
							4-Bromophenyl phenyl ether	200 ppm
							4-Chloro-3-methylphenol	200 ppm
							4-Chloroaniline	200 ppm
							4-Chlorophenyl phenyl ether	200 ppm
							4-Nitroaniline	200 ppm
							4-Nitrophenol	400 ppm
							Acenaphthene	200 ppm
							Acenaphthylene	200 ppm
							Acetophenone	200 ppm
							Aniline	200 ppm
							Anthracene	200 ppm
							Azobenzene	200 ppm
							Benzo[a]anthracene	200 ppm
							Benzo[a]pyrene	200 ppm
							Benzo[b]fluoranthene	200 ppm
							Benzo[g,h,i]perylene	200 ppm
							Benzo[k]fluoranthene	200 ppm
							Benzyl alcohol	200 ppm
							Bis(2-chloroethoxy)methane	200 ppm
							Bis(2-chloroethyl)ether	200 ppm
							Bis(2-ethylhexyl) phthalate	200 ppm
							Butyl benzyl phthalate	200 ppm
							Carbazole	200 ppm
							Chrysene	200 ppm
							Di-n-butyl phthalate	200 ppm
							Di-n-octyl phthalate	200 ppm
							Dibenz(a,h)anthracene	200 ppm
							Dibenzofuran	200 ppm
							Diethyl phthalate	200 ppm
							Dimethyl phthalate	200 ppm
							Diphenylamine	171 ppm
							Fluoranthene	200 ppm
							Fluorene	200 ppm
							Hexachlorobenzene	200 ppm
							Hexachlorobutadiene	200 ppm
							Hexachlorocyclopentadiene	200 ppm
							Hexachloroethane	200 ppm
							Indeno[1,2,3-cd]pyrene	200 ppm
							Isophorone	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-Nitrosodi-n-propylamine	200 ppm
							N-Nitrosodimethylamine	200 ppm
							N-Nitrosodiphenylamine	200 ppm
							Naphthalene	200 ppm
							Nitrobenzene	200 ppm
							Pentachlorophenol	400 ppm
							Phenanthrene	200 ppm
							Phenol	200 ppm
							Pyrene	200 ppm
							Pyridine	200 ppm
					List 1 Std 9_00010	1 mL	3,3'-Dichlorobenzidine	200 ppm
							Benzidine	200 ppm
					NN_DMF_00027	0.4 mL	Dimethylformamide	200 ppm
..8270 Surr Std_00071	01/25/17	Restek, Lot A0103615			(Purchased Reagent)		2,4,6-Tribromophenol (Surr)	5000 ppm
							2-Fluorobiphenyl (Surr)	5000 ppm
							2-Fluorophenol (Surr)	5000 ppm
							Nitrobenzene-d5 (Surr)	5000 ppm
							Phenol-d5 (Surr)	5000 ppm
							Terphenyl-d14 (Surr)	5000 ppm
..Benzoic Acid_00014	03/31/19	Restek, Lot A0109720			(Purchased Reagent)		Benzoic acid	2000 ppm
..Cyclohexanol_00032	08/13/17	Accustandard, Lot 214081290			(Purchased Reagent)		Cyclohexanol	2000 ppm
..List 1 Std 1_00026	04/30/17	Restek, Lot A0114832			(Purchased Reagent)		1,1'-Biphenyl	1000 ppm
							1,2,4,5-Tetrachlorobenzene	1000 ppm
							1,2,4-Trichlorobenzene	1000 ppm
							1,2-Dichlorobenzene	1000 ppm
							1,3-Dichlorobenzene	1000 ppm
							1,3-Dinitrobenzene	1000 ppm
							1,4-Dichlorobenzene	1000 ppm
							1,4-Dioxane	1000 ppm
							1-Methylnaphthalene	1000 ppm
							2,2'-oxybis[1-chloropropane]	1000 ppm
							2,3,4,6-Tetrachlorophenol	1000 ppm
							2,4,5-Trichlorophenol	1000 ppm
							2,4,6-Trichlorophenol	1000 ppm
							2,4-Dichlorophenol	1000 ppm
							2,4-Dimethylphenol	1000 ppm
							2,4-Dinitrophenol	2000 ppm
							2,4-Dinitrotoluene	1000 ppm
							2,6-Dichlorophenol	1000 ppm
							2,6-Dinitrotoluene	1000 ppm
							2-Chloronaphthalene	1000 ppm
							2-Chlorophenol	1000 ppm
							2-Methylnaphthalene	1000 ppm
							2-Methylphenol	1000 ppm
							2-Nitroaniline	1000 ppm
							2-Nitrophenol	1000 ppm
							3 & 4 Methylphenol	1000 ppm
							3-Nitroaniline	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4,6-Dinitro-2-methylphenol	2000 ppm
							4-Bromophenyl phenyl ether	1000 ppm
							4-Chloro-3-methylphenol	1000 ppm
							4-Chloroaniline	1000 ppm
							4-Chlorophenyl phenyl ether	1000 ppm
							4-Nitroaniline	1000 ppm
							4-Nitrophenol	2000 ppm
							Acenaphthene	1000 ppm
							Acenaphthylene	1000 ppm
							Acetophenone	1000 ppm
							Aniline	1000 ppm
							Anthracene	1000 ppm
							Azobenzene	1000 ppm
							Benzo[a]anthracene	1000 ppm
							Benzo[a]pyrene	1000 ppm
							Benzo[b]fluoranthene	1000 ppm
							Benzo[g,h,i]perylene	1000 ppm
							Benzo[k]fluoranthene	1000 ppm
							Benzyl alcohol	1000 ppm
							Bis(2-chloroethoxy)methane	1000 ppm
							Bis(2-chloroethyl)ether	1000 ppm
							Bis(2-ethylhexyl) phthalate	1000 ppm
							Butyl benzyl phthalate	1000 ppm
							Carbazole	1000 ppm
							Chrysene	1000 ppm
							Di-n-butyl phthalate	1000 ppm
							Di-n-octyl phthalate	1000 ppm
							Dibenz(a,h)anthracene	1000 ppm
							Dibenzofuran	1000 ppm
							Diethyl phthalate	1000 ppm
							Dimethyl phthalate	1000 ppm
							Diphenylamine	855 ppm
							Fluoranthene	1000 ppm
							Fluorene	1000 ppm
							Hexachlorobenzene	1000 ppm
							Hexachlorobutadiene	1000 ppm
							Hexachlorocyclopentadiene	1000 ppm
							Hexachloroethane	1000 ppm
							Indeno[1,2,3-cd]pyrene	1000 ppm
							Isophorone	1000 ppm
							N-Nitrosodi-n-propylamine	1000 ppm
							N-Nitrosodimethylamine	1000 ppm
							N-Nitrosodiphenylamine	1000 ppm
							Naphthalene	1000 ppm
							Nitrobenzene	1000 ppm
							Pentachlorophenol	2000 ppm
							Phenanthrene	1000 ppm
							Phenol	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Pyrene	1000 ppm
							Pyridine	1000 ppm
..List 1 Std 9_00010	01/31/17	Restek, Lot A0112567			(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ppm
							Benzidine	2000 ppm
..NN_DMF_00027	01/25/18	Accustandard, Lot 210021264-02			(Purchased Reagent)		Dimethylformamide	5000 ppm
.800 ppm I Std_00147	01/25/17	07/25/16	MeCl2, Lot 143066	2.5 mL	Internal Std_00007	1 mL	1,4-Dichlorobenzene-d4	800 ppm
							Acenaphthene-d10	800 ppm
							Chrysene-d12	800 ppm
							Naphthalene-d8	800 ppm
							Perylene-d12	800 ppm
							Phenanthrene-d10	800 ppm
..Internal Std_00007	01/25/17	Restek, Lot A093676			(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ppm
							Acenaphthene-d10	2000 ppm
							Chrysene-d12	2000 ppm
							Naphthalene-d8	2000 ppm
							Perylene-d12	2000 ppm
							Phenanthrene-d10	2000 ppm
50 ppm 8270_00080	01/25/17	07/25/16	MeCl2, Lot 143066	1 mL	200ppm List 1_00009	0.25 mL	2,4,6-Tribromophenol (Surr)	50 ppm
							2-Fluorobiphenyl (Surr)	50 ppm
							2-Fluorophenol (Surr)	50 ppm
							Nitrobenzene-d5 (Surr)	50 ppm
							Phenol-d5 (Surr)	50 ppm
							Terphenyl-d14 (Surr)	50 ppm
							Benzoic acid	50 ppm
							Cyclohexanol	50 ppm
							1,1'-Biphenyl	50 ppm
							1,2,4,5-Tetrachlorobenzene	50 ppm
							1,2,4-Trichlorobenzene	50 ppm
							1,2-Dichlorobenzene	50 ppm
							1,3-Dichlorobenzene	50 ppm
							1,3-Dinitrobenzene	50 ppm
							1,4-Dichlorobenzene	50 ppm
							1,4-Dioxane	50 ppm
							1-Methylnaphthalene	50 ppm
							2,2'-oxybis[1-chloropropane]	50 ppm
							2,3,4,6-Tetrachlorophenol	50 ppm
							2,4,5-Trichlorophenol	50 ppm
							2,4,6-Trichlorophenol	50 ppm
							2,4-Dichlorophenol	50 ppm
							2,4-Dimethylphenol	50 ppm
							2,4-Dinitrophenol	100 ppm
							2,4-Dinitrotoluene	50 ppm
							2,6-Dichlorophenol	50 ppm
							2,6-Dinitrotoluene	50 ppm
							2-Chloronaphthalene	50 ppm
							2-Chlorophenol	50 ppm
							2-Methylnaphthalene	50 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Methylphenol	50 ppm
							2-Nitroaniline	50 ppm
							2-Nitrophenol	50 ppm
							3 & 4 Methylphenol	50 ppm
							3-Nitroaniline	50 ppm
							4,6-Dinitro-2-methylphenol	100 ppm
							4-Bromophenyl phenyl ether	50 ppm
							4-Chloro-3-methylphenol	50 ppm
							4-Chloroaniline	50 ppm
							4-Chlorophenyl phenyl ether	50 ppm
							4-Nitroaniline	50 ppm
							4-Nitrophenol	100 ppm
							Acenaphthene	50 ppm
							Acenaphthylene	50 ppm
							Acetophenone	50 ppm
							Aniline	50 ppm
							Anthracene	50 ppm
							Azobenzene	50 ppm
							Benzo[a]anthracene	50 ppm
							Benzo[a]pyrene	50 ppm
							Benzo[b]fluoranthene	50 ppm
							Benzo[g,h,i]perylene	50 ppm
							Benzo[k]fluoranthene	50 ppm
							Benzyl alcohol	50 ppm
							Bis(2-chloroethoxy)methane	50 ppm
							Bis(2-chloroethyl)ether	50 ppm
							Bis(2-ethylhexyl) phthalate	50 ppm
							Butyl benzyl phthalate	50 ppm
							Carbazole	50 ppm
							Chrysene	50 ppm
							Di-n-butyl phthalate	50 ppm
							Di-n-octyl phthalate	50 ppm
							Dibenz(a,h)anthracene	50 ppm
							Dibenzofuran	50 ppm
							Diethyl phthalate	50 ppm
							Dimethyl phthalate	50 ppm
							Diphenylamine	42.75 ppm
							Fluoranthene	50 ppm
							Fluorene	50 ppm
							Hexachlorobenzene	50 ppm
							Hexachlorobutadiene	50 ppm
							Hexachlorocyclopentadiene	50 ppm
							Hexachloroethane	50 ppm
							Indeno[1,2,3-cd]pyrene	50 ppm
							Isophorone	50 ppm
							N-Nitrosodi-n-propylamine	50 ppm
							N-Nitrosodimethylamine	50 ppm
							N-Nitrosodiphenylamine	50 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Naphthalene	50 ppm
							Nitrobenzene	50 ppm
							Pentachlorophenol	100 ppm
							Phenanthrene	50 ppm
							Phenol	50 ppm
							Pyrene	50 ppm
							Pyridine	50 ppm
							3,3'-Dichlorobenzidine	50 ppm
							Benzidine	50 ppm
							Dimethylformamide	50 ppm
					800 ppm I Std_00147	0.05 mL	1,4-Dichlorobenzene-d4	40 ppm
							Acenaphthene-d10	40 ppm
							Chrysene-d12	40 ppm
							Naphthalene-d8	40 ppm
							Perylene-d12	40 ppm
							Phenanthrene-d10	40 ppm
.200ppm List 1_00009	01/25/17	07/25/16	MeCl2, Lot 143066	10 mL	8270 Surr Std_00071	0.4 mL	2,4,6-Tribromophenol (Surr)	200 ppm
							2-Fluorobiphenyl (Surr)	200 ppm
							2-Fluorophenol (Surr)	200 ppm
							Nitrobenzene-d5 (Surr)	200 ppm
							Phenol-d5 (Surr)	200 ppm
							Terphenyl-d14 (Surr)	200 ppm
					Benzoic Acid_00014	1 mL	Benzoic acid	200 ppm
					Cyclohexanol_00032	1 mL	Cyclohexanol	200 ppm
					List 1 Std 1_00026	2 mL	1,1'-Biphenyl	200 ppm
							1,2,4,5-Tetrachlorobenzene	200 ppm
							1,2,4-Trichlorobenzene	200 ppm
							1,2-Dichlorobenzene	200 ppm
							1,3-Dichlorobenzene	200 ppm
							1,3-Dinitrobenzene	200 ppm
							1,4-Dichlorobenzene	200 ppm
							1,4-Dioxane	200 ppm
							1-Methylnaphthalene	200 ppm
							2,2'-oxybis[1-chloropropane]	200 ppm
							2,3,4,6-Tetrachlorophenol	200 ppm
							2,4,5-Trichlorophenol	200 ppm
							2,4,6-Trichlorophenol	200 ppm
							2,4-Dichlorophenol	200 ppm
							2,4-Dimethylphenol	200 ppm
							2,4-Dinitrophenol	400 ppm
							2,4-Dinitrotoluene	200 ppm
							2,6-Dichlorophenol	200 ppm
							2,6-Dinitrotoluene	200 ppm
							2-Chloronaphthalene	200 ppm
							2-Chlorophenol	200 ppm
							2-Methylnaphthalene	200 ppm
							2-Methylphenol	200 ppm
							2-Nitroaniline	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Nitrophenol	200 ppm
							3 & 4 Methylphenol	200 ppm
							3-Nitroaniline	200 ppm
							4,6-Dinitro-2-methylphenol	400 ppm
							4-Bromophenyl phenyl ether	200 ppm
							4-Chloro-3-methylphenol	200 ppm
							4-Chloroaniline	200 ppm
							4-Chlorophenyl phenyl ether	200 ppm
							4-Nitroaniline	200 ppm
							4-Nitrophenol	400 ppm
							Acenaphthene	200 ppm
							Acenaphthylene	200 ppm
							Acetophenone	200 ppm
							Aniline	200 ppm
							Anthracene	200 ppm
							Azobenzene	200 ppm
							Benzo[a]anthracene	200 ppm
							Benzo[a]pyrene	200 ppm
							Benzo[b]fluoranthene	200 ppm
							Benzo[g,h,i]perylene	200 ppm
							Benzo[k]fluoranthene	200 ppm
							Benzyl alcohol	200 ppm
							Bis(2-chloroethoxy)methane	200 ppm
							Bis(2-chloroethyl)ether	200 ppm
							Bis(2-ethylhexyl) phthalate	200 ppm
							Butyl benzyl phthalate	200 ppm
							Carbazole	200 ppm
							Chrysene	200 ppm
							Di-n-butyl phthalate	200 ppm
							Di-n-octyl phthalate	200 ppm
							Dibenz(a,h)anthracene	200 ppm
							Dibenzofuran	200 ppm
							Diethyl phthalate	200 ppm
							Dimethyl phthalate	200 ppm
							Diphenylamine	171 ppm
							Fluoranthene	200 ppm
							Fluorene	200 ppm
							Hexachlorobenzene	200 ppm
							Hexachlorobutadiene	200 ppm
							Hexachlorocyclopentadiene	200 ppm
							Hexachloroethane	200 ppm
							Indeno[1,2,3-cd]pyrene	200 ppm
							Isophorone	200 ppm
							N-Nitrosodi-n-propylamine	200 ppm
							N-Nitrosodimethylamine	200 ppm
							N-Nitrosodiphenylamine	200 ppm
							Naphthalene	200 ppm
							Nitrobenzene	200 ppm

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Pentachlorophenol	400 ppm
							Phenanthrene	200 ppm
							Phenol	200 ppm
							Pyrene	200 ppm
							Pyridine	200 ppm
					List 1 Std 9_00010	1 mL	3,3'-Dichlorobenzidine	200 ppm
							Benzidine	200 ppm
					NN_DMF_00027	0.4 mL	Dimethylformamide	200 ppm
..8270 Surr Std_00071	01/25/17	Restek, Lot A0103615			(Purchased Reagent)		2,4,6-Tribromophenol (Surr)	5000 ppm
							2-Fluorobiphenyl (Surr)	5000 ppm
							2-Fluorophenol (Surr)	5000 ppm
							Nitrobenzene-d5 (Surr)	5000 ppm
							Phenol-d5 (Surr)	5000 ppm
							Terphenyl-d14 (Surr)	5000 ppm
..Benzoic Acid_00014	03/31/19	Restek, Lot A0109720			(Purchased Reagent)		Benzoic acid	2000 ppm
..Cyclohexanol_00032	08/13/17	Accustandard, Lot 214081290			(Purchased Reagent)		Cyclohexanol	2000 ppm
..List 1 Std 1_00026	04/30/17	Restek, Lot A0114832			(Purchased Reagent)		1,1'-Biphenyl	1000 ppm
							1,2,4,5-Tetrachlorobenzene	1000 ppm
							1,2,4-Trichlorobenzene	1000 ppm
							1,2-Dichlorobenzene	1000 ppm
							1,3-Dichlorobenzene	1000 ppm
							1,3-Dinitrobenzene	1000 ppm
							1,4-Dichlorobenzene	1000 ppm
							1,4-Dioxane	1000 ppm
							1-Methylnaphthalene	1000 ppm
							2,2'-oxybis[1-chloropropane]	1000 ppm
							2,3,4,6-Tetrachlorophenol	1000 ppm
							2,4,5-Trichlorophenol	1000 ppm
							2,4,6-Trichlorophenol	1000 ppm
							2,4-Dichlorophenol	1000 ppm
							2,4-Dimethylphenol	1000 ppm
							2,4-Dinitrophenol	2000 ppm
							2,4-Dinitrotoluene	1000 ppm
							2,6-Dichlorophenol	1000 ppm
							2,6-Dinitrotoluene	1000 ppm
							2-Chloronaphthalene	1000 ppm
							2-Chlorophenol	1000 ppm
							2-Methylnaphthalene	1000 ppm
							2-Methylphenol	1000 ppm
							2-Nitroaniline	1000 ppm
							2-Nitrophenol	1000 ppm
							3 & 4 Methylphenol	1000 ppm
							3-Nitroaniline	1000 ppm
							4,6-Dinitro-2-methylphenol	2000 ppm
							4-Bromophenyl phenyl ether	1000 ppm
							4-Chloro-3-methylphenol	1000 ppm
							4-Chloroaniline	1000 ppm
							4-Chlorophenyl phenyl ether	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Nitroaniline	1000 ppm
							4-Nitrophenol	2000 ppm
							Acenaphthene	1000 ppm
							Acenaphthylene	1000 ppm
							Acetophenone	1000 ppm
							Aniline	1000 ppm
							Anthracene	1000 ppm
							Azobenzene	1000 ppm
							Benzo[a]anthracene	1000 ppm
							Benzo[a]pyrene	1000 ppm
							Benzo[b]fluoranthene	1000 ppm
							Benzo[g,h,i]perylene	1000 ppm
							Benzo[k]fluoranthene	1000 ppm
							Benzyl alcohol	1000 ppm
							Bis(2-chloroethoxy)methane	1000 ppm
							Bis(2-chloroethyl)ether	1000 ppm
							Bis(2-ethylhexyl) phthalate	1000 ppm
							Butyl benzyl phthalate	1000 ppm
							Carbazole	1000 ppm
							Chrysene	1000 ppm
							Di-n-butyl phthalate	1000 ppm
							Di-n-octyl phthalate	1000 ppm
							Dibenz(a,h)anthracene	1000 ppm
							Dibenzofuran	1000 ppm
							Diethyl phthalate	1000 ppm
							Dimethyl phthalate	1000 ppm
							Diphenylamine	855 ppm
							Fluoranthene	1000 ppm
							Fluorene	1000 ppm
							Hexachlorobenzene	1000 ppm
							Hexachlorobutadiene	1000 ppm
							Hexachlorocyclopentadiene	1000 ppm
							Hexachloroethane	1000 ppm
							Indeno[1,2,3-cd]pyrene	1000 ppm
							Isophorone	1000 ppm
							N-Nitrosodi-n-propylamine	1000 ppm
							N-Nitrosodimethylamine	1000 ppm
							N-Nitrosodiphenylamine	1000 ppm
							Naphthalene	1000 ppm
							Nitrobenzene	1000 ppm
							Pentachlorophenol	2000 ppm
							Phenanthrene	1000 ppm
							Phenol	1000 ppm
							Pyrene	1000 ppm
							Pyridine	1000 ppm
..List 1 Std 9_00010	01/31/17	Restek, Lot A0112567			(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ppm
							Benzidine	2000 ppm
..NN_DMF_00027	01/25/18	Accustandard, Lot 210021264-02			(Purchased Reagent)		Dimethylformamide	5000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.800 ppm I Std_00147	01/25/17	07/25/16	MeCl2, Lot 143066	2.5 mL	Internal Std_00007	1 mL	1,4-Dichlorobenzene-d4	800 ppm
							Acenaphthene-d10	800 ppm
							Chrysene-d12	800 ppm
							Naphthalene-d8	800 ppm
							Perylene-d12	800 ppm
							Phenanthrene-d10	800 ppm
..Internal Std_00007	01/25/17	Restek, Lot A093676			(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ppm
							Acenaphthene-d10	2000 ppm
							Chrysene-d12	2000 ppm
							Naphthalene-d8	2000 ppm
							Perylene-d12	2000 ppm
							Phenanthrene-d10	2000 ppm
50 ppm 8270I_00019	01/25/17	07/25/16	MeCl2, Lot 143066	1 mL	800 ppm I Std_00147	0.05 mL	1,4-Dichlorobenzene-d4	40 ppm
							Acenaphthene-d10	40 ppm
							Chrysene-d12	40 ppm
							Naphthalene-d8	40 ppm
							Perylene-d12	40 ppm
							Phenanthrene-d10	40 ppm
.800 ppm I Std_00147	01/25/17	07/25/16	MeCl2, Lot 143066	2.5 mL	Internal Std_00007	1 mL	1,4-Dichlorobenzene-d4	800 ppm
							Acenaphthene-d10	800 ppm
							Chrysene-d12	800 ppm
							Naphthalene-d8	800 ppm
							Perylene-d12	800 ppm
							Phenanthrene-d10	800 ppm
..Internal Std_00007	01/25/17	Restek, Lot A093676			(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ppm
							Acenaphthene-d10	2000 ppm
							Chrysene-d12	2000 ppm
							Naphthalene-d8	2000 ppm
							Perylene-d12	2000 ppm
							Phenanthrene-d10	2000 ppm
50 ppm 8270I_00019	01/25/17	07/25/16	MeCl2, Lot 143066	1 mL	200ppmList1 I_00007	0.25 mL	1,4-Dichlorobenzene	50 ppm
							2,4,5-Trichlorophenol	50 ppm
							2,4,6-Trichlorophenol	50 ppm
							2,4-Dinitrotoluene	50 ppm
							2-Methylphenol	50 ppm
							3 & 4 Methylphenol	50 ppm
							Hexachlorobenzene	50 ppm
							Hexachlorobutadiene	50 ppm
							Hexachloroethane	50 ppm
							Nitrobenzene	50 ppm
							Pentachlorophenol	100 ppm
							Pyridine	50 ppm
.200ppmList1 I_00007	01/25/17	07/25/16	MeCl2, Lot 143066	10 mL	List1Std1_sec_00011	2 mL	1,4-Dichlorobenzene	200 ppm
							2,4,5-Trichlorophenol	200 ppm
							2,4,6-Trichlorophenol	200 ppm
							2,4-Dinitrotoluene	200 ppm
							2-Methylphenol	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							3 & 4 Methylphenol	200 ppm
							Hexachlorobenzene	200 ppm
							Hexachlorobutadiene	200 ppm
							Hexachloroethane	200 ppm
							Nitrobenzene	200 ppm
							Pentachlorophenol	400 ppm
							Pyridine	200 ppm
..List1Std1_sec_00011	06/30/17	Restek, Lot A0115803			(Purchased Reagent)		1,4-Dichlorobenzene	1000 ppm
							2,4,5-Trichlorophenol	1000 ppm
							2,4,6-Trichlorophenol	1000 ppm
							2,4-Dinitrotoluene	1000 ppm
							2-Methylphenol	1000 ppm
							3 & 4 Methylphenol	1000 ppm
							Hexachlorobenzene	1000 ppm
							Hexachlorobutadiene	1000 ppm
							Hexachloroethane	1000 ppm
							Nitrobenzene	1000 ppm
							Pentachlorophenol	2000 ppm
							Pyridine	1000 ppm
80 ppm 8270_00009	01/25/17	07/25/16	MeCl2, Lot 143066	1 mL	200ppm List 1_00009	0.4 mL	2,4,6-Tribromophenol (Surr)	80 ppm
							2-Fluorobiphenyl (Surr)	80 ppm
							2-Fluorophenol (Surr)	80 ppm
							Nitrobenzene-d5 (Surr)	80 ppm
							Phenol-d5 (Surr)	80 ppm
							Terphenyl-d14 (Surr)	80 ppm
							Benzoic acid	80 ppm
							Cyclohexanol	80 ppm
							1,1'-Biphenyl	80 ppm
							1,2,4,5-Tetrachlorobenzene	80 ppm
							1,2,4-Trichlorobenzene	80 ppm
							1,2-Dichlorobenzene	80 ppm
							1,3-Dichlorobenzene	80 ppm
							1,3-Dinitrobenzene	80 ppm
							1,4-Dichlorobenzene	80 ppm
							1,4-Dioxane	80 ppm
							1-Methylnaphthalene	80 ppm
							2,2'-oxybis[1-chloropropane]	80 ppm
							2,3,4,6-Tetrachlorophenol	80 ppm
							2,4,5-Trichlorophenol	80 ppm
							2,4,6-Trichlorophenol	80 ppm
							2,4-Dichlorophenol	80 ppm
							2,4-Dimethylphenol	80 ppm
							2,4-Dinitrophenol	160 ppm
							2,4-Dinitrotoluene	80 ppm
							2,6-Dichlorophenol	80 ppm
							2,6-Dinitrotoluene	80 ppm
							2-Chloronaphthalene	80 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Chlorophenol	80 ppm
							2-Methylnaphthalene	80 ppm
							2-Methylphenol	80 ppm
							2-Nitroaniline	80 ppm
							2-Nitrophenol	80 ppm
							3 & 4 Methylphenol	80 ppm
							3-Nitroaniline	80 ppm
							4,6-Dinitro-2-methylphenol	160 ppm
							4-Bromophenyl phenyl ether	80 ppm
							4-Chloro-3-methylphenol	80 ppm
							4-Chloroaniline	80 ppm
							4-Chlorophenyl phenyl ether	80 ppm
							4-Nitroaniline	80 ppm
							4-Nitrophenol	160 ppm
							Acenaphthene	80 ppm
							Acenaphthylene	80 ppm
							Acetophenone	80 ppm
							Aniline	80 ppm
							Anthracene	80 ppm
							Azobenzene	80 ppm
							Benzo[a]anthracene	80 ppm
							Benzo[a]pyrene	80 ppm
							Benzo[b]fluoranthene	80 ppm
							Benzo[g,h,i]perylene	80 ppm
							Benzo[k]fluoranthene	80 ppm
							Benzyl alcohol	80 ppm
							Bis(2-chloroethoxy)methane	80 ppm
							Bis(2-chloroethyl)ether	80 ppm
							Bis(2-ethylhexyl) phthalate	80 ppm
							Butyl benzyl phthalate	80 ppm
							Carbazole	80 ppm
							Chrysene	80 ppm
							Di-n-butyl phthalate	80 ppm
							Di-n-octyl phthalate	80 ppm
							Dibenz(a,h)anthracene	80 ppm
							Dibenzofuran	80 ppm
							Diethyl phthalate	80 ppm
							Dimethyl phthalate	80 ppm
							Diphenylamine	68.4 ppm
							Fluoranthene	80 ppm
							Fluorene	80 ppm
							Hexachlorobenzene	80 ppm
							Hexachlorobutadiene	80 ppm
							Hexachlorocyclopentadiene	80 ppm
							Hexachloroethane	80 ppm
							Indeno[1,2,3-cd]pyrene	80 ppm
							Isophorone	80 ppm
							N-Nitrosodi-n-propylamine	80 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-Nitrosodimethylamine	80 ppm
							N-Nitrosodiphenylamine	80 ppm
							Naphthalene	80 ppm
							Nitrobenzene	80 ppm
							Pentachlorophenol	160 ppm
							Phenanthrene	80 ppm
							Phenol	80 ppm
							Pyrene	80 ppm
							Pyridine	80 ppm
							3,3'-Dichlorobenzidine	80 ppm
							Benzidine	80 ppm
							Dimethylformamide	80 ppm
					800 ppm I Std_00147	0.05 mL	1,4-Dichlorobenzene-d4	40 ppm
							Acenaphthene-d10	40 ppm
							Chrysene-d12	40 ppm
							Naphthalene-d8	40 ppm
							Perylene-d12	40 ppm
							Phenanthrene-d10	40 ppm
.200ppm List 1_00009	01/25/17	07/25/16	MeCl2, Lot 143066	10 mL	8270 Surr Std_00071	0.4 mL	2,4,6-Tribromophenol (Surr)	200 ppm
							2-Fluorobiphenyl (Surr)	200 ppm
							2-Fluorophenol (Surr)	200 ppm
							Nitrobenzene-d5 (Surr)	200 ppm
							Phenol-d5 (Surr)	200 ppm
							Terphenyl-d14 (Surr)	200 ppm
					Benzoic Acid_00014	1 mL	Benzoic acid	200 ppm
					Cyclohexanol_00032	1 mL	Cyclohexanol	200 ppm
					List 1 Std 1_00026	2 mL	1,1'-Biphenyl	200 ppm
							1,2,4,5-Tetrachlorobenzene	200 ppm
							1,2,4-Trichlorobenzene	200 ppm
							1,2-Dichlorobenzene	200 ppm
							1,3-Dichlorobenzene	200 ppm
							1,3-Dinitrobenzene	200 ppm
							1,4-Dichlorobenzene	200 ppm
							1,4-Dioxane	200 ppm
							1-Methylnaphthalene	200 ppm
							2,2'-oxybis[1-chloropropane]	200 ppm
							2,3,4,6-Tetrachlorophenol	200 ppm
							2,4,5-Trichlorophenol	200 ppm
							2,4,6-Trichlorophenol	200 ppm
							2,4-Dichlorophenol	200 ppm
							2,4-Dimethylphenol	200 ppm
							2,4-Dinitrophenol	400 ppm
							2,4-Dinitrotoluene	200 ppm
							2,6-Dichlorophenol	200 ppm
							2,6-Dinitrotoluene	200 ppm
							2-Chloronaphthalene	200 ppm
							2-Chlorophenol	200 ppm
							2-Methylnaphthalene	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Methylphenol	200 ppm
							2-Nitroaniline	200 ppm
							2-Nitrophenol	200 ppm
							3 & 4 Methylphenol	200 ppm
							3-Nitroaniline	200 ppm
							4,6-Dinitro-2-methylphenol	400 ppm
							4-Bromophenyl phenyl ether	200 ppm
							4-Chloro-3-methylphenol	200 ppm
							4-Chloroaniline	200 ppm
							4-Chlorophenyl phenyl ether	200 ppm
							4-Nitroaniline	200 ppm
							4-Nitrophenol	400 ppm
							Acenaphthene	200 ppm
							Acenaphthylene	200 ppm
							Acetophenone	200 ppm
							Aniline	200 ppm
							Anthracene	200 ppm
							Azobenzene	200 ppm
							Benzo[a]anthracene	200 ppm
							Benzo[a]pyrene	200 ppm
							Benzo[b]fluoranthene	200 ppm
							Benzo[g,h,i]perylene	200 ppm
							Benzo[k]fluoranthene	200 ppm
							Benzyl alcohol	200 ppm
							Bis(2-chloroethoxy)methane	200 ppm
							Bis(2-chloroethyl)ether	200 ppm
							Bis(2-ethylhexyl) phthalate	200 ppm
							Butyl benzyl phthalate	200 ppm
							Carbazole	200 ppm
							Chrysene	200 ppm
							Di-n-butyl phthalate	200 ppm
							Di-n-octyl phthalate	200 ppm
							Dibenz(a,h)anthracene	200 ppm
							Dibenzofuran	200 ppm
							Diethyl phthalate	200 ppm
							Dimethyl phthalate	200 ppm
							Diphenylamine	171 ppm
							Fluoranthene	200 ppm
							Fluorene	200 ppm
							Hexachlorobenzene	200 ppm
							Hexachlorobutadiene	200 ppm
							Hexachlorocyclopentadiene	200 ppm
							Hexachloroethane	200 ppm
							Indeno[1,2,3-cd]pyrene	200 ppm
							Isophorone	200 ppm
							N-Nitrosodi-n-propylamine	200 ppm
							N-Nitrosodimethylamine	200 ppm
							N-Nitrosodiphenylamine	200 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Naphthalene	200 ppm
							Nitrobenzene	200 ppm
							Pentachlorophenol	400 ppm
							Phenanthrene	200 ppm
							Phenol	200 ppm
							Pyrene	200 ppm
							Pyridine	200 ppm
					List 1 Std 9_00010	1 mL	3,3'-Dichlorobenzidine	200 ppm
							Benzidine	200 ppm
					NN_DMF_00027	0.4 mL	Dimethylformamide	200 ppm
..8270 Surr Std_00071	01/25/17		Restek, Lot A0103615		(Purchased Reagent)		2,4,6-Tribromophenol (Surr)	5000 ppm
							2-Fluorobiphenyl (Surr)	5000 ppm
							2-Fluorophenol (Surr)	5000 ppm
							Nitrobenzene-d5 (Surr)	5000 ppm
							Phenol-d5 (Surr)	5000 ppm
							Terphenyl-d14 (Surr)	5000 ppm
..Benzoic Acid_00014	03/31/19		Restek, Lot A0109720		(Purchased Reagent)		Benzoic acid	2000 ppm
..Cyclohexanol_00032	08/13/17		Accustandard, Lot 214081290		(Purchased Reagent)		Cyclohexanol	2000 ppm
..List 1 Std 1_00026	04/30/17		Restek, Lot A0114832		(Purchased Reagent)		1,1'-Biphenyl	1000 ppm
							1,2,4,5-Tetrachlorobenzene	1000 ppm
							1,2,4-Trichlorobenzene	1000 ppm
							1,2-Dichlorobenzene	1000 ppm
							1,3-Dichlorobenzene	1000 ppm
							1,3-Dinitrobenzene	1000 ppm
							1,4-Dichlorobenzene	1000 ppm
							1,4-Dioxane	1000 ppm
							1-Methylnaphthalene	1000 ppm
							2,2'-oxybis[1-chloropropane]	1000 ppm
							2,3,4,6-Tetrachlorophenol	1000 ppm
							2,4,5-Trichlorophenol	1000 ppm
							2,4,6-Trichlorophenol	1000 ppm
							2,4-Dichlorophenol	1000 ppm
							2,4-Dimethylphenol	1000 ppm
							2,4-Dinitrophenol	2000 ppm
							2,4-Dinitrotoluene	1000 ppm
							2,6-Dichlorophenol	1000 ppm
							2,6-Dinitrotoluene	1000 ppm
							2-Chloronaphthalene	1000 ppm
							2-Chlorophenol	1000 ppm
							2-Methylnaphthalene	1000 ppm
							2-Methylphenol	1000 ppm
							2-Nitroaniline	1000 ppm
							2-Nitrophenol	1000 ppm
							3 & 4 Methylphenol	1000 ppm
							3-Nitroaniline	1000 ppm
							4,6-Dinitro-2-methylphenol	2000 ppm
							4-Bromophenyl phenyl ether	1000 ppm
							4-Chloro-3-methylphenol	1000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Chloroaniline	1000 ppm
							4-Chlorophenyl phenyl ether	1000 ppm
							4-Nitroaniline	1000 ppm
							4-Nitrophenol	2000 ppm
							Acenaphthene	1000 ppm
							Acenaphthylene	1000 ppm
							Acetophenone	1000 ppm
							Aniline	1000 ppm
							Anthracene	1000 ppm
							Azobenzene	1000 ppm
							Benzo[a]anthracene	1000 ppm
							Benzo[a]pyrene	1000 ppm
							Benzo[b]fluoranthene	1000 ppm
							Benzo[g,h,i]perylene	1000 ppm
							Benzo[k]fluoranthene	1000 ppm
							Benzyl alcohol	1000 ppm
							Bis(2-chloroethoxy)methane	1000 ppm
							Bis(2-chloroethyl)ether	1000 ppm
							Bis(2-ethylhexyl) phthalate	1000 ppm
							Butyl benzyl phthalate	1000 ppm
							Carbazole	1000 ppm
							Chrysene	1000 ppm
							Di-n-butyl phthalate	1000 ppm
							Di-n-octyl phthalate	1000 ppm
							Dibenz(a,h)anthracene	1000 ppm
							Dibenzofuran	1000 ppm
							Diethyl phthalate	1000 ppm
							Dimethyl phthalate	1000 ppm
							Diphenylamine	855 ppm
							Fluoranthene	1000 ppm
							Fluorene	1000 ppm
							Hexachlorobenzene	1000 ppm
							Hexachlorobutadiene	1000 ppm
							Hexachlorocyclopentadiene	1000 ppm
							Hexachloroethane	1000 ppm
							Indeno[1,2,3-cd]pyrene	1000 ppm
							Isophorone	1000 ppm
							N-Nitrosodi-n-propylamine	1000 ppm
							N-Nitrosodimethylamine	1000 ppm
							N-Nitrosodiphenylamine	1000 ppm
							Naphthalene	1000 ppm
							Nitrobenzene	1000 ppm
							Pentachlorophenol	2000 ppm
							Phenanthrene	1000 ppm
							Phenol	1000 ppm
							Pyrene	1000 ppm
							Pyridine	1000 ppm
..List 1 Std 9_00010	01/31/17	Restek, Lot A0112567			(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ppm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzidine	2000 ppm
..NN_DMF_00027	01/25/18	Accustandard, Lot 210021264-02			(Purchased Reagent)		Dimethylformamide	5000 ppm
.800 ppm I Std_00147	01/25/17	07/25/16	MeCl2, Lot 143066	2.5 mL	Internal Std_00007	1 mL	1,4-Dichlorobenzene-d4	800 ppm
							Acenaphthene-d10	800 ppm
							Chrysene-d12	800 ppm
							Naphthalene-d8	800 ppm
							Perylene-d12	800 ppm
							Phenanthrene-d10	800 ppm
..Internal Std_00007	01/25/17	Restek, Lot A093676			(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ppm
							Acenaphthene-d10	2000 ppm
							Chrysene-d12	2000 ppm
							Naphthalene-d8	2000 ppm
							Perylene-d12	2000 ppm
							Phenanthrene-d10	2000 ppm
800 ppm I Std_00138	11/23/16	05/23/16	MeCl2, Lot 132633	2.5 mL	Internal Std_00005	1 mL	1,4-Dichlorobenzene-d4	800 ppm
							Acenaphthene-d10	800 ppm
							Chrysene-d12	800 ppm
							Naphthalene-d8	800 ppm
							Perylene-d12	800 ppm
							Phenanthrene-d10	800 ppm
.Internal Std_00005	02/28/18	Restek, Lot A093676			(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ppm
							Acenaphthene-d10	2000 ppm
							Chrysene-d12	2000 ppm
							Naphthalene-d8	2000 ppm
							Perylene-d12	2000 ppm
							Phenanthrene-d10	2000 ppm
8082_IS_1ppm_00008	01/18/17	07/18/16	Hexane, Lot 825070	50 mL	8082 IS Std_00006	0.05 mL	1-Bromo-2-nitrobenzene	1.008 ug/mL
.8082 IS Std_00006	01/18/17	Restek, Lot A0113173			(Purchased Reagent)		1-Bromo-2-nitrobenzene	1008 ug/mL
82232-334_00001	06/03/60	Eckert & Ziegler, Lot 82232-334			(Purchased Reagent)		Americium-241	7.281 Bq
							Plutonium-239/240	7.137 Bq
							Thorium-230	7.63 Bq
82233-334_00001	06/03/60	Eckert & Zigler, Lot 82233-334			(Purchased Reagent)		Americium-241	5.114 Bq
							Plutonium-239/240	6.064 Bq
							Thorium-230	4.95 Bq
82234-334_00001	06/02/60	Eckert & Zigler, Lot 82234-334			(Purchased Reagent)		Americium-241	5.652 Bq
							Plutonium-239/240	5.936 Bq
							Thorium-230	5.685 Bq
82235-334_00001	06/04/60	Eckert & Ziegler, Lot 82235-334			(Purchased Reagent)		Americium-241	7.466 Bq
							Plutonium-239/240	6.897 Bq
							Thorium-230	7.167 Bq
82236-334_00001	06/02/60	Eckert & Ziegler, Lot 82236-334			(Purchased Reagent)		Americium-241	6.891 Bq
							Plutonium-239/240	6.664 Bq
							Thorium-230	7.107 Bq
82237-334_00003	06/01/60	Eckert & Ziegler, Lot 82237-334			(Purchased Reagent)		Americium-241	5.608 Bq
							Plutonium-239/240	6.424 Bq

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Thorium-230	5.856 Bq
82240-334_00001	06/08/60	Eckert & Ziegler, Lot 82240-334			(Purchased Reagent)		Americium-241	8.298 Bq
							Plutonium-239/240	7.163 Bq
							Thorium-230	6.304 Bq
82241-334_00001	06/08/60	Eckert & Ziegler, Lot 82241-334			(Purchased Reagent)		Americium-241	6.638 Bq
							Plutonium-239/240	6.797 Bq
							Thorium-230	6.629 Bq
82242-334_00001	06/08/60	Eckert & Ziegler, Lot 82242-334			(Purchased Reagent)		Americium-241	7.145 Bq
							Plutonium-239/240	6.414 Bq
							Thorium-230	6.583 Bq
82243-334_00001	06/09/60	Eckert & Ziegler, Lot 82243-334			(Purchased Reagent)		Americium-241	6.39 Bq
							Plutonium-239/240	5.979 Bq
							Thorium-230	5.856 Bq
82244-334_00001	06/09/60	Eckert & Zigler, Lot 82244-334			(Purchased Reagent)		Americium-241	6.897 Bq
							Plutonium-239/240	6.717 Bq
							Thorium-230	7.352 Bq
82245-334_00001	06/09/60	Eckert & Ziegler, Lot 82245-334			(Purchased Reagent)		Americium-241	5.528 Bq
							Plutonium-239/240	5.437 Bq
							Thorium-230	6.727 Bq
82246-334_00001	06/09/60	Eckert & Ziegler, Lot 82246-334			(Purchased Reagent)		Americium-241	6.002 Bq
							Plutonium-239/240	5.353 Bq
							Thorium-230	5.57 Bq
82247-334_00001	06/10/60	Eckert & Ziegler, Lot 82247-334			(Purchased Reagent)		Americium-241	6.291 Bq
							Plutonium-239/240	5.746 Bq
							Thorium-230	6.251 Bq
8260 NewWkMix_00174	07/17/16	07/10/16	Methanol, Lot DN615	10 mL	8260_2_CLEVE_00041	100 uL	2-Chloroethyl vinyl ether	25 ug/mL
					8260Custom1_00039	125 uL	1,2-Dichloro-1,1,2,2-tetrafluoroethane	25 ug/mL
							n-Nonyl Aldehyde	25 ug/mL
					8260Cyclohexa_00041	100 uL	Cyclohexanone	250 ug/mL
					8260Gases_00164	100 uL	Bromomethane	25 ug/mL
							Butadiene	25 ug/mL
							Chloroethane	25 ug/mL
							Chloromethane	25 ug/mL
							Dichlorodifluoromethane	25 ug/mL
							Dichlorofluoromethane	25 ug/mL
							Trichlorofluoromethane	25 ug/mL
							Vinyl chloride	25 ug/mL
					8260Ketones_00041	20 uL	2-Butanone (MEK)	25 ug/mL
							2-Hexanone	25 ug/mL
							4-Methyl-2-pentanone (MIBK)	25 ug/mL
							Acetone	25 ug/mL
					8260MegaMix_00041	100 uL	1,1,1,2-Tetrachloroethane	25 ug/mL
							1,1,1-Trichloroethane	25 ug/mL
							1,1,2,2-Tetrachloroethane	25 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,1,2-Trichloro-1,2,2-trifluoroethane	25 ug/mL
							1,1,2-Trichloroethane	25 ug/mL
							1,1-Dichloroethane	25 ug/mL
							1,1-Dichloroethene	25 ug/mL
							1,1-Dichloropropene	25 ug/mL
							1,2,3-Trichlorobenzene	25 ug/mL
							1,2,3-Trichloropropane	25 ug/mL
							1,2,4-Trichlorobenzene	25 ug/mL
							1,2,4-Trimethylbenzene	25 ug/mL
							1,2-Dibromo-3-Chloropropane	25 ug/mL
							1,2-Dichlorobenzene	25 ug/mL
							1,2-Dichloroethane	25 ug/mL
							1,2-Dichloropropane	25 ug/mL
							1,3,5-Trimethylbenzene	25 ug/mL
							1,3-Dichlorobenzene	25 ug/mL
							1,3-Dichloropropane	25 ug/mL
							1,4-Dichlorobenzene	25 ug/mL
							1,4-Dioxane	500 ug/mL
							2,2-Dichloropropane	25 ug/mL
							2-Chlorotoluene	25 ug/mL
							2-Methyl-2-propanol	250 ug/mL
							3-Chloro-1-propene	25 ug/mL
							4-Chlorotoluene	25 ug/mL
							4-Isopropyltoluene	25 ug/mL
							Acrylonitrile	250 ug/mL
							Benzene	25 ug/mL
							Bromobenzene	25 ug/mL
							Bromoform	25 ug/mL
							Carbon disulfide	25 ug/mL
							Carbon tetrachloride	25 ug/mL
							Chlorobenzene	25 ug/mL
							Chlorobromomethane	25 ug/mL
							Chlorodibromomethane	25 ug/mL
							Chloroform	25 ug/mL
							cis-1,2-Dichloroethene	25 ug/mL
							cis-1,3-Dichloropropene	25 ug/mL
							Cyclohexane	25 ug/mL
							Dibromomethane	25 ug/mL
							Dichlorobromomethane	25 ug/mL
							Ethyl ether	25 ug/mL
							Ethyl methacrylate	25 ug/mL
							Ethylbenzene	25 ug/mL
							Ethylene Dibromide	25 ug/mL
							Hexachlorobutadiene	25 ug/mL
							Hexane	25 ug/mL
							Iodomethane	25 ug/mL
							Isobutyl alcohol	625 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Isopropylbenzene	25 ug/mL
							m-Xylene & p-Xylene	25 ug/mL
							Methyl acetate	125 ug/mL
							Methyl tert-butyl ether	25 ug/mL
							Methylcyclohexane	25 ug/mL
							Methylene Chloride	25 ug/mL
							n-Butylbenzene	25 ug/mL
							n-Heptane	25 ug/mL
							N-Propylbenzene	25 ug/mL
							Naphthalene	25 ug/mL
							o-Xylene	25 ug/mL
							sec-Butylbenzene	25 ug/mL
							Styrene	25 ug/mL
							tert-Butylbenzene	25 ug/mL
							Tetrachloroethene	25 ug/mL
							Tetrahydrofuran	50 ug/mL
							Toluene	25 ug/mL
							trans-1,2-Dichloroethene	25 ug/mL
							trans-1,3-Dichloropropene	25 ug/mL
							trans-1,4-Dichloro-2-butene	25 ug/mL
							Trichloroethene	25 ug/mL
					8260VinAcetat_00044	50 uL	Vinyl acetate	25 ug/mL
					Acrolein_00035	62.5 uL	Acrolein	125 ug/mL
					Adds (B) 2016_00004	100 uL	Ethyl acetate	50 ug/mL
							Ethyl acrylate	25 ug/mL
							Methyl methacrylate	50 ug/mL
							n-Butyl acetate	25 ug/mL
					Adds(A) 2016_00004	100 uL	1,2,3-Trimethylbenzene	25 ug/mL
							1,3,5-Trichlorobenzene	25 ug/mL
							1-Chlorohexane	25 ug/mL
							2-Chloro-1,3-butadiene	25 ug/mL
							2-Nitropropane	50 ug/mL
							Benzyl chloride	25 ug/mL
							Isooctane	25 ug/mL
							Isopropyl alcohol	250 ug/mL
							Methacrylonitrile	250 ug/mL
							n-Butanol	625 ug/mL
					Polar Add._00032	100 uL	Acetonitrile	250 ug/mL
							Ethanol	1000 ug/mL
							Isopropyl ether	25 ug/mL
							Propionitrile	250 ug/mL
							Tert-amyl methyl ether	25 ug/mL
							Tert-butyl ethyl ether	25 ug/mL
.8260_2_CLEVE_00041	07/26/16	Restek, Lot A0115628			(Purchased Reagent)		2-Chloroethyl vinyl ether	2500 ug/mL
.8260Custom1_00039	07/20/16	Accustandard, Lot 215101095			(Purchased Reagent)		1,2-Dichloro-1,1,2,2-tetrafluoroethane	2000 ug/mL
							n-Nonyl Aldehyde	2000 ug/mL
.8260Cyclohexa_00041	07/26/16	Restek, Lot A0116621			(Purchased Reagent)		Cyclohexanone	25000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.8260Gases_00164	07/17/16		Restek, Lot A0115012		(Purchased Reagent)		Bromomethane	2500 ug/mL
							Butadiene	2500 ug/mL
							Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Dichlorodifluoromethane	2500 ug/mL
							Dichlorofluoromethane	2500 ug/mL
							Trichlorofluoromethane	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.8260Ketones_00041	07/26/16		Restek, Lot A0115554		(Purchased Reagent)		2-Butanone (MEK)	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone (MIBK)	12500 ug/mL
							Acetone	12500 ug/mL
.8260MegaMix_00041	07/26/16		Restek, Lot A0108166		(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2500 ug/mL
							1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloro-1,2,2-trifluor oethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,1-Dichloropropene	2500 ug/mL
							1,2,3-Trichlorobenzene	2500 ug/mL
							1,2,3-Trichloropropane	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2,4-Trimethylbenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dichlorobenzene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							1,3,5-Trimethylbenzene	2500 ug/mL
							1,3-Dichlorobenzene	2500 ug/mL
							1,3-Dichloropropane	2500 ug/mL
							1,4-Dichlorobenzene	2500 ug/mL
							1,4-Dioxane	50000 ug/mL
							2,2-Dichloropropane	2500 ug/mL
							2-Chlorotoluene	2500 ug/mL
							2-Methyl-2-propanol	25000 ug/mL
							3-Chloro-1-propene	2500 ug/mL
							4-Chlorotoluene	2500 ug/mL
							4-Isopropyltoluene	2500 ug/mL
							Acrylonitrile	25000 ug/mL
							Benzene	2500 ug/mL
							Bromobenzene	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorobromomethane	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Cyclohexane	2500 ug/mL
							Dibromomethane	2500 ug/mL
							Dichlorobromomethane	2500 ug/mL
							Ethyl ether	2500 ug/mL
							Ethyl methacrylate	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Ethylene Dibromide	2500 ug/mL
							Hexachlorobutadiene	2500 ug/mL
							Hexane	2500 ug/mL
							Iodomethane	2500 ug/mL
							Isobutyl alcohol	62500 ug/mL
							Isopropylbenzene	2500 ug/mL
							m-Xylene & p-Xylene	2500 ug/mL
							Methyl acetate	12500 ug/mL
							Methyl tert-butyl ether	2500 ug/mL
							Methylcyclohexane	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							n-Butylbenzene	2500 ug/mL
							n-Heptane	2500 ug/mL
							N-Propylbenzene	2500 ug/mL
							Naphthalene	2500 ug/mL
							o-Xylene	2500 ug/mL
							sec-Butylbenzene	2500 ug/mL
							Styrene	2500 ug/mL
							tert-Butylbenzene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Tetrahydrofuran	5000 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							trans-1,4-Dichloro-2-butene	2500 ug/mL
							Trichloroethene	2500 ug/mL
.8260VinAcetat_00044	08/03/16		Restek, Lot A0118255		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
.Acrolein_00035	08/06/16		Restek, Lot A0118994		(Purchased Reagent)		Acrolein	20000 ug/mL
.Adds (B) 2016_00004	08/10/16		Restek, Lot A0116077		(Purchased Reagent)		Ethyl acetate	5000 ug/mL
							Ethyl acrylate	2500 ug/mL
							Methyl methacrylate	5000 ug/mL
							n-Butyl acetate	2500 ug/mL
.Adds(A) 2016_00004	08/10/16		Restek, Lot A0116133		(Purchased Reagent)		1,2,3-Trimethylbenzene	2500 ug/mL
							1,3,5-Trichlorobenzene	2500 ug/mL
							1-Chlorohexane	2500 ug/mL
							2-Chloro-1,3-butadiene	2500 ug/mL
							2-Nitropropane	5000 ug/mL
							Benzyl chloride	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Isooctane	2500 ug/mL
							Isopropyl alcohol	25000 ug/mL
							Methacrylonitrile	25000 ug/mL
							n-Butanol	62500 ug/mL
.Polar Add._00032	07/26/16		Restek, Lot A0114666		(Purchased Reagent)		Acetonitrile	25000 ug/mL
							Ethanol	100000 ug/mL
							Isopropyl ether	2500 ug/mL
							Propionitrile	25000 ug/mL
							Tert-amyl methyl ether	2500 ug/mL
							Tert-butyl ethyl ether	2500 ug/mL
8260 NewWkMix_00178	08/14/16	08/07/16	Methanol, Lot DM417	10 mL	8260Gases_00168	100 uL	Vinyl chloride	25 ug/mL
					8260Ketones_00042	20 uL	2-Butanone (MEK)	25 ug/mL
					8260MegaMix_00042	100 uL	1,1-Dichloroethene	25 ug/mL
							1,2-Dichloroethane	25 ug/mL
							Benzene	25 ug/mL
							Carbon tetrachloride	25 ug/mL
							Chlorobenzene	25 ug/mL
							Chloroform	25 ug/mL
							Tetrachloroethene	25 ug/mL
							Trichloroethene	25 ug/mL
.8260Gases_00168	08/14/16		Restek, Lot A0115012		(Purchased Reagent)		Vinyl chloride	2500 ug/mL
.8260Ketones_00042	08/24/16		Restek, Lot A0115554		(Purchased Reagent)		2-Butanone (MEK)	12500 ug/mL
.8260MegaMix_00042	08/24/16		Restek, Lot A0118177		(Purchased Reagent)		1,1-Dichloroethene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							Benzene	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chloroform	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Trichloroethene	2500 ug/mL
8260 Surr 25_00063	08/03/16	07/03/16	Methanol, Lot DN315	25 mL	8260_Surr_00037	250 uL	1,2-Dichloroethane-d4 (Surr)	25 ug/mL
							4-Bromofluorobenzene (Surr)	25 ug/mL
							Dibromofluoromethane (Surr)	25 ug/mL
							Toluene-d8 (Surr)	25 ug/mL
.8260_Surr_00037	08/03/16		Restek, Lot A0115812		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	2500 ug/mL
							4-Bromofluorobenzene (Surr)	2500 ug/mL
							Dibromofluoromethane (Surr)	2500 ug/mL
							Toluene-d8 (Surr)	2500 ug/mL
8260 Surr 25_00064	09/03/16	08/03/16	Methanol, Lot DM417	25 mL	8260_Surr_00038	250 uL	1,2-Dichloroethane-d4 (Surr)	25 ug/mL
							4-Bromofluorobenzene (Surr)	25 ug/mL
							Dibromofluoromethane (Surr)	25 ug/mL
							Toluene-d8 (Surr)	25 ug/mL
.8260_Surr_00038	09/03/16		Restek, Lot A0115812		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	2500 ug/mL
							4-Bromofluorobenzene (Surr)	2500 ug/mL
							Dibromofluoromethane (Surr)	2500 ug/mL
							Toluene-d8 (Surr)	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
8260_Surr_00037	08/03/16		Restek, Lot A0115812		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	2500 ug/mL
							4-Bromofluorobenzene (Surr)	2500 ug/mL
							Dibromofluoromethane (Surr)	2500 ug/mL
							Toluene-d8 (Surr)	2500 ug/mL
8260NewHiWrk_00152	07/17/16	07/10/16	Methanol, Lot DN615	1 mL	8260_2_CLEVE_00041	50 uL	2-Chloroethyl vinyl ether	125 ug/mL
					8260Custom1_00039	62.5 uL	1,2-Dichloro-1,1,2,2-tetrafluoroethane	125 ug/mL
							n-Nonyl Aldehyde	125 ug/mL
					8260Cyclohexa_00041	50 uL	Cyclohexanone	1250 ug/mL
					8260Gases_00164	50 uL	Bromomethane	125 ug/mL
							Butadiene	125 ug/mL
							Chloroethane	125 ug/mL
							Chloromethane	125 ug/mL
							Dichlorodifluoromethane	125 ug/mL
							Dichlorofluoromethane	125 ug/mL
							Trichlorofluoromethane	125 ug/mL
							Vinyl chloride	125 ug/mL
					8260Ketones_00041	10 uL	2-Butanone (MEK)	125 ug/mL
							2-Hexanone	125 ug/mL
							4-Methyl-2-pentanone (MIBK)	125 ug/mL
							Acetone	125 ug/mL
					8260MegaMix_00041	50 uL	1,1,1,2-Tetrachloroethane	125 ug/mL
							1,1,1-Trichloroethane	125 ug/mL
							1,1,2,2-Tetrachloroethane	125 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	125 ug/mL
							1,1,2-Trichloroethane	125 ug/mL
							1,1-Dichloroethane	125 ug/mL
							1,1-Dichloroethene	125 ug/mL
							1,1-Dichloropropene	125 ug/mL
							1,2,3-Trichlorobenzene	125 ug/mL
							1,2,3-Trichloropropane	125 ug/mL
							1,2,4-Trichlorobenzene	125 ug/mL
							1,2,4-Trimethylbenzene	125 ug/mL
							1,2-Dibromo-3-Chloropropane	125 ug/mL
							1,2-Dichlorobenzene	125 ug/mL
							1,2-Dichloroethane	125 ug/mL
							1,2-Dichloropropane	125 ug/mL
							1,3,5-Trimethylbenzene	125 ug/mL
							1,3-Dichlorobenzene	125 ug/mL
							1,3-Dichloropropane	125 ug/mL
							1,4-Dichlorobenzene	125 ug/mL
							1,4-Dioxane	2500 ug/mL
							2,2-Dichloropropane	125 ug/mL
							2-Chlorotoluene	125 ug/mL
							2-Methyl-2-propanol	1250 ug/mL
							3-Chloro-1-propene	125 ug/mL
							4-Chlorotoluene	125 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Isopropyltoluene	125 ug/mL
							Acrylonitrile	1250 ug/mL
							Benzene	125 ug/mL
							Bromobenzene	125 ug/mL
							Bromoform	125 ug/mL
							Carbon disulfide	125 ug/mL
							Carbon tetrachloride	125 ug/mL
							Chlorobenzene	125 ug/mL
							Chlorobromomethane	125 ug/mL
							Chlorodibromomethane	125 ug/mL
							Chloroform	125 ug/mL
							cis-1,2-Dichloroethene	125 ug/mL
							cis-1,3-Dichloropropene	125 ug/mL
							Cyclohexane	125 ug/mL
							Dibromomethane	125 ug/mL
							Dichlorobromomethane	125 ug/mL
							Ethyl ether	125 ug/mL
							Ethyl methacrylate	125 ug/mL
							Ethylbenzene	125 ug/mL
							Ethylene Dibromide	125 ug/mL
							Hexachlorobutadiene	125 ug/mL
							Hexane	125 ug/mL
							Iodomethane	125 ug/mL
							Isobutyl alcohol	3125 ug/mL
							Isopropylbenzene	125 ug/mL
							m-Xylene & p-Xylene	125 ug/mL
							Methyl acetate	625 ug/mL
							Methyl tert-butyl ether	125 ug/mL
							Methylcyclohexane	125 ug/mL
							Methylene Chloride	125 ug/mL
							n-Butylbenzene	125 ug/mL
							n-Heptane	125 ug/mL
							N-Propylbenzene	125 ug/mL
							Naphthalene	125 ug/mL
							o-Xylene	125 ug/mL
							sec-Butylbenzene	125 ug/mL
							Styrene	125 ug/mL
							tert-Butylbenzene	125 ug/mL
							Tetrachloroethene	125 ug/mL
							Tetrahydrofuran	250 ug/mL
							Toluene	125 ug/mL
							trans-1,2-Dichloroethene	125 ug/mL
							trans-1,3-Dichloropropene	125 ug/mL
							trans-1,4-Dichloro-2-butene	125 ug/mL
							Trichloroethene	125 ug/mL
					8260VinAcetat_00044	25 uL	Vinyl acetate	125 ug/mL
					Acrolein_00035	31.25 uL	Acrolein	625 ug/mL
					Adds (B) 2016_00004	50 uL	Ethyl acetate	250 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Ethyl acrylate	125 ug/mL
							Methyl methacrylate	250 ug/mL
							n-Butyl acetate	125 ug/mL
					Adds(A) 2016_00004	50 uL	1,2,3-Trimethylbenzene	125 ug/mL
							1,3,5-Trichlorobenzene	125 ug/mL
							1-Chlorohexane	125 ug/mL
							2-Chloro-1,3-butadiene	125 ug/mL
							2-Nitropropane	250 ug/mL
							Benzyl chloride	125 ug/mL
							Isooctane	125 ug/mL
							Isopropyl alcohol	1250 ug/mL
							Methacrylonitrile	1250 ug/mL
							n-Butanol	3125 ug/mL
					Polar Add._00032	50 uL	Acetonitrile	1250 ug/mL
							Ethanol	5000 ug/mL
							Isopropyl ether	125 ug/mL
							Propionitrile	1250 ug/mL
							Tert-amyl methyl ether	125 ug/mL
							Tert-butyl ethyl ether	125 ug/mL
.8260_2_CLEVE_00041	07/26/16	Restek, Lot A0115628			(Purchased Reagent)		2-Chloroethyl vinyl ether	2500 ug/mL
.8260Custom1_00039	07/20/16	Accustandard, Lot 215101095			(Purchased Reagent)		1,2-Dichloro-1,1,2,2-tetrafluoroethane	2000 ug/mL
							n-Nonyl Aldehyde	2000 ug/mL
.8260Cyclohexa_00041	07/26/16	Restek, Lot A0116621			(Purchased Reagent)		Cyclohexanone	25000 ug/mL
.8260Gases_00164	07/17/16	Restek, Lot A0115012			(Purchased Reagent)		Bromomethane	2500 ug/mL
							Butadiene	2500 ug/mL
							Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Dichlorodifluoromethane	2500 ug/mL
							Dichlorofluoromethane	2500 ug/mL
							Trichlorofluoromethane	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.8260Ketones_00041	07/26/16	Restek, Lot A0115554			(Purchased Reagent)		2-Butanone (MEK)	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone (MIBK)	12500 ug/mL
							Acetone	12500 ug/mL
.8260MegaMix_00041	07/26/16	Restek, Lot A0108166			(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2500 ug/mL
							1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,1-Dichloropropene	2500 ug/mL
							1,2,3-Trichlorobenzene	2500 ug/mL
							1,2,3-Trichloropropane	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,4-Trimethylbenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dichlorobenzene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							1,3,5-Trimethylbenzene	2500 ug/mL
							1,3-Dichlorobenzene	2500 ug/mL
							1,3-Dichloropropane	2500 ug/mL
							1,4-Dichlorobenzene	2500 ug/mL
							1,4-Dioxane	50000 ug/mL
							2,2-Dichloropropane	2500 ug/mL
							2-Chlorotoluene	2500 ug/mL
							2-Methyl-2-propanol	25000 ug/mL
							3-Chloro-1-propene	2500 ug/mL
							4-Chlorotoluene	2500 ug/mL
							4-Isopropyltoluene	2500 ug/mL
							Acrylonitrile	25000 ug/mL
							Benzene	2500 ug/mL
							Bromobenzene	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorobromomethane	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Cyclohexane	2500 ug/mL
							Dibromomethane	2500 ug/mL
							Dichlorobromomethane	2500 ug/mL
							Ethyl ether	2500 ug/mL
							Ethyl methacrylate	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Ethylene Dibromide	2500 ug/mL
							Hexachlorobutadiene	2500 ug/mL
							Hexane	2500 ug/mL
							Iodomethane	2500 ug/mL
							Isobutyl alcohol	62500 ug/mL
							Isopropylbenzene	2500 ug/mL
							m-Xylene & p-Xylene	2500 ug/mL
							Methyl acetate	12500 ug/mL
							Methyl tert-butyl ether	2500 ug/mL
							Methylcyclohexane	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							n-Butylbenzene	2500 ug/mL
							n-Heptane	2500 ug/mL
							N-Propylbenzene	2500 ug/mL

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Naphthalene	2500 ug/mL
							o-Xylene	2500 ug/mL
							sec-Butylbenzene	2500 ug/mL
							Styrene	2500 ug/mL
							tert-Butylbenzene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Tetrahydrofuran	5000 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							trans-1,4-Dichloro-2-butene	2500 ug/mL
							Trichloroethene	2500 ug/mL
.8260VinAcetat_00044	08/03/16		Restek, Lot A0118255		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
.Acrolein_00035	08/06/16		Restek, Lot A0118994		(Purchased Reagent)		Acrolein	20000 ug/mL
.Adds (B) 2016_00004	08/10/16		Restek, Lot A0116077		(Purchased Reagent)		Ethyl acetate	5000 ug/mL
							Ethyl acrylate	2500 ug/mL
							Methyl methacrylate	5000 ug/mL
							n-Butyl acetate	2500 ug/mL
.Adds(A) 2016_00004	08/10/16		Restek, Lot A0116133		(Purchased Reagent)		1,2,3-Trimethylbenzene	2500 ug/mL
							1,3,5-Trichlorobenzene	2500 ug/mL
							1-Chlorohexane	2500 ug/mL
							2-Chloro-1,3-butadiene	2500 ug/mL
							2-Nitropropane	5000 ug/mL
							Benzyl chloride	2500 ug/mL
							Isooctane	2500 ug/mL
							Isopropyl alcohol	25000 ug/mL
							Methacrylonitrile	25000 ug/mL
							n-Butanol	62500 ug/mL
.Polar Add._00032	07/26/16		Restek, Lot A0114666		(Purchased Reagent)		Acetonitrile	25000 ug/mL
							Ethanol	100000 ug/mL
							Isopropyl ether	2500 ug/mL
							Propionitrile	25000 ug/mL
							Tert-amyl methyl ether	2500 ug/mL
							Tert-butyl ethyl ether	2500 ug/mL
8260NewICVMix_00165	07/17/16	07/10/16	Methanol, Lot DN615	5 mL	8260GasesSS_00165	50 uL	Vinyl chloride	25 ug/mL
					8260KetonesSS_00040	10 uL	2-Butanone (MEK)	25 ug/mL
					8260MegaMixSS_00040	50 uL	1,1-Dichloroethene	25 ug/mL
							1,2-Dichloroethane	25 ug/mL
							Benzene	25 ug/mL
							Carbon tetrachloride	25 ug/mL
							Chlorobenzene	25 ug/mL
							Chloroform	25 ug/mL
							Tetrachloroethene	25 ug/mL
							Trichloroethene	25 ug/mL
.8260GasesSS_00165	07/17/16		Restek, Lot A0115484		(Purchased Reagent)		Vinyl chloride	2500 ug/mL
.8260KetonesSS_00040	07/26/16		Restek, Lot A0112937		(Purchased Reagent)		2-Butanone (MEK)	12500 ug/mL
.8260MegaMixSS_00040	07/26/16		Restek, Lot A0108163		(Purchased Reagent)		1,1-Dichloroethene	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2-Dichloroethane	2500 ug/mL
							Benzene	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chloroform	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Trichloroethene	2500 ug/mL
Am-234 Cal NP_00001	09/19/61	10/03/11	DI Water, Lot na	100 mL	Am-243_00002	5.0709 g	Americium-243	2219.79 dpm/g
.Am-243_00002	09/19/61	Eckert & Ziegler, Lot 85737-334			(Purchased Reagent)		Americium-243	43775 dpm/g
Am-241_00010	03/24/17	05/28/13	1M HNO3, Lot n/a	250 mL	Am-241_00001	10 mL	Americium-241	85.6 dpm/mL
.Am-241_00001	03/24/17	EPA, Lot 94030 1			(Purchased Reagent)		Americium-241	2140 dpm/mL
Am-243_00007	12/12/13	12/11/12	1M HCL, Lot 0	500 mL	Am-243_00003	15 mL	Americium-243	66.6877 dpm/mL
							Neptunium-239	66.6877 dpm/mL
.Am-243_00003	11/08/16	12/14/09	1M HCL, Lot 0	100 mL	Am-243_00001	5.0769 g	Americium-243	2222.92 dpm/mL
							Neptunium-239	2222.92 dpm/mL
..Am-243_00001	11/03/59	Eckert & Ziegler, Lot 80973-334			(Purchased Reagent)		Americium-243	729.752 Bq/g
							Neptunium-239	729.752 Bq/g
Am-243_00014	11/08/16	11/05/15	1M HCL, Lot 0	250 mL	Am-243_00003	7.5 mL	Americium-243	66.6877 dpm/mL
							Neptunium-239	66.6877 dpm/mL
.Am-243_00003	11/08/16	12/14/09	1M HCL, Lot 0	100 mL	Am-243_00001	5.0769 g	Americium-243	2222.92 dpm/mL
							Neptunium-239	2222.92 dpm/mL
..Am-243_00001	11/03/59	Eckert & Ziegler, Lot 80973-334			(Purchased Reagent)		Americium-243	729.752 Bq/g
							Neptunium-239	729.752 Bq/g
Am-243_00015	01/08/17	02/06/13	1M HCL, Lot 0	250 mL	Am-243CalStd_00001	15 mL	Americium-243	134.34 dpm/mL
							Neptunium-239	134.34 dpm/mL
.Am-243CalStd_00001	01/08/17	02/05/13	1M HCL, Lot 0	100 mL	Am-243_00008	5.1137 g	Americium-243	2239 dpm/mL
							Neptunium-239	2239 dpm/mL
..Am-243_00008	01/12/60	Eckert & Ziegler, Lot 81335-334			(Purchased Reagent)		Americium-243	729.74 Bq/g
							Neptunium-239	729.74 Bq/g
BNA_TCLP_00048	10/27/16	Restek, Lot A0116903			(Purchased Reagent)		1,4-Dichlorobenzene	100 ug/mL
							2,4,5-Trichlorophenol	100 ug/mL
							2,4,6-Trichlorophenol	100 ug/mL
							2,4-Dinitrotoluene	100 ug/mL
							2-Methylphenol	100 ug/mL
							3 & 4 Methylphenol	100 ug/mL
							3-Methylphenol	100 ug/mL
							4-Methylphenol	100 ug/mL
							Hexachlorobenzene	100 ug/mL
							Hexachlorobutadiene	100 ug/mL

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Hexachloroethane	100 ug/mL
							Nitrobenzene	100 ug/mL
							Pentachlorophenol	100 ug/mL
							Pyridine	100 ug/mL
Derv Herb ICV_00002	10/31/16	08/16/16	Hexane, Lot 954031	25 mL	Derv Herb Std_00017	1.6 mL	2,4-Dichlorophenylacetic acid	0.128 ug/mL
.Derv Herb Std_00017	10/31/16	08/15/16	Hexane, Lot 954031	10 mL	Underv Herb_00001	1 mL	2,4-Dichlorophenylacetic acid	2 ug/mL
..Underv Herb_00001	10/31/16	08/15/16	Hexane, Lot 954031	10 mL	Herb Surr_00004	0.2 mL	2,4-Dichlorophenylacetic acid	20 ug/mL
...Herb Surr_00004	10/31/16	Restek, Lot A0110521			(Purchased Reagent)		2,4-Dichlorophenylacetic acid	1000 ug/mL
Derv Herb ICV_00002	10/31/16	08/16/16	Hexane, Lot 954031	25 mL	Derv Herb Std_00017	1.6 mL	2,4-D	0.128 ug/mL
							Silvex (2,4,5-TP)	0.032 ug/mL
.Derv Herb Std_00017	10/31/16	08/15/16	Hexane, Lot 954031	10 mL	Underv Herb_00001	1 mL	2,4-D	2 ug/mL
							Silvex (2,4,5-TP)	0.5 ug/mL
..Underv Herb_00001	10/31/16	08/15/16	Hexane, Lot 954031	10 mL	Herb List #1_00007	1 mL	2,4-D	20 ug/mL
							Silvex (2,4,5-TP)	5 ug/mL
...Herb List #1_00007	09/30/17	Restek, Lot A0118132			(Purchased Reagent)		2,4-D	200 ug/mL
							Silvex (2,4,5-TP)	50 ug/mL
H-3_00018	09/01/16	07/15/15	DI Water, Lot n/a	100 mL	H-3_00017	4.964 g	Low Energy Beta	110082 dpm/mL
							Tritium	110082 dpm/mL
.H-3_00017	02/15/65	Eckert &Ziegler, Lot 1794-39			(Purchased Reagent)		Low Energy Beta	36.96 kBq/g
							Tritium	36.96 kBq/g
H-3_00022	05/23/17	08/28/15	DI Water, Lot n/a	100 mL	H-3_00021	4.9867 mL	Low Energy Beta	112799 dpm/mL
							Tritium	112799 dpm/mL
.H-3_00021	07/01/57	Eckert & Ziegler, Lot 1232-95			(Purchased Reagent)		Low Energy Beta	37.7 kBq/g
							Tritium	37.7 kBq/g
H-3_00023	05/23/17	08/28/15	DI Water, Lot n/a	250 mL	H-3_00022	5 mL	Low Energy Beta	2255.98 dpm/mL
							Tritium	2255.98 dpm/mL
.H-3_00022	05/23/17	08/28/15	DI Water, Lot n/a	100 mL	H-3_00021	4.9867 mL	Low Energy Beta	112799 dpm/mL
							Tritium	112799 dpm/mL
..H-3_00021	07/01/57	Eckert & Ziegler, Lot 1232-95			(Purchased Reagent)		Low Energy Beta	37.7 kBq/g
							Tritium	37.7 kBq/g
Herb LCS RTS_00017	07/18/17	Restek, Lot A0116679			(Purchased Reagent)		2,4,5-T	5 ug/mL
							2,4-D	20 ug/mL
							2,4-DB	20 ug/mL
							Dalapon	20 ug/mL
							Dicamba	10 ug/mL
							Dichlorprop	20 ug/mL
							Dinoseb	20 ug/mL
							MCPA	2000 ug/mL
							MCPP	2000 ug/mL
							Pentachlorophenol	5 ug/mL
							Picloram	20 ug/mL
							Silvex (2,4,5-TP)	5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
Herb Prime_00022	10/31/16	08/15/16	Hexane, Lot 0000137702	25 mL	Derv Herb Std_00017	1.6 mL	2,4,5-T	0.032 ug/mL
							2,4-D	0.128 ug/mL
							2,4-DB	0.128 ug/mL
							Dalapon	0.127808 ug/mL
							Dicamba	0.064 ug/mL
							Dichlorprop	0.128 ug/mL
							Dinoseb	0.128 ug/mL
							MCPA	12.8001 ug/mL
							MCPP	12.8038 ug/mL
							Pentachlorophenol	0.032 ug/mL
							Silvex (2,4,5-TP)	0.032 ug/mL
							2,4-Dichlorophenylacetic acid	0.128 ug/mL
.Derv Herb Std_00017	10/31/16	08/15/16	Hexane, Lot 954031	10 mL	Underv Herb_00001	1 mL	2,4,5-T	0.5 ug/mL
							2,4-D	2 ug/mL
							2,4-DB	2 ug/mL
							Dalapon	1.997 ug/mL
							Dicamba	1 ug/mL
							Dichlorprop	2 ug/mL
							Dinoseb	2 ug/mL
							MCPA	200.002 ug/mL
							MCPP	200.06 ug/mL
							Pentachlorophenol	0.5 ug/mL
							Silvex (2,4,5-TP)	0.5 ug/mL
							2,4-Dichlorophenylacetic acid	2 ug/mL
..Underv Herb_00001	10/31/16	08/15/16	Hexane, Lot 954031	10 mL	Herb List #1_00007	1 mL	2,4,5-T	5 ug/mL
							2,4-D	20 ug/mL
							2,4-DB	20 ug/mL
							Dalapon	19.97 ug/mL
							Dicamba	10 ug/mL
							Dichlorprop	20 ug/mL
							Dinoseb	20 ug/mL
							MCPA	2000.02 ug/mL
							MCPP	2000.6 ug/mL
							Pentachlorophenol	5 ug/mL
							Silvex (2,4,5-TP)	5 ug/mL
					Herb Surr_00004	0.2 mL	2,4-Dichlorophenylacetic acid	20 ug/mL
...Herb List #1_00007	09/30/17	Restek, Lot A0118132			(Purchased Reagent)		2,4,5-T	50 ug/mL
							2,4-D	200 ug/mL
							2,4-DB	200 ug/mL
							Dalapon	199.7 ug/mL
							Dicamba	100 ug/mL
							Dichlorprop	200 ug/mL
							Dinoseb	200 ug/mL
							MCPA	20000.2 ug/mL
							MCPP	20006 ug/mL
							Pentachlorophenol	50 ug/mL
							Silvex (2,4,5-TP)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...Herb Surr_00004	10/31/16		Restek, Lot A0110521		(Purchased Reagent)		2,4-Dichlorophenylacetic acid	1000 ug/mL
Herb Surr RTS_00013	05/31/17		Restek, Lot A0115101		(Purchased Reagent)		2,4-Dichlorophenylacetic acid	10 ug/mL
I.S. Working_00133	08/03/16	07/03/16	Methanol, Lot DN615	25 mL	8260 IS(2014)_00029	250 uL	1,4-Dichlorobenzene-d4	25 ug/mL
							Chlorobenzene-d5	25 ug/mL
							Fluorobenzene	25 ug/mL
.8260 IS(2014)_00029	08/03/16		Restek, Lot A0113698		(Purchased Reagent)		1,4-Dichlorobenzene-d4	2500 ug/mL
							Chlorobenzene-d5	2500 ug/mL
							Fluorobenzene	2500 ug/mL
I.S. Working_00134	09/02/16	08/02/16	Methanol, Lot DM417	25 mL	8260 IS(2014)_00030	250 uL	1,4-Dichlorobenzene-d4	25 ug/mL
							Chlorobenzene-d5	25 ug/mL
							Fluorobenzene	25 ug/mL
.8260 IS(2014)_00030	09/02/16		Restek, Lot A0113698		(Purchased Reagent)		1,4-Dichlorobenzene-d4	2500 ug/mL
							Chlorobenzene-d5	2500 ug/mL
							Fluorobenzene	2500 ug/mL
ICP CAL1/LLC_00078	09/15/16	08/15/16	5% HCl/5%HN03, Lot 946230	1000 mL	ICP LLC B_00002	5 mL	Arsenic	0.01 ug/mL
							Barium	0.05 ug/mL
							Cadmium	0.005 ug/mL
							Chromium	0.01 ug/mL
							Lead	0.01 ug/mL
							Selenium	0.015 ug/mL
							Silver	0.01 ug/mL
.ICP LLC B_00002	05/26/17		INORGANIC VENTURES, Lot K2-MEB639045		(Purchased Reagent)		Arsenic	2 mg/L
							Barium	10 mg/L
							Cadmium	1 mg/L
							Chromium	2 mg/L
							Lead	2 mg/L
							Selenium	3 mg/L
							Silver	2 mg/L
ICP CAL2/CCV_00084	09/16/16	08/16/16	5% HCl/5@HN03, Lot 946230	1000 mL	ICP CAL A_00001	5 mL	Arsenic	5 ug/mL
							Barium	5 ug/mL
							Cadmium	5 ug/mL
							Chromium	5 ug/mL
							Lead	5 ug/mL
							Selenium	1 ug/mL
							Silver	1 ug/mL
.ICP CAL A_00001	05/26/17		INORGANIC VENTURES, Lot K2-MEB639046		(Purchased Reagent)		Arsenic	1000 mg/L
							Barium	1000 mg/L
							Cadmium	1000 mg/L
							Chromium	1000 mg/L
							Lead	1000 mg/L
							Selenium	200 mg/L
							Silver	200 mg/L
ICP CAL3\LRC_00047	09/05/16	08/05/16	5% HCl /5%HN03, Lot 898535	1000 mL	ICP CAL A_00001	10 mL	Arsenic	10 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Barium	10 ug/mL
							Cadmium	10 ug/mL
							Chromium	10 ug/mL
							Lead	10 ug/mL
							Selenium	2 ug/mL
							Silver	2 ug/mL
.ICP CAL A_00001	05/26/17	INORGANIC VENTURES, Lot K2-MEB639046			(Purchased Reagent)		Arsenic	1000 mg/L
							Barium	1000 mg/L
							Cadmium	1000 mg/L
							Chromium	1000 mg/L
							Lead	1000 mg/L
							Selenium	200 mg/L
							Silver	200 mg/L
ICP ICSA_00004	09/01/16	08/01/16	5% HCl/5%HN03, Lot 898535	1000 mL	ICP ICSA A_00001	5 mL	Al	100 ug/mL
.ICP ICSA A_00001	05/26/17	INORGANIC VENTURES, Lot K2-MEB639051			(Purchased Reagent)		Al	20000 mg/L
ICP ICSAB_00003	09/01/16	08/01/16	5% HCl/5%HN03, Lot 946230	1000 mL	ICP ICSAB A_00001	5 mL	Arsenic	2.5 ug/mL
							Barium	2.5 ug/mL
							Cadmium	2.5 ug/mL
							Chromium	2.5 ug/mL
							Lead	2.5 ug/mL
							Selenium	0.5 ug/mL
							Silver	0.5 ug/mL
.ICP ICSAB A_00001	05/26/17	INORGANIC VENTURES, Lot K2-MEB639049			(Purchased Reagent)		Arsenic	500 mg/L
							Barium	500 mg/L
							Cadmium	500 mg/L
							Chromium	500 mg/L
							Lead	500 mg/L
							Selenium	100 mg/L
							Silver	100 mg/L
ICP ICV_00042	08/18/16	08/17/16	5% HCl/5@HN03, Lot 946230	100 mL	ICP ICV 2_00002	0.5 mL	Arsenic	5 ug/mL
							Selenium	1 ug/mL
					ICP ICV 3_00002	0.5 mL	Barium	5 ug/mL
							Cadmium	5 ug/mL
							Chromium	5 ug/mL
							Lead	5 ug/mL
							Silver	1 ug/mL
.ICP ICV 2_00002	06/30/17	SPEX, Lot 37-107CR			(Purchased Reagent)		Arsenic	1000 ug/mL
							Selenium	200 ug/mL
.ICP ICV 3_00002	06/30/17	SPEX, Lot 37-108CR			(Purchased Reagent)		Barium	1000 ug/mL
							Cadmium	1000 ug/mL
							Chromium	1000 ug/mL
							Lead	1000 ug/mL
							Silver	200 ug/mL
LSC Aqua_00002	08/18/20	Perkin Elmer, Lot 21			(Purchased Reagent)		Background	0 dpm

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							C-14	108400 dpm
							Tritium	276500 dpm
LSC Check_00001	02/23/21	Perkin Elmer, Lot 135			(Purchased Reagent)		Background	0 dpm
							C-14	112100 dpm
							Tritium	286200 dpm
MPREP1_00006	07/28/17	Inorganic Ventures, Lot J2-MEB616036			(Purchased Reagent)		Al	2000 mg/L
							Arsenic	200 mg/L
							B	400 mg/L
							Barium	200 mg/L
							Be	200 mg/L
							Bi	200 mg/L
							Ca	2000 mg/L
							Cadmium	199.9 mg/L
							Chromium	200 mg/L
							Co	200 mg/L
							Cu	200 mg/L
							Fe	2000 mg/L
							K	2000 mg/L
							Lead	200 mg/L
							Li	200 mg/L
							Mg	2000 mg/L
							Mn	200 mg/L
							Na	2000 mg/L
							Ni	200 mg/L
							P	200 mg/L
							Selenium	100 mg/L
							Silver	39.99 mg/L
							Sm	200 mg/L
							Sr	200 mg/L
							Sulfur	2000 mg/L
							Th	200.3 mg/L
							Tl	39.99 mg/L
							U	200 mg/L
							V	200 mg/L
							Zn	200 mg/L
MPREP2_00005	07/28/17	Inorganic Ventures, Lot J2-MEB616037			(Purchased Reagent)		Mo	100 mg/L
							Sb	100 mg/L
							Si	1000 mg/L
							Sn	200 mg/L
							Ti	200 mg/L
							W	200 mg/L
							Zr	200 mg/L
Np-237_00014	04/27/17	04/26/16	4M HNO3, Lot n/a	250 mL	Np-237_00013	10 mL	Neptunium-237	86.0803 dpm/mL
.Np-237_00013	04/27/17	04/26/16	4M HNO3, Lot n/a	100 mL	Np-237 (high)_00002	5.4245 mL	Neptunium-237	2152.01 dpm/mL
..Np-237 (high)_00002	04/26/61	Eckert & Ziegler, Lot 1526-70			(Purchased Reagent)		Neptunium-237	661.2 Bq/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
PCB Surr_00011	01/21/17	07/21/16	Hexane, Lot 954031	500 mL	8082SurrDeca_00022	200 uL	DCB Decachlorobiphenyl (Surr)	0.4016 ug/mL
.8082SurrDeca_00022	01/01/18	Ultra Scientific, Lot CC-4355			(Purchased Reagent)		DCB Decachlorobiphenyl (Surr)	1004 ug/mL
PCB_Spike_00018	12/20/16	06/20/16	Hexane, Lot 936402	250 mL	8082 Spike_00020	1.25 mL	PCB-1016	10 ug/mL
							PCB-1260	10 ug/mL
					8082 Spike_00021	1.25 mL	PCB-1016	10 ug/mL
							PCB-1260	10 ug/mL
.8082 Spike_00020	05/21/19	Restek, Lot A0109056			(Purchased Reagent)		PCB-1016	1000 ug/mL
							PCB-1260	1000 ug/mL
.8082 Spike_00021	05/21/19	Restek, Lot A0109056			(Purchased Reagent)		PCB-1016	1000 ug/mL
							PCB-1260	1000 ug/mL
Pu-238_00010	07/13/17	08/28/13	3M HNO3, Lot n/a	200 mL	Pu-238 Parent_00001	5.4689 g	Plutonium-238	68.1206 dpm/mL
.Pu-238 Parent_00001	07/13/17	08/28/13	3M HNO3, Lot n/a	5.4689 mL	Pu238 Ampoule_00001	5.4689 g	Plutonium-238	2491.2 dpm/mL
..Pu238 Ampoule_00001	08/28/49	NIST, Lot SRM 4323B			(Purchased Reagent)		Plutonium-238	41.52 Bq/g
Pu-239_00010	07/13/17	08/28/13	3M HNO3, Lot n/a	200 mL	Pu-239_00003	10 mL	Plutonium-239/240	73.3436 dpm/mL
.Pu-239_00003	07/13/17	08/11/08	3M HNO3, Lot 0	100 mL	Pu-239_00001	5.5996 g	Plutonium-239/240	1466.87 dpm/mL
..Pu-239_00001	12/13/40	US EPA NRAD-LV, Lot 2510-1			(Purchased Reagent)		Plutonium-239/240	11800 pCi/g
Pu-242_00023	01/08/17	01/28/15	3M HNO3, Lot n/a	250 mL	Pu-242_00020	10.8934 g	Pu-242	69.9879 dpm/mL
							Pu-242 (T)	69.9879 dpm/mL
.Pu-242_00020	01/01/60	NIST, Lot 4334I			(Purchased Reagent)		Pu-242	26.77 Bq/g
							Pu-242 (T)	26.77 Bq/g
Source A_00001	04/01/59	02/23/11	water, Lot 79670-334	0.9986 Source	Gamma Ampuole_00001	0.9986 g	Americium-241	9.4429 Bq
							Cd-109	132.909 Bq
							Ce-139	4.4538 Bq
							Co-57	2.9513 Bq
							Co-60	6.2002 Bq
							Cs-137	3.7296 Bq
							Hg-203	9.6996 Bq
							Sn-113	7.6266 Bq
							Y-88	12.712 Bq
.Gamma Ampuole_00001	04/07/59	Analytics, Lot 79670-334			(Purchased Reagent)		Americium-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
Source C_00001	04/01/59	02/23/12	water, Lot 79670-334	1.0148 g	Gamma Ampuole_00001	1.0148 g	Americium-241	9442.9 Bq

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
.Gamma Ampuole_00001	04/07/59	Analytics, Lot 79670-334			(Purchased Reagent)		Americium-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
Source D_00001	04/01/59	02/23/11	water, Lot 79670-334	0.9781 g	Gamma Ampuole_00001	0.9781 g	Americium-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
.Gamma Ampuole_00001	04/07/59	Analytics, Lot 79670-334			(Purchased Reagent)		Americium-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
Sr Carrier_00037	03/24/17	CPI, Lot 15L040			(Purchased Reagent)		Sr Carrier	0.0249 g
Sr-90_00004	09/17/59	06/21/11	0.1M HCL, Lot 0	100 mL	Sr-90_00001	5.0139 g	Gross Beta	45120.6 dpm/mL
							Sr	22560.3 dpm/mL
							Sr-90	22560.3 dpm/mL
.Sr-90_00001	09/17/59	Eckert & Ziegler, Lot 80573-334			(Purchased Reagent)		Gross Beta	14998.5 Bq/g
							Sr	7499.25 Bq/g
							Sr-90	7499.25 Bq/g
Sr-90_00018	05/04/17	11/28/12	0.1M HCL, Lot 0	100 mL	Sr-90_00017	4.9997 g	Gross Beta	44774.2 dpm/mL

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Sr-90	22387.1 dpm/mL
.Sr-90_00017	11/29/62		Analytics, Lot 92352		(Purchased Reagent)		Gross Beta	14925.6 Bq/g
							Sr-90	7462.82 Bq/g
Sr-90_00031	03/18/17	02/17/16	0.1M HCL, Lot n/a	500 mL	Sr-90_00012	0.5 mL	Gross Beta	45.1206 dpm/mL
							Sr-90	22.5603 dpm/mL
							Strontium 89/90	22.5603 dpm/mL
.Sr-90_00012	03/18/17	06/01/11	0.1M HCL, Lot 0	100 mL	Sr-90_00011	5.0139 g	Gross Beta	45120.6 dpm/mL
							Sr-90	22560.3 dpm/mL
							Strontium 89/90	22560.3 dpm/mL
..Sr-90_00011	09/17/59		Eckert & Ziegler, Lot 0		(Purchased Reagent)		Gross Beta	14998.5 Bq/g
							Sr-90	7499.25 Bq/g
							Strontium 89/90	7499.25 Bq/g
Tc (T) Dil #2_00239	08/12/16	08/12/16	DI Water, Lot 0	100 mL	Tc (T) Dil #1_00205	1 mL	Tc-99m	2000 pCi/ml
.Tc (T) Dil #1_00205	08/12/16	08/12/16	Blood Bank Saline, Lot 231454	100 mL	Tc (T) Source_00192	1 mL	Tc-99m	200000 pCi/ml
..Tc (T) Source_00192	08/15/16		Triad, Lot 20160812		(Purchased Reagent)		Tc-99m	20 uCi/ml
Tc-99_00007	01/01/50	07/19/06	DI Water, Lot 0	100 mL	Tc-99_00003	4.9519 g	Technetium-99	22185.5 dpm/mL
.Tc-99_00003	01/01/50		Isotope Products, Lot 681-78-1		(Purchased Reagent)		Technetium-99	7.467 kBq/g
Tc-99_00019	03/15/17	03/18/15	2M HNO3, Lot n/a	500 mL	Tc-99_00015	12 mL	Technetium-99	228.819 dpm/mL
							Total Activity	228.819 dpm/mL
.Tc-99_00015	03/16/17	06/28/05	2M HNO3, Lot 0	100 mL	Tc-99_00004	10 mL	Technetium-99	9534.11 dpm/mL
							Total Activity	9534.11 dpm/mL
..Tc-99_00004	03/16/17	02/28/02	2M HNO3, Lot 0	100 mL	Tc-99_00002	4.8728 g	Technetium-99	95341.1 dpm/mL
							Total Activity	95341.1 dpm/mL
...Tc-99_00002	03/16/17		NIST, Lot SRM 4288A		(Purchased Reagent)		Technetium-99	32.61 kBq/g
							Total Activity	32.61 kBq/g
TCLP Fluid #1_00097	09/24/16	04/28/16	DI Water, Lot 3182014	48 L	Acetic Acid G_00007	250 mL	Acetic acid	0.0907292 mol/L
					NaOH 10N_00009	290 mL	Sodium Hydroxide	0.0604167 mol/L
.Acetic Acid G_00007	09/24/16		Macron, Lot 85356		(Purchased Reagent)		Acetic acid	17.42 mol/L
.NaOH 10N_00009	04/20/17		Ricca, Lot 1601863		(Purchased Reagent)		Sodium Hydroxide	10 N
TCLP Fluid #1_00100	08/02/17	08/02/16	DI Water, Lot 3182014	48 L	10N NaOH_00002	290 mL	Sodium Hydroxide	0.0604167 mol/L

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					Acetic Acid G_00007	250 mL	Acetic acid	0.0907292 mol/L
.10N NaOH_00002	07/25/17	Ricca Chemical, Lot 4409691			(Purchased Reagent)		Sodium Hydroxide	10 N
.Acetic Acid G_00007	09/24/16	Macron, Lot 85356			(Purchased Reagent)		Acetic acid	17.42 mol/L
TCLP Fluid #2_00009	04/05/17	04/06/16	DI Water, Lot 10	48 L	Acetic Acid_00010	250 mL	Acetic acid	5.20833 mol/L
.Acetic Acid_00010	11/11/17	Macron, Lot 0000044453			(Purchased Reagent)		Acetic acid	100 %
Th-229_00021	08/01/17	07/20/16	0.1M HNO3, Lot n/a	500 mL	Th-229_00017	15 mL	At-217	67.2296 dpm/mL
							Thorium-229	67.2296 dpm/mL
.Th-229_00017	08/01/17	08/20/14	0.1M HNO3, Lot n/a	100 mL	Th-229_00016	5.0464 g	At-217	2240.99 dpm/mL
							Thorium-229	2240.99 dpm/mL
..Th-229_00016	08/06/64	Analytics, Lot 97790			(Purchased Reagent)		At-217	740.127 Bq/g
							Thorium-229	740.127 Bq/g
Th-230_00016	11/29/62	11/28/12	0.5M HNO3, Lot 0	100 mL	Th-230_00015	5.0489 g	Gross Alpha	2374.49 dpm/mL
							Thorium-230	2374.49 dpm/mL
.Th-230_00015	11/29/62	Analytics, Lot 92523			(Purchased Reagent)		Gross Alpha	783.829 Bq/g
							Thorium-230	783.829 Bq/g
Th-230_00019	11/08/16	08/13/13	1M HNO3, Lot n/a	100 mL	Th-230_00018	5.0731 mL	Gross Alpha	2228.23 dpm/mL
							Thorium-230	2228.23 dpm/mL
.Th-230_00018	08/08/63	Eckert & Ziegler Analytics, Lot 92776			(Purchased Reagent)		Gross Alpha	43922.5 dpm/g
							Thorium-230	43922.5 dpm/g
TRM-2_00001	03/20/50	DOE, Lot TRM-2			(Purchased Reagent)		Pb-210	22.1 pCi/g
							Ra-226	25.4 pCi/g
							Thorium-230	24.5 pCi/g
							Uranium-233/234	6.2 pCi/g
							Uranium-238	6 pCi/g
Tuna Can LCS_00005	10/29/16	Analytics, Lot 74139-334			(Purchased Reagent)		Americium-241	219 dpm/g
							Co-60	136 dpm/g
							Cs-137	82.3 dpm/g
Tuna Can_00002	02/03/15	Eckert & Ziegler, Lot 81427-334			(Purchased Reagent)		Americium-241	1164 Bq
							Cd-109	16063 Bq
							Ce-139	546 Bq
							Co-57	357 Bq
							Co-60	742 Bq
							Cs-137	465 Bq
							Hg-203	1208 Bq
							Pb-210	15186 Bq
							Sn-113	943 Bq
							Y-88	1571 Bq

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
Tuna Can_00003	02/09/17	Eckert & Ziegler, Lot 90099			(Purchased Reagent)		Americium-241	1164 Bq
							Cd-109	16373 Bq
							Ce-139	549 Bq
							Co-57	362 Bq
							Co-60	735 Bq
							Cs-137	467 Bq
							Hg-203	1171 Bq
							Pb-210	14936 Bq
							Sn-113	967 Bq
							Y-88	1590 Bq
Tuna Can_00006	03/01/16	Eckert & Ziegler, Lot 83814-334			(Purchased Reagent)		Americium-241	1195 Bq
							Cd-109	16353 Bq
							Ce-139	543 Bq
							Co-57	354 Bq
							Co-60	745 Bq
							Cs-137	453 Bq
							Hg-203	1175 Bq
							Pb-210	14606 Bq
							Sn-113	961 Bq
							Y-88	1568 Bq
U-232_00035	07/13/17	07/16/15	2M HNO3, Lot n/a	500 mL	U-232_00009	4 mL	Uranium-232	82.2457 dpm/mL
.U-232_00009	07/13/17	08/29/11	1M HNO3, Lot 0	100 mL	U-232_00003	5.1609 g	Uranium-232	10280.7 dpm/mL
..U-232_00003	08/25/61	Eckert & Ziegler, Lot 85539-334			(Purchased Reagent)		Uranium-232	3320.07 Bq/g
UNAT_00012	05/05/17	04/28/15	1M HNO3, Lot n/a	200 mL	UNAT Parent_00001	20 mL	Uranium-233/234	70.6912 dpm/mL
							Uranium-235/236	3.37064 dpm/mL
							Uranium-238	72.265 dpm/mL
.UNAT Parent_00001	05/05/17	05/03/13	1M HNO3, Lot n/a	200 mL	UNAT Ampoule_00001	19.2509 g	Uranium-233/234	706.912 dpm/mL
							Uranium-235/236	33.7064 dpm/mL
							Uranium-238	722.65 dpm/mL
..UNAT Ampoule_00001	03/30/58	New Brunswick Lab, Lot CRM 145			(Purchased Reagent)		Uranium-233/234	7344.2 dpm/g
							Uranium-235/236	350.18 dpm/g
							Uranium-238	7507.7 dpm/g

Reagent

10N NaOH_00002

RICCA CHEMICAL COMPANY®

Arlington, TX 76012
Pocomoke City, MD 21851
Batesville, IN 47006
http://www.riccachemical.com
1-888-GO-RICCA
customerservice@riccachemical.com

Certificate of Analysis

Sodium Hydroxide, 10.0 Normal

Lot Number: 4601563 **Product Number:** 7470

Manufacture Date: JAN 06, 2016
Expiration Date: DEC 2017

Name	CAS#	Grade
Water	7732-18-5	ACS/ASTM/USP/EP
Sodium Hydroxide	1310-73-2	Reagent

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Assay (vs. Sulfuric Acid/Phenolphthalein)	9.95-10.05 N at 20°C	9.97 N at 20°C	723
Heavy Metals (as Pb)	max 10 ppm	<= 10 ppm	
Iron (Fe)	max 5 ppm	<= 5 ppm	3126

Specification	Reference
Sodium hydroxide Solution (400 g/L)	ASTM (D 3590 A)
Sodium Hydroxide Solution (400 g/L)	ASTM (D 1426 B)
Sodium Hydroxide, 10 N	APHA (4500-NH3 D)
Sodium Hydroxide, 10 N	APHA (4500-CN- L)
Sodium Hydroxide Stock Solution	APHA (4500-NO3- H)
Sodium Hydroxide, 10 N	APHA (7500-Ra D)
ISA Solution (10 M NaOH)	EPA (SW-846) (9213)
Sodium Hydroxide Solution (10 N)	EPA (SW-846) (3510C)
Sodium Hydroxide Solution (10 N)	EPA (SW-846) (3520C)
Sodium Hydroxide (10 N)	EPA (SW-846) (3650B)
Sodium Hydroxide Solution (10 N)	EPA (SW-846) (3535)
Sodium Hydroxide Solution (10 Molar)	EPA (SW-846) (3542)
Sodium Hydroxide, 10 N	EPA (350.3)
Sodium Hydroxide, 10 N	EPA (351.4)
Sodium Hydroxide Stock Solution (10 N)	EPA (353.1)
Sodium Hydroxide, 10 N	EPA (110.1)

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
7470-2.5	10 L Cubitainer®	24 months
7470-4	120 mL natural poly	24 months
7470-32	1 L natural poly	24 months
7470-5HP	20 L Ropak™	24 months
7470-5	20 L Cubitainer®	24 months
7470-220	220 gal tote	24 months
7470-330	330 gal tote	24 months

7470-1	4 L natural poly	24 months
7470-1CT	4 L Cubitainer®	24 months
7470-16	500 mL natural poly	24 months
7470-50	50 gal drum	24 months
7470-55	55 gal drum	24 months

Recommended Storage: 15°C - 30°C (59°F - 86°F)

Katie Schnur
Quality Control Manager

This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

Reagent

8082 Spike_00020

10426 - 6 [illegible] +29 .

recieved by CS 6/30/15

RESTEK®

CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

Certificate of Analysis

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

[redacted]

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 32039 **Lot No.:** A0109056

Description : Aroclor® 1016/1260 Mix

Aroclor® 1016/1260 Mix 1,000 µg/mL, Hexane, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : May 31, 2021 **Storage:** 25°C nominal

Handling: This product contains PCB's

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Aroclor 1016		1,000.2 µg/mL	+/- 5.8287	µg/mL	Gravimetric
	CAS # 12674-11-2	(Lot W-125-01)		+/- 31.1208	µg/mL	Unstressed
	Purity ----%			+/- 41.4016	µg/mL	Stressed
2	Aroclor 1260		1,001.0 µg/mL	+/- 5.8333	µg/mL	Gravimetric
	CAS # 11096-82-5	(Lot W-129-06)		+/- 31.1457	µg/mL	Unstressed
	Purity ----%			+/- 41.4348	µg/mL	Stressed

Solvent: Hexane
CAS # 110-54-3
Purity 99%

Column:
30m x .25mm x .2um
Rtx-CLP II (cat.# 11323)

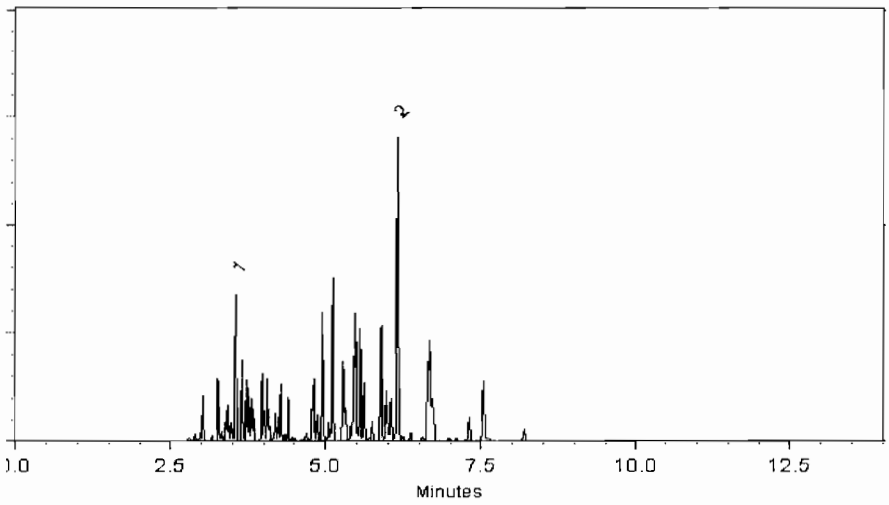
Carrier Gas:
helium-constant pressure 20 psi.

Temp. Program:
200°C to 300°C
@ 25°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
300°C

Det. Type:
ECD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Connor Flanney - Mix Technician

Date Mixed: 12-Feb-2015 **Balance:** 1128360905

Jodi E. Breon - QA Analyst

Date Passed: 13-Feb-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8082 Spike_00021

10426 - 6 [illegible] +29 .

recieved by CS 6/30/15

RESTEK®

CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

Certificate of Analysis

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

[redacted]

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 32039 **Lot No.:** A0109056

Description : Aroclor® 1016/1260 Mix

Aroclor® 1016/1260 Mix 1,000 µg/mL, Hexane, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : May 31, 2021 **Storage:** 25°C nominal

Handling: This product contains PCB's

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Aroclor 1016		1,000.2 µg/mL	+/- 5.8287	µg/mL	Gravimetric
	CAS # 12674-11-2	(Lot W-125-01)		+/- 31.1208	µg/mL	Unstressed
	Purity ----%			+/- 41.4016	µg/mL	Stressed
2	Aroclor 1260		1,001.0 µg/mL	+/- 5.8333	µg/mL	Gravimetric
	CAS # 11096-82-5	(Lot W-129-06)		+/- 31.1457	µg/mL	Unstressed
	Purity ----%			+/- 41.4348	µg/mL	Stressed

Solvent: Hexane
CAS # 110-54-3
Purity 99%

Column:
30m x .25mm x .2um
Rtx-CLP II (cat.# 11323)

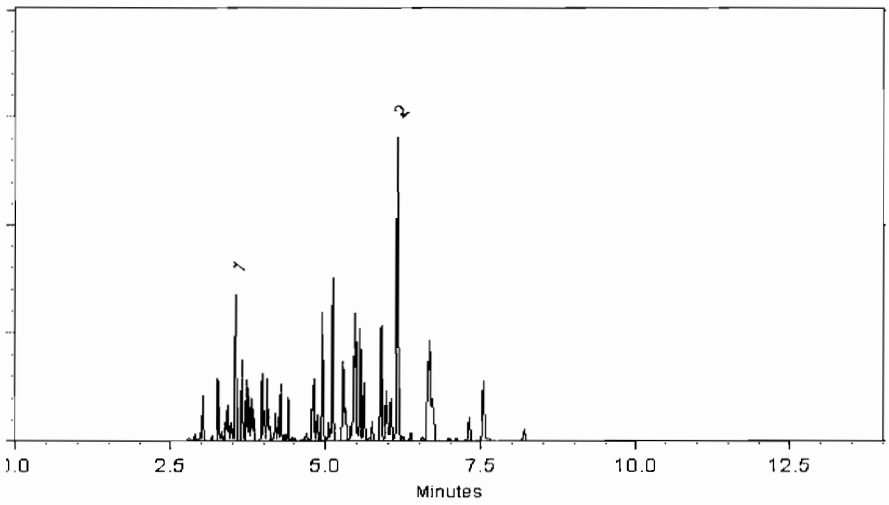
Carrier Gas:
helium-constant pressure 20 psi.

Temp. Program:
200°C to 300°C
@ 25°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
300°C

Det. Type:
ECD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Connor Flanney - Mix Technician

Date Mixed: 12-Feb-2015 **Balance:** 1128360905

Jodi E. Breon - QA Analyst

Date Passed: 13-Feb-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8082 Surr DCB_00021

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

Decachlorobiphenyl Solution

Product Number: PPS-150 **Page:** 1 of 1

Lot Number: CK-4355 **Lot Issue Date:** 11-Feb-2014 **Expiration Date:** 31-Jan-2018

This certified Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
decachlorobiphenyl (BZ # 209)	002051-24-3	RM01256	999.5 ± 5.0 µg/mL

Matrix: toluene

Storage: Store at Room Temperature (15-30°C).

545526
ID. 8082 Surr DCB_00019
Exp: 01/31/18 Prpd: JBH
Decachlorobiphenyl Soluti

545528
ID: 8082 Surr DCB_00020
Exp: 01/31/18 Prpd: JBH
Decachlorobiphenyl Soluti

545530
ID 8082 Surr DCB_00021
Exp: 01/31/18 Prpd: JBH
Decachlorobiphenyl Soluti

545532
ID. 8082 Surr DCB_00022
Exp: 01/31/18 Prpd. JBH
Decachlorobiphenyl Soluti

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

ACCREDITED

ISO 17025
Accredited
A2LA
Cert. No. 0851-01

ISO 9001
Registered
TUV USA, Inc.
Cert. No. 09-1009

William J. Leary
Quality Assurance Manager

250 SMITH STREET N. KINGSTOWN, RHODE ISLAND 02852 USA WWW.ULTRASCI.COM

Reagent

8082SurrDeca_00022

r'ceived by CS 2/18/15 ID# 563892 - 563903

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ULTRA ISO 17025 • ISO GUIDE 34 • ISO 9001

Decachlorobiphenyl Solution

Product Number: PPS-150 **Page:** 1 of 1

Lot Number: CK-4355 **Lot Issue Date:** 11-Feb-2014 **Expiration Date:** 31-Jan-2018

This certified Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
decachlorobiphenyl (BZ # 209)	002051-24-3	RM01256	999.5 ± 5.0 µg/mL

Matrix: toluene

Storage: Store at Room Temperature (15-30°C).

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

A2LA ACCREDITED

ISO 17025 Accredited A2LA Cert. No. 0851-01

ISO 9001 Registered TUV USA, Inc. Cert. No. 09-1009

William J. Leary
Quality Assurance Manager

250 SMITH STREET N. KINGSTOWN, RHODE ISLAND 02852 USA WWW.ULTRASCI.COM

Reagent

82232-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82232-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 3-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	7.630E+00	4420-4800	7.540E+04	0.7	1.1	2.6
Pu-239	7.137E+00	4950-5240	2.410E+04	0.7	1.1	2.6
Am-241	7.281E+00	5280-5600	4.326E+02	0.7	1.1	2.6
Total Activity	2.210E+01	3000-8000		0.4	1.1	2.3

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82233-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82233-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 3-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	4.950E+00	4420-4800	7.540E+04	0.8	1.1	2.7
Pu-239	6.064E+00	4950-5240	2.410E+04	0.7	1.1	2.6
Am-241	5.114E+00	5280-5600	4.326E+02	0.8	1.1	2.7
Total Activity	1.616E+01	3000-8000		0.1	1.1	2.2

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82234-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82234-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 2-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	5.685E+00	4420-4800	7.540E+04	0.9	1.1	2.8
Pu-239	5.936E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	5.652E+00	5280-5600	4.326E+02	0.9	1.1	2.8
Total Activity	1.732E+01	3000-8000		0.5	1.1	2.4

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82235-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82235-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 4-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	7.167E+00	4420-4800	7.540E+04	0.8	1.1	2.7
Pu-239	6.897E+00	4950-5240	2.410E+04	0.8	1.1	2.7
Am-241	7.466E+00	5280-5600	4.326E+02	0.8	1.1	2.7
Total Activity	2.161E+01	3000-8000		0.5	1.1	2.4

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06·24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82236-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82236-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 2-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	7.107E+00	4420-4800	7.540E+04	0.7	1.1	2.6
Pu-239	6.664E+00	4950-5240	2.410E+04	0.8	1.1	2.7
Am-241	6.891E+00	5280-5600	4.326E+02	0.7	1.1	2.6
Total Activity	2.071E+01	3000-8000		0.4	1.1	2.3

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82237-334_00003

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82237-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 1-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	5.856E+00	4420-4800	7.540E+04	1.0	1.1	3.0
Pu-239	6.424E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	5.608E+00	5280-5600	4.326E+02	1.0	1.1	3.0
Total Activity	1.793E+01	3000-8000		0.6	1.1	2.5

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82240-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82240-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 8-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	6.304E+00	4420-4800	7.540E+04	0.9	1.1	2.8
Pu-239	7.163E+00	4950-5240	2.410E+04	0.8	1.1	2.7
Am-241	8.298E+00	5280-5600	4.326E+02	0.8	1.1	2.7
Total Activity	2.182E+01	3000-8000		0.5	1.1	2.4

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

ANA Form005 Rev. —

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82241-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82241-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 8-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	6.629E+00	4420-4800	7.540E+04	0.8	1.1	2.7
Pu-239	6.797E+00	4950-5240	2.410E+04	0.8	1.1	2.7
Am-241	6.638E+00	5280-5600	4.326E+02	0.8	1.1	2.7
Total Activity	2.011E+01	3000-8000		0.4	1.1	2.3

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82242-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82242-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 8-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	6.583E+00	4420-4800	7.540E+04	0.9	1.1	2.8
Pu-239	6.414E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	7.145E+00	5280-5600	4.326E+02	0.9	1.1	2.8
Total Activity	2.018E+01	3000-8000		0.6	1.1	2.5

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82243-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82243-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 9-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	5.856E+00	4420-4800	7.540E+04	0.8	1.1	2.7
Pu-239	5.979E+00	4950-5240	2.410E+04	0.8	1.1	2.7
Am-241	6.390E+00	5280-5600	4.326E+02	0.8	1.1	2.7
Total Activity	1.827E+01	3000-8000		0.3	1.1	2.3

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1966

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82244-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82244-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 9-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	7.352E+00	4420-4800	7.540E+04	0.8	1.1	2.7
Pu-239	6.717E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	6.897E+00	5280-5600	4.326E+02	0.9	1.1	2.8
Total Activity	2.101E+01	3000-8000		0.6	1.1	2.5

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82245-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82245-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 9-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	6.727E+00	4420-4800	7.540E+04	1.0	1.1	3.0
Pu-239	5.437E+00	4950-5240	2.410E+04	1.1	1.1	3.1
Am-241	5.528E+00	5280-5600	4.326E+02	1.1	1.1	3.1
Total Activity	1.773E+01	3000-8000		0.8	1.1	2.7

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06·24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82246-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82246-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 9-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	5.570E+00	4420-4800	7.540E+04	1.0	1.1	3.0
Pu-239	5.353E+00	4950-5240	2.410E+04	1.0	1.1	3.0
Am-241	6.002E+00	5280-5600	4.326E+02	1.0	1.1	3.0
Total Activity	1.696E+01	3000-8000		0.7	1.1	2.6

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06·24·2010
E. A. Taskaev, QA Manager Alternate

Reagent

82247-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82247-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 10-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	6.251E+00	4420-4800	7.540E+04	0.9	1.1	2.8
Pu-239	5.746E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	6.291E+00	5280-5600	4.326E+02	0.9	1.1	2.8
Total Activity	1.832E+01	3000-8000		0.6	1.1	2.5

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1966

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

ANA Form005 Rev. —

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

8260 IS(2014)_00029

RESTEK®
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30241 **Lot No.:** A0113698

Description : 8260A Internal Standard Mix

8260A Internal Standard Mix 2,500 µg/mL, P&T Methanol, 1mL/ampul

RECD 3-16-16
JDH
870891-895

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Fluorobenzene	2,509.7 µg/mL	+/- 14.5916	µg/mL	Gravimetric
	CAS # 462-06-6 (Lot 1380033)		+/- 28.3005	µg/mL	Unstressed
	Purity 99%		+/- 32.5657	µg/mL	Stressed
2	Chlorobenzene-d5	2,518.2 µg/mL	+/- 14.6410	µg/mL	Gravimetric
	CAS # 3114-55-4 (Lot PR-23926)		+/- 28.3963	µg/mL	Unstressed
	Purity 99%		+/- 32.6760	µg/mL	Stressed
3	1,4-Dichlorobenzene-d4	2,511.6 µg/mL	+/- 14.6027	µg/mL	Gravimetric
	CAS # 3855-82-1 (Lot PR-18488)		+/- 28.3219	µg/mL	Unstressed
	Purity 99%		+/- 32.5903	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

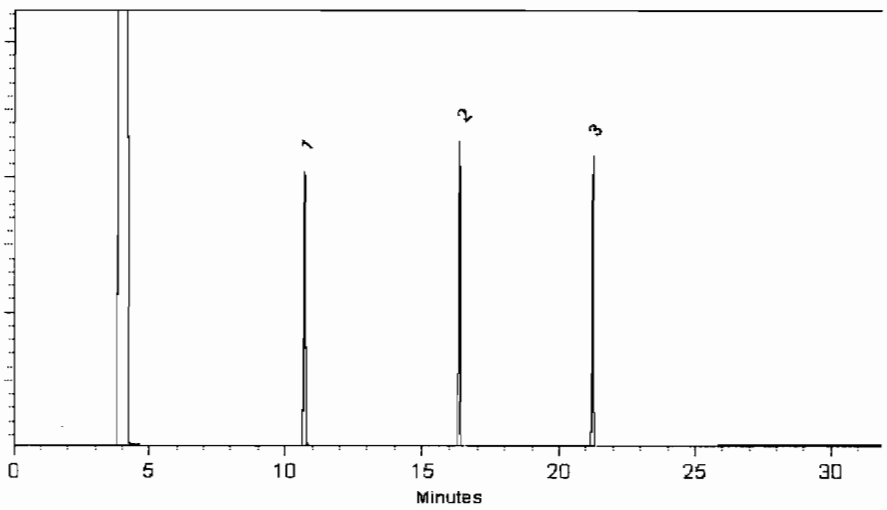
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cheryl Graham

Cheryl Graham - Mix Technician

Date Mixed: 01-Sep-2015 **Balance:** 1127510105

Diane Shaffer

Diane Shaffer - QA Analyst

Date Passed: 03-Sep-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260 IS(2014)_00030

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30241 **Lot No.:** A0113698

Description : 8260A Internal Standard Mix

8260A Internal Standard Mix 2,500 µg/mL, P&T Methanol, 1mL/ampul

RECD 3-16-16
JOH
870891-895

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Fluorobenzene **CAS #** 462-06-6 (Lot 1380033) **Purity** 99%	2,509.7 µg/mL	+/- 14.5916 µg/mL +/- 28.3005 µg/mL +/- 32.5657 µg/mL	Gravimetric Unstressed Stressed
2	Chlorobenzene-d5 **CAS #** 3114-55-4 (Lot PR-23926) **Purity** 99%	2,518.2 µg/mL	+/- 14.6410 µg/mL +/- 28.3963 µg/mL +/- 32.6760 µg/mL	Gravimetric Unstressed Stressed
3	1,4-Dichlorobenzene-d4 **CAS #** 3855-82-1 (Lot PR-18488) **Purity** 99%	2,511.6 µg/mL	+/- 14.6027 µg/mL +/- 28.3219 µg/mL +/- 32.5903 µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

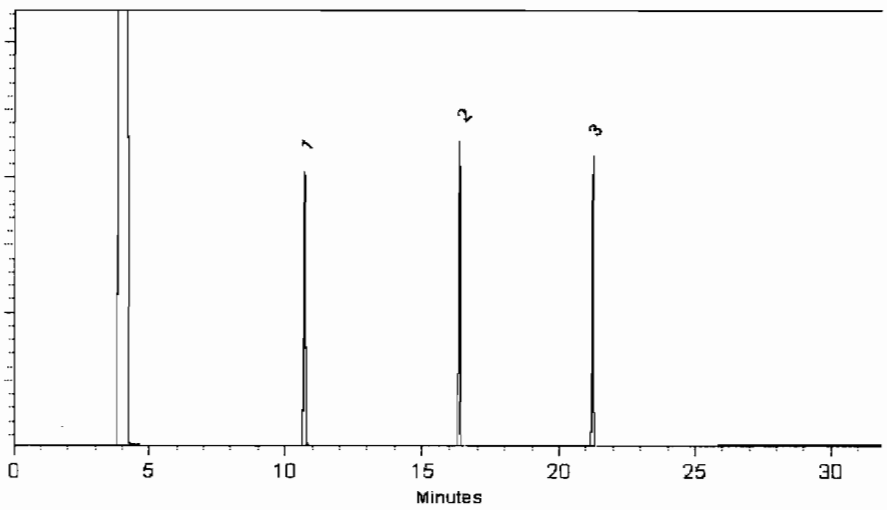
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cheryl Graham

Cheryl Graham - Mix Technician

Date Mixed: 01-Sep-2015 **Balance:** 1127510105

Diane Shaffer

Diane Shaffer - QA Analyst

Date Passed: 03-Sep-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260_2_CLEVE_00041

RESTEK® CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569723 **Lot No.:** A0115628

Description : 8260 List 1 / Std #4 2-CEVE (2015)

8260 List 1 / Std #4 2-CEVE (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 4-5-16
JDH

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2018 **Storage:** 0°C or colder

900267 -269

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2-Chloroethyl vinyl ether **CAS #** 110-75-8 (Lot MKBK2735V) **Purity** 99%	2,509.2 µg/mL	+/- 14.5887 µg/mL +/- 53.7223 µg/mL +/- 55.2841 µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:

Degradation of tetrachloroethylene to pentachloroethane may occur if solutions containing 2-chloroethyl vinyl ether are combined with solutions that contain tetrachloroethylene.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

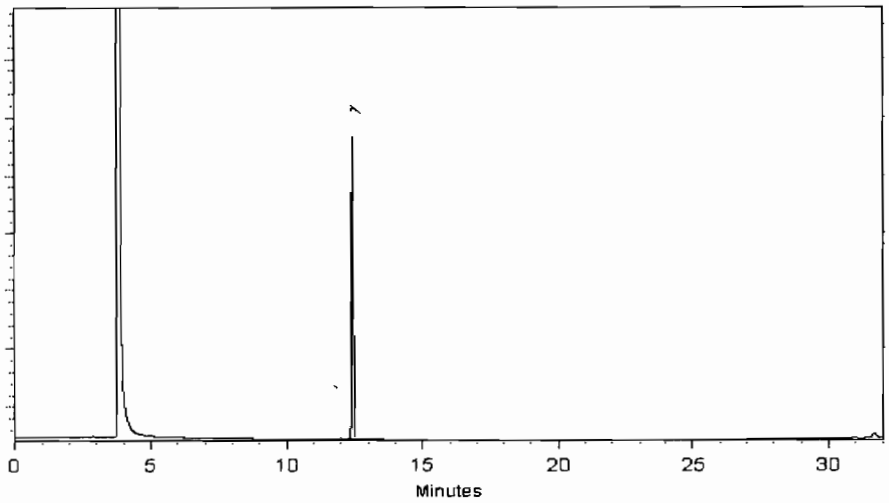
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cheryl Graham

Cheryl Graham - Mix Technician

Date Mixed: 24-Nov-2015 **Balance:** B251644995

Jennifer L Pollino

Jennifer L. Pollino - QC Analyst

Date Passed: 30-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260_Surr_00037

RESTEK® CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Certificate of Analysis

ACCREDITED ISO Guide 34 Accredited Reference Material Producer Certificate #3222.01

ilac-MRA

ACCREDITED ISO/IEC 17025 Accredited Testing Laboratory Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567650 **Lot No.:** A0115812

Description : 8260 Surrogate Standard

8260 Surrogate Standard 2,500 ug/ml, P&T Methanol, 5 ml/ampul

REC'D 3-16-16
JDH

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : December 31, 2020 **Storage:** 0°C or colder

870896,898-901

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Dibromofluoromethane		2,503.1 µg/mL	+/- 14.5534	µg/mL	Gravimetric
	CAS # 1868-53-7	(Lot 022012)		+/- 140.3482	µg/mL	Unstressed
	Purity 99%			+/- 143.6322	µg/mL	Stressed
2	1,2-Dichloroethane-d4		2,500.1 µg/mL	+/- 14.5360	µg/mL	Gravimetric
	CAS # 17060-07-0	(Lot 14C-191)		+/- 140.1800	µg/mL	Unstressed
	Purity 99%			+/- 143.4600	µg/mL	Stressed
3	Toluene-d8		2,505.0 µg/mL	+/- 14.5643	µg/mL	Gravimetric
	CAS # 2037-26-5	(Lot PR-26282)		+/- 140.4529	µg/mL	Unstressed
	Purity 99%			+/- 143.7393	µg/mL	Stressed
4	1-Bromo-4-fluorobenzene (BFB)		2,501.1 µg/mL	+/- 14.5418	µg/mL	Gravimetric
	CAS # 460-00-4	(Lot 20401KOV)		+/- 140.2361	µg/mL	Unstressed
	Purity 99%			+/- 143.5174	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

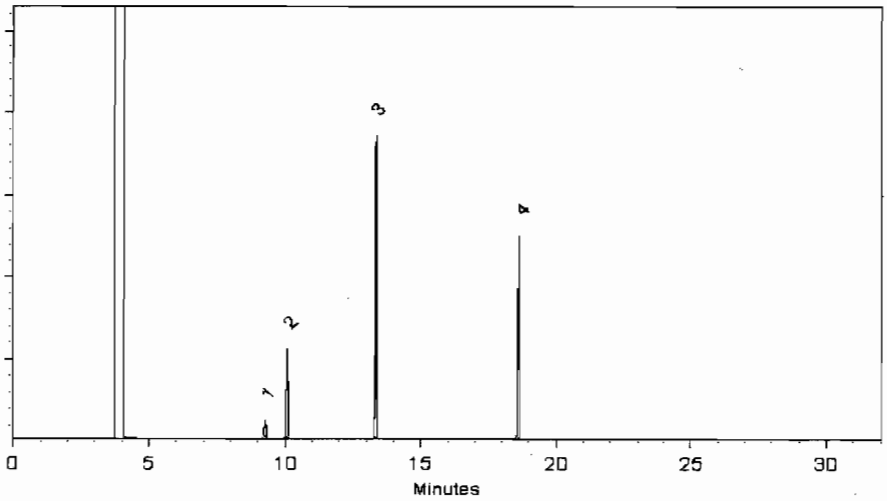
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Brandon Cook

Brandon Cook - Mix Technician **Date Mixed:** 07-Dec-2015 **Balance:** 1127510105

Jennifer L Pollino

Jennifer L. Pollino - QC Analyst **Date Passed:** 10-Dec-2015

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Reagent

8260_Surr_00038

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567650 **Lot No.:** A0115812

Description : 8260 Surrogate Standard

8260 Surrogate Standard 2,500 ug/ml, P&T Methanol, 5 ml/ampul

REC'D 3-16-16
JDH

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : December 31, 2020 **Storage:** 0°C or colder

870896,898-901

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Dibromofluoromethane **CAS #** 1868-53-7 (Lot 022012) **Purity** 99%	2,503.1 µg/mL	+/- 14.5534 µg/mL +/- 140.3482 µg/mL +/- 143.6322 µg/mL		Gravimetric Unstressed Stressed
2	1,2-Dichloroethane-d4 **CAS #** 17060-07-0 (Lot 14C-191) **Purity** 99%	2,500.1 µg/mL	+/- 14.5360 µg/mL +/- 140.1800 µg/mL +/- 143.4600 µg/mL		Gravimetric Unstressed Stressed
3	Toluene-d8 **CAS #** 2037-26-5 (Lot PR-26282) **Purity** 99%	2,505.0 µg/mL	+/- 14.5643 µg/mL +/- 140.4529 µg/mL +/- 143.7393 µg/mL		Gravimetric Unstressed Stressed
4	1-Bromo-4-fluorobenzene (BFB) **CAS #** 460-00-4 (Lot 20401KOV) **Purity** 99%	2,501.1 µg/mL	+/- 14.5418 µg/mL +/- 140.2361 µg/mL +/- 143.5174 µg/mL		Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

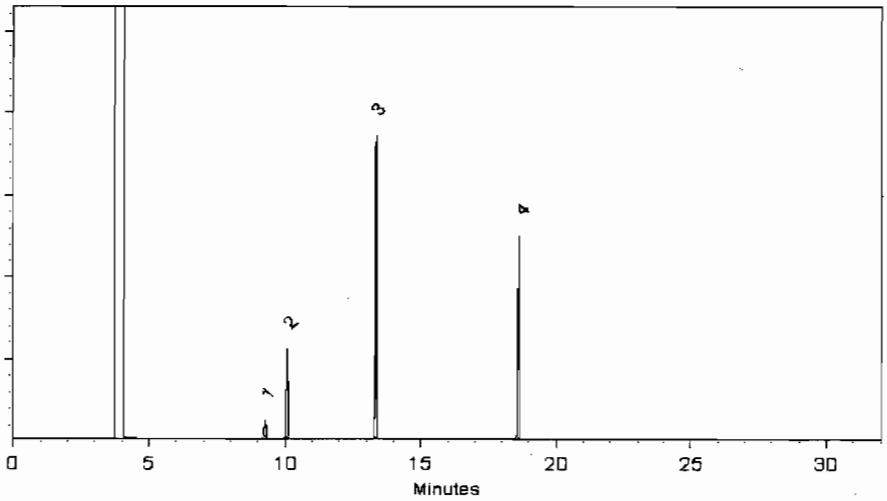
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Brandon Cook

Brandon Cook - Mix Technician **Date Mixed:** 07-Dec-2015 **Balance:** 1127510105

Jennifer L Pollino

Jennifer L. Pollino - QC Analyst **Date Passed:** 10-Dec-2015

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Reagent

8260Custom1_00039

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

Catalog No: S-26138
Description: Custom VOC Standard
Lot: 215101095
Solvent: Methanol
Hazards: **HIGHLY FLAMMABLE** - *Refer to SDS for safety info*

Danger 2

Date Certified: Oct 12, 2015
Expiration: Oct 12, 2016
Sample Size: 1 mL
Components: 2
Storage Condition: Refrig (0-5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO Guide 34 Scope of Accreditation: Yes

Component	CAS #	Purity % (GC/FID)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
Freon 114	76-14-2	99.0	2013	1993
Nonanal	124-19-6	100.0	2004	2004

REC'D 11-3-15
JDH
790389-393

A product with a suffix (-1A, -2B, etc. or -01, -02, etc.) on its lot number has had its expiration date extended and is identical to the same lot number without the suffix.

[1] All weights are traceable through NIST, Test No. 822-275872-11

[2] Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty associated with the gravimetric values reported on this certificate is ±0.24%. The CRM Uncertainty calculated for this product is ±5%. These values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.

Labels and certificates follow U.S. Conventions in reporting numerical values:
A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

See reverse side for additional information

Certified By: Larry Decker, Organic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Reagent

8260Cyclohexa_00041

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569727 **Lot No.:** A0116621

Description : 8260 List 2/ Std #3 Cyclohexanone (2015)

8260 List 2/ Std #3 Cyclohexanone (2015) 25,000 µg/ml, Water, 1 ml/ampul

REC'D 4-5-16
JDH
900279 -281

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2019 **Storage:** 10°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Cyclohexanone **CAS #** 108-94-1 (Lot MKBN5282V) **Purity** 99%	25,086.7 µg/mL	+/- 146.8879 µg/mL +/- 1,513.6896 µg/mL +/- 1,517.2828 µg/mL	Gravimetric Unstressed Stressed

Solvent: Water
CAS # 7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

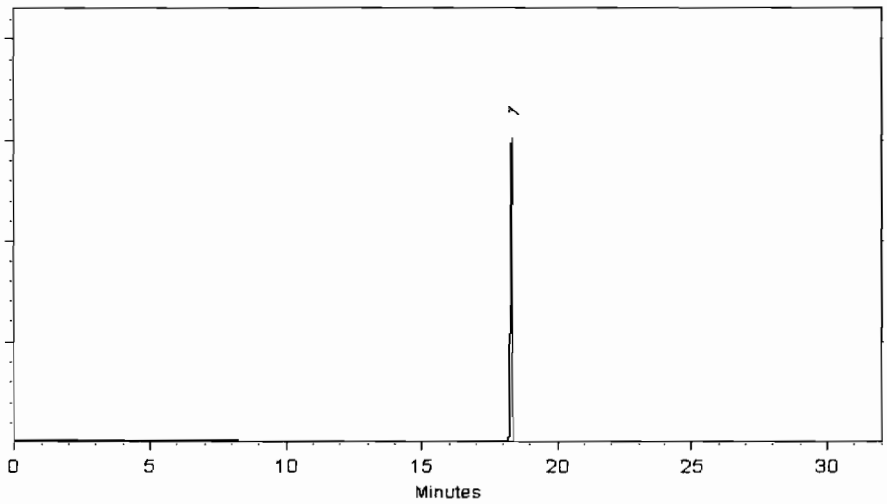
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cheryl Graham - Mix Technician

Date Mixed: 17-Jan-2016 **Balance:** 1125113331

Amanda Miller - QC Analyst

Date Passed: 19-Jan-2016

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Reagent

8260Gases_00164

RESTEK®
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569722 **Lot No.:** A0115012

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 4-5-16
JDH
910118-127

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Dichlorodifluoromethane (CFC-12)		2,502.3 µg/mL	+/- 17.1236	µg/mL	Gravimetric
	CAS # 75-71-8	(Lot Q167-08)		+/- 140.5935	µg/mL	Unstressed
	Purity 99%			+/- 143.8698	µg/mL	Stressed
2	Chloromethane (methyl chloride)		2,506.2 µg/mL	+/- 15.8909	µg/mL	Gravimetric
	CAS # 74-87-3	(Lot SHBF7067V)		+/- 140.6631	µg/mL	Unstressed
	Purity 99%			+/- 143.9478	µg/mL	Stressed
3	Vinyl chloride		2,507.2 µg/mL	+/- 16.0743	µg/mL	Gravimetric
	CAS # 75-01-4	(Lot 25LPST)		+/- 140.7405	µg/mL	Unstressed
	Purity 99%			+/- 144.0261	µg/mL	Stressed
4	1,3-Butadiene		2,517.0 µg/mL	+/- 17.1894	µg/mL	Gravimetric
	CAS # 106-99-0	(Lot SHBF3387V)		+/- 141.4157	µg/mL	Unstressed
	Purity 99%			+/- 144.7114	µg/mL	Stressed
5	Bromomethane (methyl bromide)		2,511.3 µg/mL	+/- 17.3826	µg/mL	Gravimetric
	CAS # 74-83-9	(Lot 101604)		+/- 141.1222	µg/mL	Unstressed
	Purity 99%			+/- 144.4097	µg/mL	Stressed
6	Chloroethane (ethyl chloride)		2,497.4 µg/mL	+/- 16.0992	µg/mL	Gravimetric
	CAS # 75-00-3	(Lot SHBD1717V)		+/- 140.2015	µg/mL	Unstressed
	Purity 99%			+/- 143.4741	µg/mL	Stressed
7	Dichlorofluoromethane (CFC-21)		2,516.3 µg/mL	+/- 19.2032	µg/mL	Gravimetric
	CAS # 75-43-4	(Lot Q9B-58)		+/- 141.6354	µg/mL	Unstressed
	Purity 99%			+/- 144.9242	µg/mL	Stressed

8	Trichlorofluoromethane (CFC-11)		2,512.2	µg/mL	+/-	18.6489	µg/mL	Gravimetric
	CAS # 75-69-4	(Lot SHBF6387V)			+/-	141.3341	µg/mL	Unstressed
	Purity 99%				+/-	144.6191	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

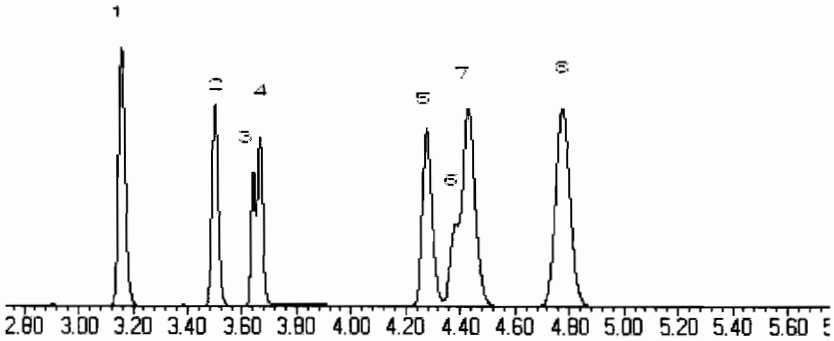
Carrier Gas:
helium-constant flow 2.0 mL/min.

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Kendra Swope - Mix Technician

Date Mixed: 29-Oct-2015 **Balance:** 1125113331

Jennifer L. Pollino - QC Analyst

Date Passed: 02-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260Gases_00168

RESTEK® CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569722 **Lot No.:** A0115012

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 7-14-16
JDH
960536-545

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dichlorodifluoromethane (CFC-12) **CAS #** 75-71-8 (Lot Q167-08) **Purity** 99%	2,502.3 µg/mL	+/- 17.1236 µg/mL +/- 140.5935 µg/mL +/- 143.8698 µg/mL	Gravimetric Unstressed Stressed
2	Chloromethane (methyl chloride) **CAS #** 74-87-3 (Lot SHBF7067V) **Purity** 99%	2,506.2 µg/mL	+/- 15.8909 µg/mL +/- 140.6631 µg/mL +/- 143.9478 µg/mL	Gravimetric Unstressed Stressed
3	Vinyl chloride **CAS #** 75-01-4 (Lot 25LPST) **Purity** 99%	2,507.2 µg/mL	+/- 16.0743 µg/mL +/- 140.7405 µg/mL +/- 144.0261 µg/mL	Gravimetric Unstressed Stressed
4	1,3-Butadiene **CAS #** 106-99-0 (Lot SHBF3387V) **Purity** 99%	2,517.0 µg/mL	+/- 17.1894 µg/mL +/- 141.4157 µg/mL +/- 144.7114 µg/mL	Gravimetric Unstressed Stressed
5	Bromomethane (methyl bromide) **CAS #** 74-83-9 (Lot 101604) **Purity** 99%	2,511.3 µg/mL	+/- 17.3826 µg/mL +/- 141.1222 µg/mL +/- 144.4097 µg/mL	Gravimetric Unstressed Stressed
6	Chloroethane (ethyl chloride) **CAS #** 75-00-3 (Lot SHBD1717V) **Purity** 99%	2,497.4 µg/mL	+/- 16.0992 µg/mL +/- 140.2015 µg/mL +/- 143.4741 µg/mL	Gravimetric Unstressed Stressed
7	Dichlorofluoromethane (CFC-21) **CAS #** 75-43-4 (Lot Q9B-58) **Purity** 99%	2,516.3 µg/mL	+/- 19.2032 µg/mL +/- 141.6354 µg/mL +/- 144.9242 µg/mL	Gravimetric Unstressed Stressed

8	Trichlorofluoromethane (CFC-11)		2,512.2	µg/mL	+/-	18.6489	µg/mL	Gravimetric
	CAS # 75-69-4	(Lot SHBF6387V)			+/-	141.3341	µg/mL	Unstressed
	Purity 99%				+/-	144.6191	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

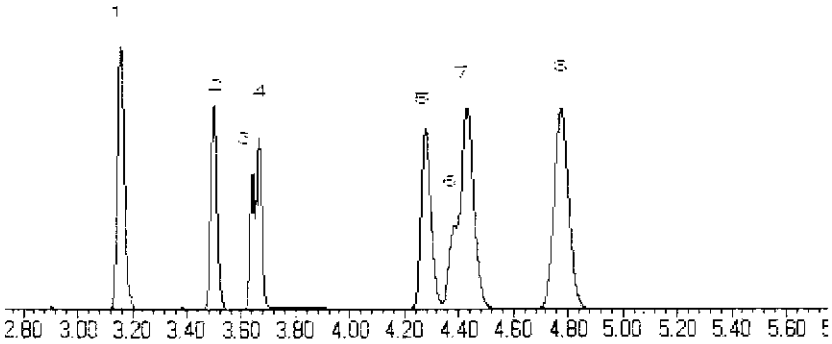
Carrier Gas:
helium-constant flow 2.0 mL/min

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Kendra Swope - Mix Technician

Date Mixed: 29-Oct-2015 **Balance:** 1125113331

Jennifer L. Pollino - QC Analyst

Date Passed: 02-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260GasesSS_00165

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569722.sec **Lot No.:** A0115484

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 4-5-16
JDH

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2018 **Storage:** 0°C or colder

915360-369

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Dichlorodifluoromethane (CFC-12)	2,505.6 µg/mL	+/- 16.6251	µg/mL	Gravimetric
	CAS # 75-71-8.SEC (Lot 22274)		+/- 140.7169	µg/mL	Unstressed
	Purity 99%		+/- 143.9990	µg/mL	Stressed
2	Chloromethane (methyl chloride)	2,517.3 µg/mL	+/- 17.3796	µg/mL	Gravimetric
	CAS # 74-87-3.SEC (Lot 18343)		+/- 141.4522	µg/mL	Unstressed
	Purity 99%		+/- 144.7477	µg/mL	Stressed
3	Vinyl chloride	2,510.2 µg/mL	+/- 16.6342	µg/mL	Gravimetric
	CAS # 75-01-4.SEC (Lot MKBK6872V)		+/- 140.9727	µg/mL	Unstressed
	Purity 99%		+/- 144.2609	µg/mL	Stressed
4	1,3-Butadiene	2,516.5 µg/mL	+/- 17.4874	µg/mL	Gravimetric
	CAS # 106-99-0.SEC (Lot 22331)		+/- 141.4240	µg/mL	Unstressed
	Purity 99%		+/- 144.7182	µg/mL	Stressed
5	Bromomethane (methyl bromide)	2,511.5 µg/mL	+/- 16.8310	µg/mL	Gravimetric
	CAS # 74-83-9.SEC (Lot Q119-46)		+/- 141.0664	µg/mL	Unstressed
	Purity 99%		+/- 144.3557	µg/mL	Stressed
6	Chloroethane (ethyl chloride)	2,504.8 µg/mL	+/- 16.4341	µg/mL	Gravimetric
	CAS # 75-00-3.SEC (Lot 00004202)		+/- 140.6469	µg/mL	Unstressed
	Purity 99%		+/- 143.9283	µg/mL	Stressed
7	Dichlorofluoromethane (CFC-21)	2,500.5 µg/mL	+/- 16.1659	µg/mL	Gravimetric
	CAS # 75-43-4.SEC (Lot SHBC0858V)		+/- 140.3776	µg/mL	Unstressed
	Purity 99%		+/- 143.6540	µg/mL	Stressed

8	Trichlorofluoromethane (CFC-11)		2,524.5	µg/mL	+/-	16.8928	µg/mL	Gravimetric
	CAS # 75-69-4.SEC	(Lot Q12B-59)			+/-	141.7952	µg/mL	Unstressed
	Purity 99%				+/-	145.1017	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

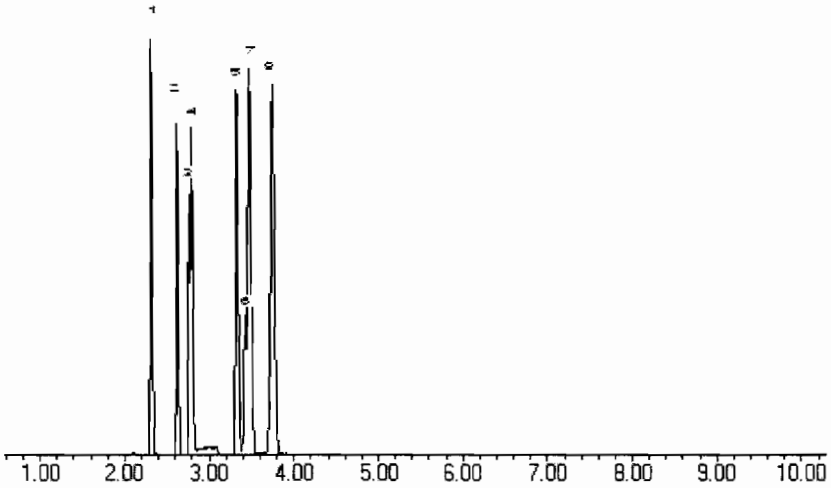
Carrier Gas:
helium-constant flow 2.0 mL/min.

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Lane Kibe - Mix Technician **Date Mixed:** 17-Nov-2015 **Balance:** 1127510105

Jennifer L. Pollino - QC Analyst **Date Passed:** 10-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260Ketones_00041

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569721 **Lot No.:** A0115554

Description : 8260 List 1/ Std #2 Ketones (2015)

8260 List 1/ Std #2 Ketones (2015) 12,500 µg/ml, P&T Methanol/Water (90:10), 1 ml/ampul

REC'D 4-14-16
JDH
900261-263

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Acetone **CAS #** 67-64-1 **Purity** 99%	(Lot 07196AK)	12,501.8 µg/mL	+/- 72.6865 µg/mL +/- 754.2890 µg/mL +/- 756.0798 µg/mL		Gravimetric Unstressed Stressed
2	2-Butanone (MEK) **CAS #** 78-93-3 **Purity** 98%	(Lot SHBG0444V)	12,499.7 µg/mL	+/- 72.6744 µg/mL +/- 754.1625 µg/mL +/- 755.9530 µg/mL		Gravimetric Unstressed Stressed
3	4-Methyl-2-pentanone (MIBK) **CAS #** 108-10-1 **Purity** 99%	(Lot SHBF9556V)	12,500.6 µg/mL	+/- 72.6796 µg/mL +/- 754.2166 µg/mL +/- 756.0072 µg/mL		Gravimetric Unstressed Stressed
4	2-Hexanone **CAS #** 591-78-6 **Purity** 99%	(Lot MKBT3158V)	12,502.4 µg/mL	+/- 72.6900 µg/mL +/- 754.3252 µg/mL +/- 756.1161 µg/mL		Gravimetric Unstressed Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

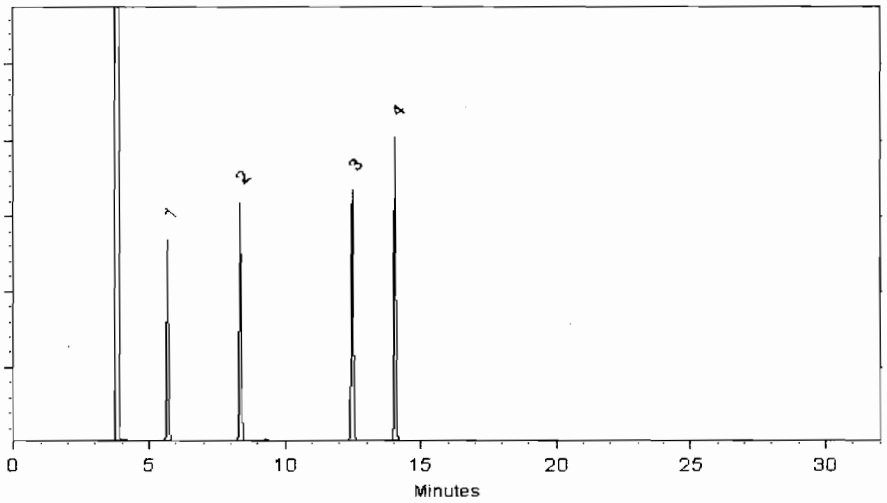
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 20-Nov-2015 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 24-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260Ketones_00042

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569721 **Lot No.:** A0115554

Description : 8260 List 1/ Std #2 Ketones (2015)

8260 List 1/ Std #2 Ketones (2015) 12,500 µg/mL, P&T Methanol/Water (90:10), 1 ml/ampul

REC'D 7-14-16
JDH
960533-535

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Acetone **CAS #** 67-64-1 **Purity** 99%	(Lot 07196AK)	12,501.8 µg/mL	+/- 72.6865 µg/mL +/- 754.2890 µg/mL +/- 756.0798 µg/mL	Gravimetric Unstressed Stressed
2	2-Butanone (MEK) **CAS #** 78-93-3 **Purity** 98%	(Lot SHBG0444V)	12,499.7 µg/mL	+/- 72.6744 µg/mL +/- 754.1625 µg/mL +/- 755.9530 µg/mL	Gravimetric Unstressed Stressed
3	4-Methyl-2-pentanone (MIBK) **CAS #** 108-10-1 **Purity** 99%	(Lot SHBF9556V)	12,500.6 µg/mL	+/- 72.6796 µg/mL +/- 754.2166 µg/mL +/- 756.0072 µg/mL	Gravimetric Unstressed Stressed
4	2-Hexanone **CAS #** 591-78-6 **Purity** 99%	(Lot MKBT3158V)	12,502.4 µg/mL	+/- 72.6900 µg/mL +/- 754.3252 µg/mL +/- 756.1161 µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

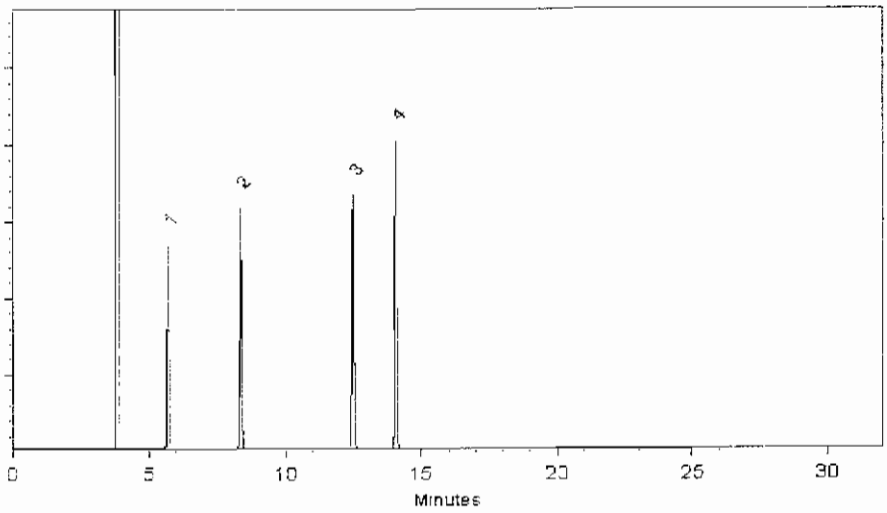
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Talion - MD Technician

Date Mixed: 20-Nov-2015 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 24-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260KetonesSS_00040

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569721.sec **Lot No.:** A0112937

Description : 8260 List 1/ Std #2 Ketones (2015)

8260 List 1/ Std #2 Ketones (2015) 12,500 µg/ml, P&T Methanol/Water (90:10), 1 ml/ampul

REG'D 4-5-16
JDH
900264-266

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : July 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)			
1	Acetone		12,501.5	µg/mL	+/-	73.1990	µg/mL	Gravimetric
	CAS # 67-64-1.SEC	(Lot P14A572)			+/-	665.3586	µg/mL	Unstressed
	Purity 99%				+/-	666.0923	µg/mL	Stressed
2	2-Butanone (MEK)		12,506.0	µg/mL	+/-	73.2254	µg/mL	Gravimetric
	CAS # 78-93-3.SEC	(Lot RA58J)			+/-	665.5981	µg/mL	Unstressed
	Purity 99%				+/-	666.3320	µg/mL	Stressed
3	4-Methyl-2-pentanone (MIBK)		12,525.0	µg/mL	+/-	73.3366	µg/mL	Gravimetric
	CAS # 108-10-1.SEC	(Lot E29T040)			+/-	666.6094	µg/mL	Unstressed
	Purity 99%				+/-	667.3444	µg/mL	Stressed
4	2-Hexanone		12,513.5	µg/mL	+/-	73.2693	µg/mL	Gravimetric
	CAS # 591-78-6.SEC	(Lot ZSVCD-FF)			+/-	665.9973	µg/mL	Unstressed
	Purity 99%				+/-	666.7316	µg/mL	Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

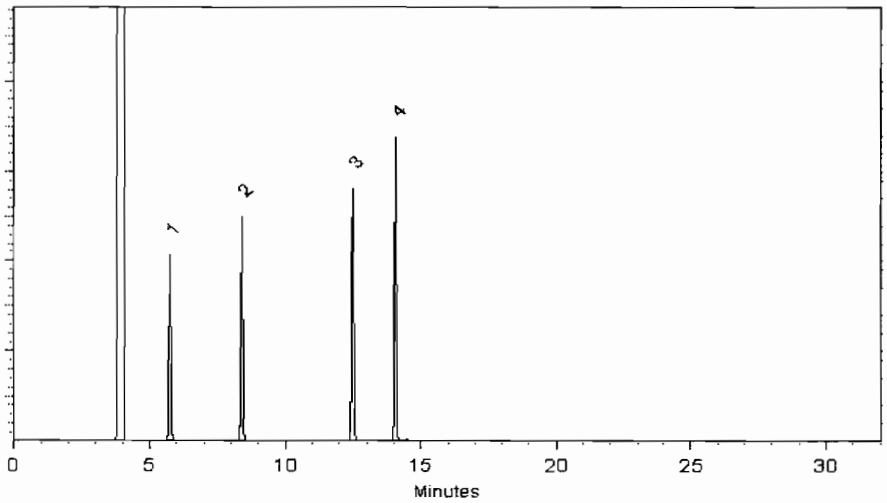
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Mary Ellen Wood - Mix Technician

Date Mixed: 30-Jul-2015 **Balance:** 1127510105

Jennifer L. Pollino - QC Analyst

Date Passed: 03-Aug-2015

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Reagent

8260MegaMix_00041

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569720 **Lot No.:** A0108166

Description : 8260 List 1 / Std #1 MegaMix (2015)

8260 List 1 / Std #1 MegaMix (2015) 1250-62500 µg/ml, P&T Methanol, 1 ml/ampul

REC'D 4-14-16
JDH
900255 - 257

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2017 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Diethyl ether (ethyl ether) **CAS #** 60-29-7 (Lot SHBF3466V) **Purity** 99%	2,521.3 µg/mL	+/- 14.6588 µg/mL +/- 134.1754 µg/mL +/- 134.3233 µg/mL	Gravimetric Unstressed Stressed
2	1,1,2-Trichlorotrifluoroethane (CFC-113) **CAS #** 76-13-1 (Lot 00001135) **Purity** 99%	2,522.5 µg/mL	+/- 14.6660 µg/mL +/- 134.2419 µg/mL +/- 134.3899 µg/mL	Gravimetric Unstressed Stressed
3	1,1-Dichloroethane **CAS #** 75-34-3 (Lot Q179-33) **Purity** 98%	2,499.5 µg/mL	+/- 14.5323 µg/mL +/- 133.0173 µg/mL +/- 133.1640 µg/mL	Gravimetric Unstressed Stressed
4	tert-Butanol (TBA) **CAS #** 75-65-0 (Lot SHBC6893V) **Purity** 99%	25,002.4 µg/mL	+/- 145.3584 µg/mL +/- 1,330.5704 µg/mL +/- 1,332.0378 µg/mL	Gravimetric Unstressed Stressed
5	Iodomethane (methyl iodide) **CAS #** 74-88-4 (Lot SHBC7288V) **Purity** 99%	2,510.0 µg/mL	+/- 14.5934 µg/mL +/- 133.5767 µg/mL +/- 133.7240 µg/mL	Gravimetric Unstressed Stressed
6	Methyl acetate **CAS #** 79-20-9 (Lot SHBD7134V) **Purity** 98%	12,505.4 µg/mL	+/- 72.7037 µg/mL +/- 665.5101 µg/mL +/- 666.2440 µg/mL	Gravimetric Unstressed Stressed
7	Allyl chloride (3-chloropropene) **CAS #** 107-05-1 (Lot MKBG5777V) **Purity** 99%	2,500.0 µg/mL	+/- 19.2743 µg/mL +/- 133.6453 µg/mL +/- 133.7914 µg/mL	Gravimetric Unstressed Stressed

8	Methylene chloride (dichloromethane)			2,511.3	µg/mL	+/-	14.6006	µg/mL	Gravimetric
	CAS #	75-09-2	(Lot SHBD4974V)			+/-	133.6432	µg/mL	Unstressed
	Purity	99%				+/-	133.7906	µg/mL	Stressed
9	Carbon disulfide			2,511.7	µg/mL	+/-	14.6035	µg/mL	Gravimetric
	CAS #	75-15-0	(Lot C30Y997)			+/-	133.6693	µg/mL	Unstressed
	Purity	98%				+/-	133.8167	µg/mL	Stressed
10	Acrylonitrile			25,017.1	µg/mL	+/-	145.4441	µg/mL	Gravimetric
	CAS #	107-13-1	(Lot 10172706)			+/-	1,331.3554	µg/mL	Unstressed
	Purity	99%				+/-	1,332.8236	µg/mL	Stressed
11	cis-1,2-Dichloroethene			2,503.9	µg/mL	+/-	14.5577	µg/mL	Gravimetric
	CAS #	156-59-2	(Lot MKBG8424V)			+/-	133.2507	µg/mL	Unstressed
	Purity	99%				+/-	133.3977	µg/mL	Stressed
12	n-Hexane (C6)			2,511.9	µg/mL	+/-	14.6043	µg/mL	Gravimetric
	CAS #	110-54-3	(Lot SHBF0293V)			+/-	133.6764	µg/mL	Unstressed
	Purity	99%				+/-	133.8239	µg/mL	Stressed
13	1,1-dichloroethene			2,521.3	µg/mL	+/-	14.6588	µg/mL	Gravimetric
	CAS #	75-35-4	(Lot SHBD6170V)			+/-	134.1754	µg/mL	Unstressed
	Purity	99%				+/-	134.3233	µg/mL	Stressed
14	2,2-Dichloropropane			2,500.0	µg/mL	+/-	14.5351	µg/mL	Gravimetric
	CAS #	594-20-7	(Lot BCBH9246V)			+/-	133.0434	µg/mL	Unstressed
	Purity	98%				+/-	133.1901	µg/mL	Stressed
15	trans-1,2-Dichloroethene			2,505.0	µg/mL	+/-	14.5643	µg/mL	Gravimetric
	CAS #	156-60-5	(Lot MKBH9850V)			+/-	133.3106	µg/mL	Unstressed
	Purity	99%				+/-	133.4576	µg/mL	Stressed
16	Isobutanol (2-Methyl-1-propanol)			62.553.8	µg/mL	+/-	363.6739	µg/mL	Gravimetric
	CAS #	78-83-1	(Lot SHBF2852V)			+/-	3,328.9705	µg/mL	Unstressed
	Purity	99%				+/-	3,332.6417	µg/mL	Stressed
17	Methyl-tert-butyl ether (MTBE)			2,504.6	µg/mL	+/-	14.5621	µg/mL	Gravimetric
	CAS #	1634-04-4	(Lot SHBF1193V)			+/-	133.2906	µg/mL	Unstressed
	Purity	99%				+/-	133.4376	µg/mL	Stressed
18	Bromochloromethane			2,505.1	µg/mL	+/-	14.5650	µg/mL	Gravimetric
	CAS #	74-97-5	(Lot 00004559)			+/-	133.3172	µg/mL	Unstressed
	Purity	99%				+/-	133.4642	µg/mL	Stressed
19	Tetrahydrofuran			5,000.7	µg/mL	+/-	29.0746	µg/mL	Gravimetric
	CAS #	109-99-9	(Lot SHBF2660V)			+/-	266.1270	µg/mL	Unstressed
	Purity	97%				+/-	266.4204	µg/mL	Stressed
20	1,1,1-trichloroethane			2,508.1	µg/mL	+/-	14.5825	µg/mL	Gravimetric
	CAS #	71-55-6	(Lot B14Z1114)			+/-	133.4769	µg/mL	Unstressed
	Purity	99%				+/-	133.6241	µg/mL	Stressed
21	Cyclohexane			2,504.0	µg/mL	+/-	14.5585	µg/mL	Gravimetric
	CAS #	110-82-7	(Lot SHBD7873V)			+/-	133.2574	µg/mL	Unstressed
	Purity	99%				+/-	133.4043	µg/mL	Stressed
22	1,1-Dichloropropene			2,502.4	µg/mL	+/-	14.5493	µg/mL	Gravimetric
	CAS #	563-58-6	(Lot PR09161302)			+/-	133.1738	µg/mL	Unstressed
	Purity	98%				+/-	133.3207	µg/mL	Stressed
23	carbon tetrachloride			2,505.3	µg/mL	+/-	14.5657	µg/mL	Gravimetric
	CAS #	56-23-5	(Lot SHBC1410V)			+/-	133.3239	µg/mL	Unstressed
	Purity	99%				+/-	133.4709	µg/mL	Stressed

24	n-Heptane (C7)		2,501.4	µg/mL	+/-	14.5432	µg/mL	Gravimetric
	CAS # 142-82-5	(Lot SHBF2321V)			+/-	133.1177	µg/mL	Unstressed
	Purity 99%				+/-	133.2645	µg/mL	Stressed
25	1,2-Dichloroethane		2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 107-06-2	(Lot SHBC6595V)			+/-	133.1310	µg/mL	Unstressed
	Purity 99%				+/-	133.2778	µg/mL	Stressed
26	Benzene		2,509.1	µg/mL	+/-	14.5883	µg/mL	Gravimetric
	CAS # 71-43-2	(Lot SHBD4617V)			+/-	133.5301	µg/mL	Unstressed
	Purity 99%				+/-	133.6774	µg/mL	Stressed
27	Trichloroethene		2,504.8	µg/mL	+/-	14.5628	µg/mL	Gravimetric
	CAS # 79-01-6	(Lot SHBF0943V)			+/-	133.2973	µg/mL	Unstressed
	Purity 99%				+/-	133.4443	µg/mL	Stressed
28	Methylcyclohexane		2,502.5	µg/mL	+/-	14.5498	µg/mL	Gravimetric
	CAS # 108-87-2	(Lot 50996APV)			+/-	133.1775	µg/mL	Unstressed
	Purity 99%				+/-	133.3244	µg/mL	Stressed
29	1,2-Dichloropropane		2,502.4	µg/mL	+/-	14.5490	µg/mL	Gravimetric
	CAS # 78-87-5	(Lot 01113D0V)			+/-	133.1709	µg/mL	Unstressed
	Purity 99%				+/-	133.3177	µg/mL	Stressed
30	bromodichloromethane		2,507.9	µg/mL	+/-	14.5814	µg/mL	Gravimetric
	CAS # 75-27-4	(Lot MKBL1617V)			+/-	133.4672	µg/mL	Unstressed
	Purity 98%				+/-	133.6144	µg/mL	Stressed
31	1,4-Dioxane		50,001.4	µg/mL	+/-	290.6971	µg/mL	Gravimetric
	CAS # 123-91-1	(Lot SHBF2002V)			+/-	2,660.9612	µg/mL	Unstressed
	Purity 99%				+/-	2,663.8957	µg/mL	Stressed
32	Dibromomethane		2,508.1	µg/mL	+/-	14.5825	µg/mL	Gravimetric
	CAS # 74-95-3	(Lot 10169264)			+/-	133.4769	µg/mL	Unstressed
	Purity 99%				+/-	133.6241	µg/mL	Stressed
33	cis-1,3-Dichloropropene		2,507.0	µg/mL	+/-	14.5759	µg/mL	Gravimetric
	CAS # 10061-01-5	(Lot 20936)			+/-	133.4170	µg/mL	Unstressed
	Purity 99%				+/-	133.5641	µg/mL	Stressed
34	Toluene		2,502.4	µg/mL	+/-	14.5490	µg/mL	Gravimetric
	CAS # 108-88-3	(Lot SHBF2730V)			+/-	133.1709	µg/mL	Unstressed
	Purity 99%				+/-	133.3177	µg/mL	Stressed
35	Ethyl methacrylate		2,500.9	µg/mL	+/-	14.5403	µg/mL	Gravimetric
	CAS # 97-63-2	(Lot 69796APV)			+/-	133.0911	µg/mL	Unstressed
	Purity 99%				+/-	133.2378	µg/mL	Stressed
36	trans-1,3-Dichloropropene		2,502.1	µg/mL	+/-	14.5476	µg/mL	Gravimetric
	CAS # 10061-02-6	(Lot C363110)			+/-	133.1576	µg/mL	Unstressed
	Purity 99%				+/-	133.3044	µg/mL	Stressed
37	1,1,2-Trichloroethane		2,507.5	µg/mL	+/-	14.5788	µg/mL	Gravimetric
	CAS # 79-00-5	(Lot FGB01)			+/-	133.4436	µg/mL	Unstressed
	Purity 99%				+/-	133.5908	µg/mL	Stressed
38	1,3-Dichloropropane		2,505.3	µg/mL	+/-	14.5657	µg/mL	Gravimetric
	CAS # 142-28-9	(Lot BCBG2162V)			+/-	133.3239	µg/mL	Unstressed
	Purity 99%				+/-	133.4709	µg/mL	Stressed
39	Tetrachloroethene		2,506.5	µg/mL	+/-	14.5730	µg/mL	Gravimetric
	CAS # 127-18-4	(Lot SHBD2073V)			+/-	133.3904	µg/mL	Unstressed
	Purity 99%				+/-	133.5375	µg/mL	Stressed

40	dibromochloromethane			2,503.2	µg/mL	+/-	14.5536	µg/mL	Gravimetric
	CAS # 124-48-1	(Lot MKBP0459V)				+/-	133.2129	µg/mL	Unstressed
	Purity 98%					+/-	133.3598	µg/mL	Stressed
41	1,2-Dibromoethane (EDB)			2,504.3	µg/mL	+/-	14.5599	µg/mL	Gravimetric
	CAS # 106-93-4	(Lot BCBH3877V)				+/-	133.2707	µg/mL	Unstressed
	Purity 99%					+/-	133.4176	µg/mL	Stressed
42	Chlorobenzene			2,510.8	µg/mL	+/-	14.5977	µg/mL	Gravimetric
	CAS # 108-90-7	(Lot SHBD3200V)				+/-	133.6166	µg/mL	Unstressed
	Purity 99%					+/-	133.7639	µg/mL	Stressed
43	1,1,2,2-Tetrachloroethane			2,502.9	µg/mL	+/-	14.5519	µg/mL	Gravimetric
	CAS # 79-34-5	(Lot CFA4D)				+/-	133.1975	µg/mL	Unstressed
	Purity 99%					+/-	133.3444	µg/mL	Stressed
44	Ethylbenzene			2,509.6	µg/mL	+/-	14.5912	µg/mL	Gravimetric
	CAS # 100-41-4	(Lot SHBC9001V)				+/-	133.5567	µg/mL	Unstressed
	Purity 99%					+/-	133.7040	µg/mL	Stressed
45	m-Xylene			1,252.6	µg/mL	+/-	7.2829	µg/mL	Gravimetric
	CAS # 108-38-3	(Lot SHBF1720V)				+/-	66.6619	µg/mL	Unstressed
	Purity 99%					+/-	66.7355	µg/mL	Stressed
46	o-Xylene			2,503.7	µg/mL	+/-	14.5565	µg/mL	Gravimetric
	CAS # 95-47-6	(Lot SHBC8668V)				+/-	133.2390	µg/mL	Unstressed
	Purity 98%					+/-	133.3859	µg/mL	Stressed
47	p-Xylene			1,253.3	µg/mL	+/-	7.2865	µg/mL	Gravimetric
	CAS # 106-42-3	(Lot SHBF3427V)				+/-	66.6952	µg/mL	Unstressed
	Purity 99%					+/-	66.7688	µg/mL	Stressed
48	Styrene			2,503.5	µg/mL	+/-	14.5556	µg/mL	Gravimetric
	CAS # 100-42-5	(Lot 10182421)				+/-	133.2307	µg/mL	Unstressed
	Purity 99%					+/-	133.3777	µg/mL	Stressed
49	Isopropylbenzene (cumene)			2,502.5	µg/mL	+/-	14.5498	µg/mL	Gravimetric
	CAS # 98-82-8	(Lot 10169400)				+/-	133.1775	µg/mL	Unstressed
	Purity 99%					+/-	133.3244	µg/mL	Stressed
50	bromoform			2,507.8	µg/mL	+/-	14.5803	µg/mL	Gravimetric
	CAS # 75-25-2	(Lot SHBC3410V)				+/-	133.4569	µg/mL	Unstressed
	Purity 99%					+/-	133.6041	µg/mL	Stressed
51	1,1,1,2-Tetrachloroethane			2,510.3	µg/mL	+/-	14.5948	µg/mL	Gravimetric
	CAS # 630-20-6	(Lot MKBS3769V)				+/-	133.5900	µg/mL	Unstressed
	Purity 99%					+/-	133.7373	µg/mL	Stressed
52	chloroform			2,501.3	µg/mL	+/-	14.5425	µg/mL	Gravimetric
	CAS # 67-66-3	(Lot SHBB7498V)				+/-	133.1110	µg/mL	Unstressed
	Purity 99%					+/-	133.2578	µg/mL	Stressed
53	1,2,3-Trichloropropane			2,502.5	µg/mL	+/-	14.5498	µg/mL	Gravimetric
	CAS # 96-18-4	(Lot 1428739V)				+/-	133.1775	µg/mL	Unstressed
	Purity 99%					+/-	133.3244	µg/mL	Stressed
54	trans-1,4-dichloro-2-butene			2,499.5	µg/mL	+/-	14.5322	µg/mL	Gravimetric
	CAS # 110-57-6	(Lot MKBP5371V)				+/-	133.0168	µg/mL	Unstressed
	Purity 96%					+/-	133.1635	µg/mL	Stressed
55	n-Propylbenzene			2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 103-65-1	(Lot MKBQ8049V)				+/-	133.0578	µg/mL	Unstressed
	Purity 99%					+/-	133.2045	µg/mL	Stressed

56	Bromobenzene			2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 108-86-1	(Lot MKBD4032V)				+/-	133.1044	µg/mL	Unstressed
	Purity 99%					+/-	133.2511	µg/mL	Stressed
57	1,2,4-Trimethylbenzene			2,501.6	µg/mL	+/-	14.5444	µg/mL	Gravimetric
	CAS # 95-63-6	(Lot MKBJ1732V)				+/-	133.1282	µg/mL	Unstressed
	Purity 98%					+/-	133.2750	µg/mL	Stressed
58	2-Chlorotoluene			2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 95-49-8	(Lot MKBH8892V)				+/-	133.0578	µg/mL	Unstressed
	Purity 99%					+/-	133.2045	µg/mL	Stressed
59	4-Chlorotoluene			2,506.4	µg/mL	+/-	14.5723	µg/mL	Gravimetric
	CAS # 106-43-4	(Lot MKBB7205V)				+/-	133.3837	µg/mL	Unstressed
	Purity 99%					+/-	133.5308	µg/mL	Stressed
60	tert-Butylbenzene			2,500.1	µg/mL	+/-	14.5359	µg/mL	Gravimetric
	CAS # 98-06-6	(Lot S52237V)				+/-	133.0511	µg/mL	Unstressed
	Purity 99%					+/-	133.1979	µg/mL	Stressed
61	1,3,5-Trimethylbenzene			2,503.1	µg/mL	+/-	14.5534	µg/mL	Gravimetric
	CAS # 108-67-8	(Lot BCBJ3305V)				+/-	133.2108	µg/mL	Unstressed
	Purity 99%					+/-	133.3577	µg/mL	Stressed
62	sec-Butylbenzene			2,504.0	µg/mL	+/-	14.5585	µg/mL	Gravimetric
	CAS # 135-98-8	(Lot MKBK3151V)				+/-	133.2574	µg/mL	Unstressed
	Purity 99%					+/-	133.4043	µg/mL	Stressed
63	p-Isopropyltoluene (p-Cymene)			2,501.1	µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 99-87-6	(Lot MKBK4439V)				+/-	133.1044	µg/mL	Unstressed
	Purity 99%					+/-	133.2511	µg/mL	Stressed
64	1,3-Dichlorobenzene			2,506.1	µg/mL	+/-	14.5708	µg/mL	Gravimetric
	CAS # 541-73-1	(Lot BCBC1891V)				+/-	133.3704	µg/mL	Unstressed
	Purity 99%					+/-	133.5175	µg/mL	Stressed
65	1,4-Dichlorobenzene			2,507.0	µg/mL	+/-	14.5759	µg/mL	Gravimetric
	CAS # 106-46-7	(Lot MKBL3891V)				+/-	133.4170	µg/mL	Unstressed
	Purity 99%					+/-	133.5641	µg/mL	Stressed
66	n-Butylbenzene			2,502.6	µg/mL	+/-	14.5505	µg/mL	Gravimetric
	CAS # 104-51-8	(Lot 09418JJV)				+/-	133.1842	µg/mL	Unstressed
	Purity 99%					+/-	133.3311	µg/mL	Stressed
67	1,2-Dichlorobenzene			2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 95-50-1	(Lot 68996CMV)				+/-	133.1310	µg/mL	Unstressed
	Purity 99%					+/-	133.2778	µg/mL	Stressed
68	1,2-Dibromo-3-chloropropane			2,505.9	µg/mL	+/-	14.5694	µg/mL	Gravimetric
	CAS # 96-12-8	(Lot FBL01)				+/-	133.3571	µg/mL	Unstressed
	Purity 99%					+/-	133.5042	µg/mL	Stressed
69	1,2,4-Trichlorobenzene			2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS # 120-82-1	(Lot 26896BM)				+/-	133.1243	µg/mL	Unstressed
	Purity 99%					+/-	133.2711	µg/mL	Stressed
70	Hexachlorobutadiene			2,501.6	µg/mL	+/-	14.5444	µg/mL	Gravimetric
	CAS # 87-68-3	(Lot K22W009)				+/-	133.1282	µg/mL	Unstressed
	Purity 98%					+/-	133.2750	µg/mL	Stressed
71	Naphthalene			2,502.6	µg/mL	+/-	14.5505	µg/mL	Gravimetric
	CAS # 91-20-3	(Lot MKBH4351V)				+/-	133.1842	µg/mL	Unstressed
	Purity 99%					+/-	133.3311	µg/mL	Stressed

72	1,2,3-Trichlorobenzene		2.503.4	µg/mL	+/-	14.5548	µg/mL	Gravimetric
	CAS # 87-61-6	(Lot 12912PFV)			+/-	133.2241	µg/mL	Unstressed
	Purity 99%				+/-	133.3710	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

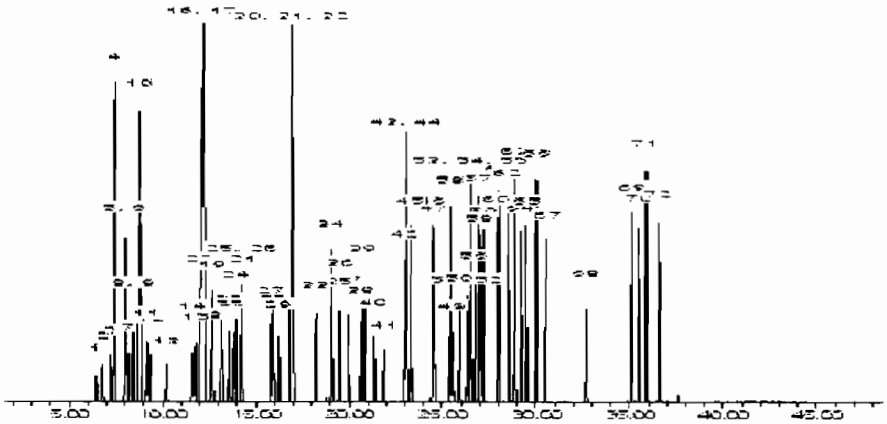
Carrier Gas:
helium-constant pressure 30 psi

Temp. Program:
40°C (hold 6 min.) to 240°C
@ 6°C/min. (hold 10 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Kendra Swope - Mix Technician

Date Mixed: 07-Jan-2015 **Balance:** 1125113331

Tyler Brown - QA Analyst

Date Passed: 14-Jan-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260MegaMix_00042

RESTEK® CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited Reference Material Producer
Certificate #3232.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited Testing Laboratory
Certificate #3232.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569720 **Lot No.:** A0118177

Description : 8260 List 1 / Std #1 MegaMix (2015)

8260 List 1 / Std #1 MegaMix (2015) 1250-62500 µg/mL P&T Methanol, 1 mL/ampul

REC'D 7-14-16
JDH
960530-532

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Diethyl ether (ethyl ether) **CAS #** 60-29-7 (Lot SHBG1462V) **Purity** 99%	2,503.5 µg/mL	+/- 14.5556 µg/mL +/- 151.0472 µg/mL +/- 151.4059 µg/mL	Gravimetric Unstressed Stressed
2	1,1,2-Trichlorotrifluoroethane (CFC-113) **CAS #** 76-13-1 (Lot 00004562) **Purity** 99%	2,500.0 µg/mL	+/- 14.5352 µg/mL +/- 150.8361 µg/mL +/- 151.1942 µg/mL	Gravimetric Unstressed Stressed
3	1,1-Dichloroethane **CAS #** 75-34-3 (Lot 00008621) **Purity** 99%	2,500.1 µg/mL	+/- 14.5359 µg/mL +/- 150.8436 µg/mL +/- 151.2017 µg/mL	Gravimetric Unstressed Stressed
4	tert-Butanol (TBA) **CAS #** 75-65-0 (Lot SHBD0362V) **Purity** 99%	25,033.4 µg/mL	+/- 145.5386 µg/mL +/- 1,510.3737 µg/mL +/- 1,513.9596 µg/mL	Gravimetric Unstressed Stressed
5	Iodomethane (methyl iodide) **CAS #** 74-88-4 (Lot SHBF2149V) **Purity** 98%	2,502.9 µg/mL	+/- 14.5522 µg/mL +/- 151.0123 µg/mL +/- 151.3708 µg/mL	Gravimetric Unstressed Stressed
6	Methyl acetate **CAS #** 79-20-9 (Lot SHBD7134V) **Purity** 98%	12,508.6 µg/mL	+/- 72.7223 µg/mL +/- 754.6987 µg/mL +/- 756.4905 µg/mL	Gravimetric Unstressed Stressed
7	Allyl chloride (3-chloropropene) **CAS #** 107-05-1 (Lot SHBF8133V) **Purity** 99%	2,500.0 µg/mL	+/- 19.2743 µg/mL +/- 151.3663 µg/mL +/- 151.7231 µg/mL	Gravimetric Unstressed Stressed

8	Methylene chloride (dichloromethane)			2,521.4	µg/mL	+/-	14.6595	µg/mL	Gravimetric
	CAS #	75-09-2	(Lot SHBF9870V)			+/-	152.1257	µg/mL	Unstressed
	Purity	99%				+/-	152.4869	µg/mL	Stressed
9	Carbon disulfide			2,516.0	µg/mL	+/-	14.6282	µg/mL	Gravimetric
	CAS #	75-15-0	(Lot S20A856)			+/-	151.8014	µg/mL	Unstressed
	Purity	99%				+/-	152.1618	µg/mL	Stressed
10	Acrylonitrile			25,001.3	µg/mL	+/-	145.3518	µg/mL	Gravimetric
	CAS #	107-13-1	(Lot J08Z057)			+/-	1,508.4355	µg/mL	Unstressed
	Purity	99%				+/-	1,512.0167	µg/mL	Stressed
11	cis-1,2-Dichloroethene			2,507.8	µg/mL	+/-	14.5807	µg/mL	Gravimetric
	CAS #	156-59-2	(Lot MKBV2831V)			+/-	151.3079	µg/mL	Unstressed
	Purity	98%				+/-	151.6671	µg/mL	Stressed
12	n-Hexane (C6)			2,512.4	µg/mL	+/-	14.6072	µg/mL	Gravimetric
	CAS #	110-54-3	(Lot SHBF7674V)			+/-	151.5827	µg/mL	Unstressed
	Purity	99%				+/-	151.9426	µg/mL	Stressed
13	1,1-dichloroethene			2,508.1	µg/mL	+/-	14.5825	µg/mL	Gravimetric
	CAS #	75-35-4	(Lot 73896KMV)			+/-	151.3263	µg/mL	Unstressed
	Purity	99%				+/-	151.6856	µg/mL	Stressed
14	2,2-Dichloropropane			2,507.6	µg/mL	+/-	14.5795	µg/mL	Gravimetric
	CAS #	594-20-7	(Lot BCBL9720V)			+/-	151.2961	µg/mL	Unstressed
	Purity	99%				+/-	151.6553	µg/mL	Stressed
15	trans-1,2-Dichloroethene			2,509.8	µg/mL	+/-	14.5919	µg/mL	Gravimetric
	CAS #	156-60-5	(Lot MKBH9850V)			+/-	151.4243	µg/mL	Unstressed
	Purity	99%				+/-	151.7838	µg/mL	Stressed
16	Isobutanol (2-Methyl-1-propanol)			62,815.4	µg/mL	+/-	365.1949	µg/mL	Gravimetric
	CAS #	78-83-1	(Lot SHBD1647V)			+/-	3,789.9281	µg/mL	Unstressed
	Purity	99%				+/-	3,798.9260	µg/mL	Stressed
17	Methyl-tert-butyl ether (MTBE)			2,510.0	µg/mL	+/-	14.5934	µg/mL	Gravimetric
	CAS #	1634-04-4	(Lot MKBV2134V)			+/-	151.4394	µg/mL	Unstressed
	Purity	99%				+/-	151.7990	µg/mL	Stressed
18	Bromochloromethane			2,507.0	µg/mL	+/-	14.5759	µg/mL	Gravimetric
	CAS #	74-97-5	(Lot 00004559)			+/-	151.2584	µg/mL	Unstressed
	Purity	99%				+/-	151.6175	µg/mL	Stressed
19	Tetrahydrofuran			5,025.3	µg/mL	+/-	29.2172	µg/mL	Gravimetric
	CAS #	109-99-9	(Lot SHBG2910V)			+/-	303.1956	µg/mL	Unstressed
	Purity	99%				+/-	303.9154	µg/mL	Stressed
20	1,1,1-trichloroethane			2,508.9	µg/mL	+/-	14.5868	µg/mL	Gravimetric
	CAS #	71-55-6	(Lot B15MW0705)			+/-	151.3715	µg/mL	Unstressed
	Purity	99%				+/-	151.7309	µg/mL	Stressed
21	Cyclohexane			2,503.4	µg/mL	+/-	14.5548	µg/mL	Gravimetric
	CAS #	110-82-7	(Lot MKBV3194V)			+/-	151.0397	µg/mL	Unstressed
	Purity	99%				+/-	151.3983	µg/mL	Stressed
22	1,1-Dichloropropene			2,507.4	µg/mL	+/-	14.5781	µg/mL	Gravimetric
	CAS #	563-58-6	(Lot PR09161302)			+/-	151.2810	µg/mL	Unstressed
	Purity	99%				+/-	151.6402	µg/mL	Stressed
23	carbon tetrachloride			2,505.9	µg/mL	+/-	14.5694	µg/mL	Gravimetric
	CAS #	56-23-5	(Lot SHBG1763V)			+/-	151.1905	µg/mL	Unstressed
	Purity	99%				+/-	151.5495	µg/mL	Stressed

24	n-Heptane (C7)			2.510.8	µg/mL	+/-	14.5977	µg/mL	Gravimetric
	CAS #	142-82-5	(Lot MKBV6176V)			+/-	151.4847	µg/mL	Unstressed
	Purity	99%				+/-	151.8443	µg/mL	Stressed
25	1,2-Dichloroethane			2.511.1	µg/mL	+/-	14.5999	µg/mL	Gravimetric
	CAS #	107-06-2	(Lot MKBV4565V)			+/-	151.5073	µg/mL	Unstressed
	Purity	99%				+/-	151.8670	µg/mL	Stressed
26	Benzene			2.502.9	µg/mL	+/-	14.5519	µg/mL	Gravimetric
	CAS #	71-43-2	(Lot SHBG1169V)			+/-	151.0095	µg/mL	Unstressed
	Purity	99%				+/-	151.3681	µg/mL	Stressed
27	Trichloroethene			2.500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS #	79-01-6	(Lot SHBF0943V)			+/-	150.8587	µg/mL	Unstressed
	Purity	99%				+/-	151.2169	µg/mL	Stressed
28	Methylcyclohexane			2.503.9	µg/mL	+/-	14.5577	µg/mL	Gravimetric
	CAS #	108-87-2	(Lot 50996APV)			+/-	151.0699	µg/mL	Unstressed
	Purity	99%				+/-	151.4285	µg/mL	Stressed
29	1,2-Dichloropropane			2.523.5	µg/mL	+/-	14.6718	µg/mL	Gravimetric
	CAS #	78-87-5	(Lot 01113D0V)			+/-	152.2539	µg/mL	Unstressed
	Purity	99%				+/-	152.6154	µg/mL	Stressed
30	bromodichloromethane			2.509.0	µg/mL	+/-	14.5878	µg/mL	Gravimetric
	CAS #	75-27-4	(Lot MKBL1617V)			+/-	151.3818	µg/mL	Unstressed
	Purity	98%				+/-	151.7412	µg/mL	Stressed
31	1,4-Dioxane			50.018.1	µg/mL	+/-	290.7945	µg/mL	Gravimetric
	CAS #	123-91-1	(Lot SHBG6312V)			+/-	3,017.8137	µg/mL	Unstressed
	Purity	99%				+/-	3,024.9785	µg/mL	Stressed
32	Dibromomethane			2.511.4	µg/mL	+/-	14.6013	µg/mL	Gravimetric
	CAS #	74-95-3	(Lot 10183283)			+/-	151.5222	µg/mL	Unstressed
	Purity	98%				+/-	151.8820	µg/mL	Stressed
33	cis-1,3-Dichloropropene			2.506.0	µg/mL	+/-	14.5701	µg/mL	Gravimetric
	CAS #	10061-01-5	(Lot 22622)			+/-	151.1981	µg/mL	Unstressed
	Purity	99%				+/-	151.5571	µg/mL	Stressed
34	Toluene			2.515.5	µg/mL	+/-	14.6253	µg/mL	Gravimetric
	CAS #	108-88-3	(Lot MKBV5601V)			+/-	151.7713	µg/mL	Unstressed
	Purity	99%				+/-	152.1316	µg/mL	Stressed
35	Ethyl methacrylate			2.503.1	µg/mL	+/-	14.5534	µg/mL	Gravimetric
	CAS #	97-63-2	(Lot SHBD9190V)			+/-	151.0246	µg/mL	Unstressed
	Purity	99%				+/-	151.3832	µg/mL	Stressed
36	trans-1,3-Dichloropropene			2.508.0	µg/mL	+/-	14.5817	µg/mL	Gravimetric
	CAS #	10061-02-6	(Lot C584177)			+/-	151.3188	µg/mL	Unstressed
	Purity	99%				+/-	151.6780	µg/mL	Stressed
37	1,1,2-Trichloroethane			2.508.4	µg/mL	+/-	14.5839	µg/mL	Gravimetric
	CAS #	79-00-5	(Lot FGB011)			+/-	151.3414	µg/mL	Unstressed
	Purity	99%				+/-	151.7007	µg/mL	Stressed
38	1,3-Dichloropropane			2.522.8	µg/mL	+/-	14.6675	µg/mL	Gravimetric
	CAS #	142-28-9	(Lot BCBG2162V)			+/-	152.2087	µg/mL	Unstressed
	Purity	99%				+/-	152.5701	µg/mL	Stressed
39	Tetrachloroethene			2.518.9	µg/mL	+/-	14.6450	µg/mL	Gravimetric
	CAS #	127-18-4	(Lot SHBD9374V)			+/-	151.9749	µg/mL	Unstressed
	Purity	99%				+/-	152.3357	µg/mL	Stressed

40	dibromochloromethane **CAS #** 124-48-1 **Purity** 98%	(Lot MKBQ6577V)	2,505.4	µg/mL	+/- +/- +/-	14.5664 151.1601 151.5190	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
41	1,2-Dibromoethane (EDB) **CAS #** 106-93-4 **Purity** 99%	(Lot BCBH3877V)	2,505.1	µg/mL	+/- +/- +/-	14.5650 151.1453 151.5041	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
42	Chlorobenzene **CAS #** 108-90-7 **Purity** 99%	(Lot SHBF0505V)	2,505.6	µg/mL	+/- +/- +/-	14.5679 151.1755 151.5344	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
43	1,1,2,2-Tetrachloroethane **CAS #** 79-34-5 **Purity** 99%	(Lot CFA4D)	2,505.1	µg/mL	+/- +/- +/-	14.5650 151.1453 151.5041	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
44	Ethylbenzene **CAS #** 100-41-4 **Purity** 99%	(Lot SHBG5920V)	2,506.1	µg/mL	+/- +/- +/-	14.5708 151.2056 151.5646	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
45	m-Xylene **CAS #** 108-38-3 **Purity** 99%	(Lot SHBF8095V)	1,254.4	µg/mL	+/- +/- +/-	7.2930 75.6820 75.8617	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
46	p-Xylene **CAS #** 106-42-3 **Purity** 99%	(Lot SHBF3427V)	1,250.0	µg/mL	+/- +/- +/-	7.2676 75.4180 75.5971	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
47	o-Xylene **CAS #** 95-47-6 **Purity** 99%	(Lot SHBF7003V)	2,506.3	µg/mL	+/- +/- +/-	14.5716 151.2132 151.5722	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
48	Styrene **CAS #** 100-42-5 **Purity** 99%	(Lot MKBS7097V)	2,503.9	µg/mL	+/- +/- +/-	14.5577 151.0699 151.4285	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
49	Isopropylbenzene (cumene) **CAS #** 98-82-8 **Purity** 99%	(Lot 10185056)	2,509.4	µg/mL	+/- +/- +/-	14.5897 151.4017 151.7612	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
50	bromoform **CAS #** 75-25-2 **Purity** 99%	(Lot SHBC3410V)	2,503.3	µg/mL	+/- +/- +/-	14.5541 151.0322 151.3907	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
51	1,1,1,2-Tetrachloroethane **CAS #** 630-20-6 **Purity** 99%	(Lot MKBS3769V)	2,505.0	µg/mL	+/- +/- +/-	14.5643 151.1378 151.4966	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
52	chloroform **CAS #** 67-66-3 **Purity** 99%	(Lot MKBV2089V)	2,507.8	µg/mL	+/- +/- +/-	14.5803 151.3037 151.6629	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
53	1,2,3-Trichloropropane **CAS #** 96-18-4 **Purity** 99%	(Lot BCBH8722V)	2,504.8	µg/mL	+/- +/- +/-	14.5628 151.1227 151.4815	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
54	trans-1,4-dichloro-2-butene **CAS #** 110-57-6 **Purity** 95%	(Lot MKBP6041V)	2,499.7	µg/mL	+/- +/- +/-	14.5334 150.8172 151.1753	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
55	n-Propylbenzene **CAS #** 103-65-1 **Purity** 99%	(Lot MKBJ0332V)	2,507.5	µg/mL	+/- +/- +/-	14.5788 151.2886 151.6478	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

56	Bromobenzene		2.515.1	µg/mL	+/-	14.6232	µg/mL	Gravimetric
	CAS # 108-86-1	(Lot MKBD4032V)			+/-	151.7486	µg/mL	Unstressed
	Purity 99%				+/-	152.1089	µg/mL	Stressed
57	1.2.4-Trimethylbenzene		2.503.7	µg/mL	+/-	14.5565	µg/mL	Gravimetric
	CAS # 95-63-6	(Lot MKBJ6229V)			+/-	151.0566	µg/mL	Unstressed
	Purity 98%				+/-	151.4152	µg/mL	Stressed
58	2-Chlorotoluene		2.502.1	µg/mL	+/-	14.5476	µg/mL	Gravimetric
	CAS # 95-49-8	(Lot MKBH8892V)			+/-	150.9643	µg/mL	Unstressed
	Purity 99%				+/-	151.3227	µg/mL	Stressed
59	4-Chlorotoluene		2.512.6	µg/mL	+/-	14.6086	µg/mL	Gravimetric
	CAS # 106-43-4	(Lot MKBL7753V)			+/-	151.5978	µg/mL	Unstressed
	Purity 99%				+/-	151.9577	µg/mL	Stressed
60	tert-Butylbenzene		2.507.8	µg/mL	+/-	14.5803	µg/mL	Gravimetric
	CAS # 98-06-6	(Lot S52237V)			+/-	151.3037	µg/mL	Unstressed
	Purity 99%				+/-	151.6629	µg/mL	Stressed
61	1.3.5-Trimethylbenzene		2.502.5	µg/mL	+/-	14.5498	µg/mL	Gravimetric
	CAS # 108-67-8	(Lot BCBJ6245V)			+/-	150.9869	µg/mL	Unstressed
	Purity 99%				+/-	151.3454	µg/mL	Stressed
62	sec-Butylbenzene		2.521.8	µg/mL	+/-	14.6617	µg/mL	Gravimetric
	CAS # 135-98-8	(Lot MKBK3151V)			+/-	152.1484	µg/mL	Unstressed
	Purity 99%				+/-	152.5096	µg/mL	Stressed
63	p-Isopropyltoluene (p-Cymene)		2.502.6	µg/mL	+/-	14.5505	µg/mL	Gravimetric
	CAS # 99-87-6	(Lot MKBK4439V)			+/-	150.9945	µg/mL	Unstressed
	Purity 99%				+/-	151.3529	µg/mL	Stressed
64	1.3-Dichlorobenzene		2.505.8	µg/mL	+/-	14.5686	µg/mL	Gravimetric
	CAS # 541-73-1	(Lot BCBM5751V)			+/-	151.1830	µg/mL	Unstressed
	Purity 99%				+/-	151.5419	µg/mL	Stressed
65	1.4-Dichlorobenzene		2.504.1	µg/mL	+/-	14.5592	µg/mL	Gravimetric
	CAS # 106-46-7	(Lot MKBS1350V)			+/-	151.0850	µg/mL	Unstressed
	Purity 99%				+/-	151.4437	µg/mL	Stressed
66	n-Butylbenzene		2.503.3	µg/mL	+/-	14.5541	µg/mL	Gravimetric
	CAS # 104-51-8	(Lot 09418JJV)			+/-	151.0322	µg/mL	Unstressed
	Purity 99%				+/-	151.3907	µg/mL	Stressed
67	1.2-Dichlorobenzene		2.505.5	µg/mL	+/-	14.5672	µg/mL	Gravimetric
	CAS # 95-50-1	(Lot SHBD7331V)			+/-	151.1679	µg/mL	Unstressed
	Purity 99%				+/-	151.5268	µg/mL	Stressed
68	1.2-Dibromo-3-chloropropane		2.508.6	µg/mL	+/-	14.5854	µg/mL	Gravimetric
	CAS # 96-12-8	(Lot FBL01-JM)			+/-	151.3565	µg/mL	Unstressed
	Purity 99%				+/-	151.7158	µg/mL	Stressed
69	1.2.4-Trichlorobenzene		2.518.6	µg/mL	+/-	14.6435	µg/mL	Gravimetric
	CAS # 120-82-1	(Lot 26896BM)			+/-	151.9598	µg/mL	Unstressed
	Purity 99%				+/-	152.3206	µg/mL	Stressed
70	Hexachlorobutadiene		2.499.9	µg/mL	+/-	14.5344	µg/mL	Gravimetric
	CAS # 87-68-3	(Lot J31X013)			+/-	150.8275	µg/mL	Unstressed
	Purity 98%				+/-	151.1856	µg/mL	Stressed
71	Naphthalene		2.514.9	µg/mL	+/-	14.6217	µg/mL	Gravimetric
	CAS # 91-20-3	(Lot MKBH4351V)			+/-	151.7336	µg/mL	Unstressed
	Purity 99%				+/-	152.0938	µg/mL	Stressed

72	1,2,3-Trichlorobenzene		2,502.0	µg/mL	+/-	14.5468	µg/mL	Gravimetric
	CAS # 87-61-6	(Lot MKBS4859V)			+/-	150.9567	µg/mL	Unstressed
	Purity 99%				+/-	151.3151	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4um
Rtx-502.2 (cat.#10516)

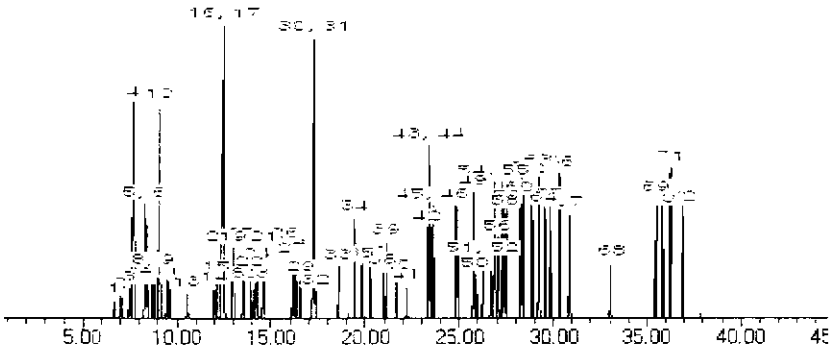
Carrier Gas:
helium-constant pressure 30 psi

Temp. Program:
40°C (hold 6 min.) to 240°C
@ 6°C/min. (hold 10 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Date Mixed: 21-Mar-2016 **Balance:** 1125113331

Jodi E. Breon - QA Analyst

Date Passed: 28-Mar-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260MegaMixSS_00040

RESTEK®
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

JDH 4-18-16

S

REC'D 4-16-16 JDH

900258 — 260

Catalog No. : 569720.sec **Lot No.:** A0108163

Description : 8260 List 1 / Std #1 MegaMix (2015)

8260 List 1 / Std #1 MegaMix (2015) 1250-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2017 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Diethyl ether (ethyl ether)	2,501.1 µg/mL	+/- 14.5418	µg/mL	Gravimetric
	CAS # 60-29-7.SEC (Lot F23X068)		+/- 133.1044	µg/mL	Unstressed
	Purity 99%		+/- 133.2511	µg/mL	Stressed
2	1,1,2-Trichlorotrifluoroethane (CFC-113)	2,501.1 µg/mL	+/- 14.5418	µg/mL	Gravimetric
	CAS # 76-13-1.SEC (Lot 18342)		+/- 133.1044	µg/mL	Unstressed
	Purity 99%		+/- 133.2511	µg/mL	Stressed
3	1,1-Dichloroethene	2,502.8 µg/mL	+/- 14.5512	µg/mL	Gravimetric
	CAS # 75-35-4.SEC (Lot 903000)		+/- 133.1908	µg/mL	Unstressed
	Purity 99%		+/- 133.3377	µg/mL	Stressed
4	tert-Butanol (TBA)	25,000.5 µg/mL	+/- 145.3477	µg/mL	Gravimetric
	CAS # 75-65-0.SEC (Lot XYXDO)		+/- 1,330.4725	µg/mL	Unstressed
	Purity 98%		+/- 1,331.9397	µg/mL	Stressed
5	Iodomethane (methyl iodide)	2,500.5 µg/mL	+/- 14.5383	µg/mL	Gravimetric
	CAS # 74-88-4.SEC (Lot A13Y016)		+/- 133.0732	µg/mL	Unstressed
	Purity 97%		+/- 133.2199	µg/mL	Stressed
6	Methyl acetate	12,500.6 µg/mL	+/- 72.6759	µg/mL	Gravimetric
	CAS # 79-20-9.SEC (Lot YDGVD)		+/- 665.2553	µg/mL	Unstressed
	Purity 99%		+/- 665.9889	µg/mL	Stressed
7	Allyl chloride (3-chloropropene)	2,501.3 µg/mL	+/- 14.5425	µg/mL	Gravimetric
	CAS # 107-05-1.SEC (Lot 5MNOA-DQ)		+/- 133.1110	µg/mL	Unstressed
	Purity 99%		+/- 133.2578	µg/mL	Stressed

8	Methylene chloride (dichloromethane)			2,501.4	µg/mL	+/-	14.5432	µg/mL	Gravimetric
	CAS #	75-09-2.SEC	(Lot FGM02)			+/-	133.1177	µg/mL	Unstressed
	Purity	99%				+/-	133.2645	µg/mL	Stressed
9	Carbon disulfide			2,501.2	µg/mL	+/-	14.5422	µg/mL	Gravimetric
	CAS #	75-15-0.SEC	(Lot MKBL1376V)			+/-	133.1086	µg/mL	Unstressed
	Purity	98%				+/-	133.2554	µg/mL	Stressed
10	Acrylonitrile			25,002.1	µg/mL	+/-	145.3569	µg/mL	Gravimetric
	CAS #	107-13-1.SEC	(Lot CCFKL)			+/-	1,330.5571	µg/mL	Unstressed
	Purity	99%				+/-	1,332.0244	µg/mL	Stressed
11	cis-1,2-Dichloroethene			2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS #	156-59-2.SEC	(Lot HGC01-BLKT)			+/-	133.0578	µg/mL	Unstressed
	Purity	99%				+/-	133.2045	µg/mL	Stressed
12	n-Hexane (C6)			2,500.1	µg/mL	+/-	14.5358	µg/mL	Gravimetric
	CAS #	110-54-3.SEC	(Lot K24W001)			+/-	133.0499	µg/mL	Unstressed
	Purity	98%				+/-	133.1967	µg/mL	Stressed
13	1,1-Dichloroethane			2,503.0	µg/mL	+/-	14.5527	µg/mL	Gravimetric
	CAS #	75-34-3.SEC	(Lot 2663100)			+/-	133.2041	µg/mL	Unstressed
	Purity	99%				+/-	133.3510	µg/mL	Stressed
14	2,2-Dichloropropane			2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS #	594-20-7.SEC	(Lot GI01)			+/-	133.0844	µg/mL	Unstressed
	Purity	99%				+/-	133.2312	µg/mL	Stressed
15	trans-1,2-Dichloroethene			2,500.2	µg/mL	+/-	14.5362	µg/mL	Gravimetric
	CAS #	156-60-5.SEC	(Lot TS5UB)			+/-	133.0538	µg/mL	Unstressed
	Purity	97%				+/-	133.2005	µg/mL	Stressed
16	Isobutanol (2-Methyl-1-propanol)			62,501.3	µg/mL	+/-	363.3687	µg/mL	Gravimetric
	CAS #	78-83-1.SEC	(Lot PH2XK)			+/-	3,326.1766	µg/mL	Unstressed
	Purity	99%				+/-	3,329.8447	µg/mL	Stressed
17	Methyl-tert-butyl ether (MTBE)			2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS #	1634-04-4.SEC	(Lot ZAQTA-MS)			+/-	133.0711	µg/mL	Unstressed
	Purity	99%				+/-	133.2178	µg/mL	Stressed
18	Bromochloromethane			2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS #	74-97-5.SEC	(Lot 345600)			+/-	133.0777	µg/mL	Unstressed
	Purity	99%				+/-	133.2245	µg/mL	Stressed
19	Tetrahydrofuran			5,002.3	µg/mL	+/-	29.0835	µg/mL	Gravimetric
	CAS #	109-99-9.SEC	(Lot XWFLA)			+/-	266.2087	µg/mL	Unstressed
	Purity	99%				+/-	266.5023	µg/mL	Stressed
20	1,1,1-Trichloroethane			2,501.9	µg/mL	+/-	14.5461	µg/mL	Gravimetric
	CAS #	71-55-6.SEC	(Lot 1103200)			+/-	133.1443	µg/mL	Unstressed
	Purity	99%				+/-	133.2911	µg/mL	Stressed
21	Cyclohexane			2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS #	110-82-7.SEC	(Lot YADRA)			+/-	133.1243	µg/mL	Unstressed
	Purity	99%				+/-	133.2711	µg/mL	Stressed
22	1,1-Dichloropropene			2,501.1	µg/mL	+/-	14.5419	µg/mL	Gravimetric
	CAS #	563-58-6.SEC	(Lot 2028500)			+/-	133.1054	µg/mL	Unstressed
	Purity	97%				+/-	133.2522	µg/mL	Stressed
23	Carbon tetrachloride			2,501.9	µg/mL	+/-	14.5465	µg/mL	Gravimetric
	CAS #	56-23-5.SEC	(Lot 11466)			+/-	133.1477	µg/mL	Unstressed
	Purity	98%				+/-	133.2946	µg/mL	Stressed

24	n-Heptane (C7)			2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS #	142-82-5.SEC	(Lot OGM01)			+/-	133.0644	µg/mL	Unstressed
	Purity	99%				+/-	133.2112	µg/mL	Stressed
25	1,2-Dichloroethane			2,501.9	µg/mL	+/-	14.5461	µg/mL	Gravimetric
	CAS #	107-06-2.SEC	(Lot FO6PK)			+/-	133.1443	µg/mL	Unstressed
	Purity	99%				+/-	133.2911	µg/mL	Stressed
26	Benzene			2,500.9	µg/mL	+/-	14.5403	µg/mL	Gravimetric
	CAS #	71-43-2.SEC	(Lot B28Y008)			+/-	133.0911	µg/mL	Unstressed
	Purity	99%				+/-	133.2378	µg/mL	Stressed
27	Trichloroethene			2,500.6	µg/mL	+/-	14.5387	µg/mL	Gravimetric
	CAS #	79-01-6.SEC	(Lot H04X050)			+/-	133.0760	µg/mL	Unstressed
	Purity	98%				+/-	133.2228	µg/mL	Stressed
28	Methylcyclohexane			2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS #	108-87-2.SEC	(Lot 24MSD-CD)			+/-	133.0711	µg/mL	Unstressed
	Purity	99%				+/-	133.2178	µg/mL	Stressed
29	1,2-Dichloropropane			2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS #	78-87-5.SEC	(Lot OGG01)			+/-	133.0445	µg/mL	Unstressed
	Purity	99%				+/-	133.1912	µg/mL	Stressed
30	Bromodichloromethane			2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS #	75-27-4.SEC	(Lot 10171168)			+/-	133.1243	µg/mL	Unstressed
	Purity	99%				+/-	133.2711	µg/mL	Stressed
31	1,4-Dioxane			50,000.8	µg/mL	+/-	290.6935	µg/mL	Gravimetric
	CAS #	123-91-1.SEC	(Lot CHA4A)			+/-	2,660.9280	µg/mL	Unstressed
	Purity	99%				+/-	2,663.8624	µg/mL	Stressed
32	Dibromomethane			2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS #	74-95-3.SEC	(Lot FGI01-OICH)			+/-	133.0777	µg/mL	Unstressed
	Purity	99%				+/-	133.2245	µg/mL	Stressed
33	cis-1,3-Dichloropropene			2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS #	10061-01-5.SEC	(Lot 7ZLXJ-TJ)			+/-	133.0977	µg/mL	Unstressed
	Purity	99%				+/-	133.2445	µg/mL	Stressed
34	Toluene			2,500.1	µg/mL	+/-	14.5359	µg/mL	Gravimetric
	CAS #	108-88-3.SEC	(Lot YND2B-BD)			+/-	133.0511	µg/mL	Unstressed
	Purity	99%				+/-	133.1979	µg/mL	Stressed
35	Ethyl methacrylate			2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS #	97-63-2.SEC	(Lot MLWYK-LS)			+/-	133.0844	µg/mL	Unstressed
	Purity	99%				+/-	133.2312	µg/mL	Stressed
36	trans-1,3-Dichloropropene			2,501.6	µg/mL	+/-	14.5444	µg/mL	Gravimetric
	CAS #	10061-02-6.SEC	(Lot 2ECIC-NM)			+/-	133.1282	µg/mL	Unstressed
	Purity	98%				+/-	133.2750	µg/mL	Stressed
37	1,1,2-Trichloroethane			2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS #	79-00-5.SEC	(Lot 732700)			+/-	133.0977	µg/mL	Unstressed
	Purity	99%				+/-	133.2445	µg/mL	Stressed
38	1,3-Dichloropropane			2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS #	142-28-9.SEC	(Lot AGN01-EFPC)			+/-	133.0844	µg/mL	Unstressed
	Purity	99%				+/-	133.2312	µg/mL	Stressed
39	Tetrachloroethene			2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS #	127-18-4.SEC	(Lot F09W014)			+/-	133.0445	µg/mL	Unstressed
	Purity	99%				+/-	133.1912	µg/mL	Stressed

40	Dibromochloromethane			2,501.8	µg/mL	+/-	14.5454	µg/mL	Gravimetric
	CAS #	124-48-1.SEC	(Lot I13W021)			+/-	133.1377	µg/mL	Unstressed
	Purity	97%				+/-	133.2845	µg/mL	Stressed
41	1,2-Dibromoethane (EDB)			2,502.1	µg/mL	+/-	14.5472	µg/mL	Gravimetric
	CAS #	106-93-4.SEC	(Lot 1368400)			+/-	133.1542	µg/mL	Unstressed
	Purity	98%				+/-	133.3011	µg/mL	Stressed
42	Chlorobenzene			2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS #	108-90-7.SEC	(Lot 1161936)			+/-	133.1310	µg/mL	Unstressed
	Purity	99%				+/-	133.2778	µg/mL	Stressed
43	1,1,1,2-Tetrachloroethane			2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS #	630-20-6.SEC	(Lot GC01-QSHR)			+/-	133.0844	µg/mL	Unstressed
	Purity	99%				+/-	133.2312	µg/mL	Stressed
44	Ethylbenzene			2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS #	100-41-4.SEC	(Lot PI4SE-GR)			+/-	133.0578	µg/mL	Unstressed
	Purity	99%				+/-	133.2045	µg/mL	Stressed
45	m-Xylene			1,250.4	µg/mL	+/-	7.2698	µg/mL	Gravimetric
	CAS #	108-38-3.SEC	(Lot OUKMG-GB)			+/-	66.5422	µg/mL	Unstressed
	Purity	99%				+/-	66.6156	µg/mL	Stressed
46	o-Xylene			2,501.3	µg/mL	+/-	14.5425	µg/mL	Gravimetric
	CAS #	95-47-6.SEC	(Lot FGL01-KTPK)			+/-	133.1110	µg/mL	Unstressed
	Purity	99%				+/-	133.2578	µg/mL	Stressed
47	p-Xylene			1,251.6	µg/mL	+/-	7.2771	µg/mL	Gravimetric
	CAS #	106-42-3.SEC	(Lot GM01)			+/-	66.6087	µg/mL	Unstressed
	Purity	99%				+/-	66.6822	µg/mL	Stressed
48	Styrene			2,500.9	µg/mL	+/-	14.5403	µg/mL	Gravimetric
	CAS #	100-42-5.SEC	(Lot OFIOL-IA)			+/-	133.0911	µg/mL	Unstressed
	Purity	99%				+/-	133.2378	µg/mL	Stressed
49	Isopropylbenzene (cumene)			2,501.3	µg/mL	+/-	14.5425	µg/mL	Gravimetric
	CAS #	98-82-8.SEC	(Lot 2PHXG-IH)			+/-	133.1110	µg/mL	Unstressed
	Purity	99%				+/-	133.2578	µg/mL	Stressed
50	Bromoform			2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS #	75-25-2.SEC	(Lot 1039300)			+/-	133.1243	µg/mL	Unstressed
	Purity	99%				+/-	133.2711	µg/mL	Stressed
51	1,1,2,2-Tetrachloroethane			2,502.9	µg/mL	+/-	14.5519	µg/mL	Gravimetric
	CAS #	79-34-5.SEC	(Lot CFA4D-AQ)			+/-	133.1975	µg/mL	Unstressed
	Purity	99%				+/-	133.3444	µg/mL	Stressed
52	Chloroform			2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS #	67-66-3.SEC	(Lot 1297547)			+/-	133.1310	µg/mL	Unstressed
	Purity	99%				+/-	133.2778	µg/mL	Stressed
53	1,2,3-Trichloropropane			2,501.9	µg/mL	+/-	14.5465	µg/mL	Gravimetric
	CAS #	96-18-4.SEC	(Lot OGI01)			+/-	133.1477	µg/mL	Unstressed
	Purity	98%				+/-	133.2946	µg/mL	Stressed
54	trans-1,4-Dichloro-2-butene			2,502.7	µg/mL	+/-	14.5510	µg/mL	Gravimetric
	CAS #	110-57-6.SEC	(Lot 100700-2)			+/-	133.1893	µg/mL	Unstressed
	Purity	97%				+/-	133.3362	µg/mL	Stressed
55	n-Propylbenzene			2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS #	103-65-1.SEC	(Lot T2HFC-IT)			+/-	133.0445	µg/mL	Unstressed
	Purity	99%				+/-	133.1912	µg/mL	Stressed

56	Bromobenzene			2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS #	108-86-1.SEC	(Lot 2FUHG-EM)			+/-	133.1310	µg/mL	Unstressed
	Purity	99%				+/-	133.2778	µg/mL	Stressed
57	1,2,4-Trimethylbenzene			2,502.4	µg/mL	+/-	14.5490	µg/mL	Gravimetric
	CAS #	95-63-6.SEC	(Lot SC7LO-QA)			+/-	133.1709	µg/mL	Unstressed
	Purity	99%				+/-	133.3177	µg/mL	Stressed
58	2-Chlorotoluene			2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS #	95-49-8.SEC	(Lot SW8QG-AO)			+/-	133.0711	µg/mL	Unstressed
	Purity	99%				+/-	133.2178	µg/mL	Stressed
59	4-Chlorotoluene			2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS #	106-43-4.SEC	(Lot P4XHJ-AO)			+/-	133.0578	µg/mL	Unstressed
	Purity	99%				+/-	133.2045	µg/mL	Stressed
60	tert-Butylbenzene			2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS #	98-06-6.SEC	(Lot OGN01)			+/-	133.1310	µg/mL	Unstressed
	Purity	99%				+/-	133.2778	µg/mL	Stressed
61	1,3,5-Trimethylbenzene			2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS #	108-67-8.SEC	(Lot FGH02-CMLN)			+/-	133.0578	µg/mL	Unstressed
	Purity	99%				+/-	133.2045	µg/mL	Stressed
62	sec-Butylbenzene			2,500.1	µg/mL	+/-	14.5359	µg/mL	Gravimetric
	CAS #	135-98-8.SEC	(Lot OGN01)			+/-	133.0511	µg/mL	Unstressed
	Purity	99%				+/-	133.1979	µg/mL	Stressed
63	4-Isopropyltoluene (p-cymene)			2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS #	99-87-6.SEC	(Lot 1721700)			+/-	133.1310	µg/mL	Unstressed
	Purity	99%				+/-	133.2778	µg/mL	Stressed
64	1,3-Dichlorobenzene			2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS #	541-73-1.SEC	(Lot FMDFD-KA)			+/-	133.1243	µg/mL	Unstressed
	Purity	99%				+/-	133.2711	µg/mL	Stressed
65	1,4-Dichlorobenzene			2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS #	106-46-7.SEC	(Lot YWKDC-MK)			+/-	133.0578	µg/mL	Unstressed
	Purity	99%				+/-	133.2045	µg/mL	Stressed
66	n-Butylbenzene			2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS #	104-51-8.SEC	(Lot OGN01)			+/-	133.0777	µg/mL	Unstressed
	Purity	99%				+/-	133.2245	µg/mL	Stressed
67	1,2-Dichlorobenzene			2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS #	95-50-1.SEC	(Lot 4NRGF-OT)			+/-	133.0445	µg/mL	Unstressed
	Purity	99%				+/-	133.1912	µg/mL	Stressed
68	1,2-Dibromo-3-chloropropane			2,500.5	µg/mL	+/-	14.5383	µg/mL	Gravimetric
	CAS #	96-12-8.SEC	(Lot LC00408V)			+/-	133.0732	µg/mL	Unstressed
	Purity	97%				+/-	133.2199	µg/mL	Stressed
69	1,2,4-Trichlorobenzene			2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS #	120-82-1.SEC	(Lot OGO01)			+/-	133.0977	µg/mL	Unstressed
	Purity	99%				+/-	133.2445	µg/mL	Stressed
70	Hexachlorobutadiene			2,501.0	µg/mL	+/-	14.5412	µg/mL	Gravimetric
	CAS #	87-68-3.SEC	(Lot 2009400)			+/-	133.0990	µg/mL	Unstressed
	Purity	97%				+/-	133.2458	µg/mL	Stressed
71	Naphthalene			2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS #	91-20-3.SEC	(Lot 4KW3H-OO)			+/-	133.0711	µg/mL	Unstressed
	Purity	99%				+/-	133.2178	µg/mL	Stressed

72	1,2,3-Trichlorobenzene		2,502.4	µg/mL	+/-	14.5490	µg/mL	Gravimetric
	CAS # 87-61-6.SEC	(Lot A0043055)			+/-	133.1709	µg/mL	Unstressed
	Purity 99%				+/-	133.3177	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

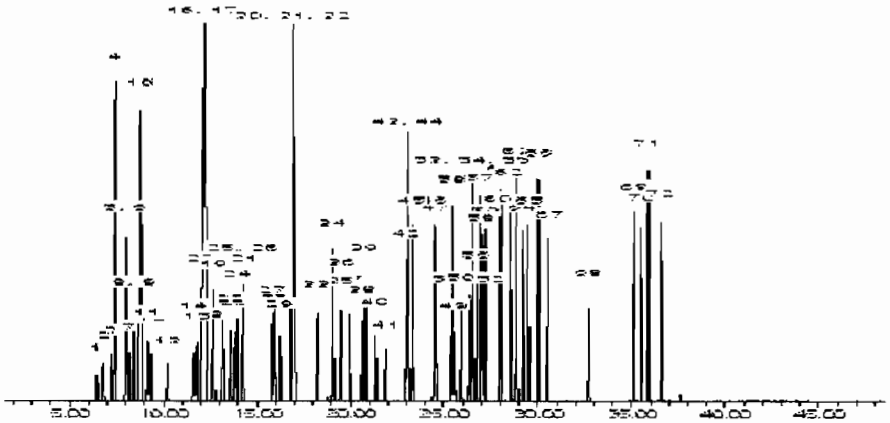
Carrier Gas:
helium-constant pressure 30 psi

Temp. Program:
40°C (hold 6 min.) to 240°C
@ 6°C/min. (hold 10 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Date Mixed: 07-Jan-2015 **Balance:** 1127510105

Tyler Brown - QA Analyst

Date Passed: 14-Jan-2015

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Reagent

8260VinAcetat_00044

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569724 **Lot No.:** A0118255

Description : 8260 List 1 / Std #6 Vinyl Acetate (2015)

8260 List 1 / Std #6 Vinyl Acetate (2015) 5000 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 5-26-16
JOH
884374
945355

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2016 **Storage:** 0°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)			
1	Vinyl acetate	5,003.0 µg/mL	+/-	29.3604	µg/mL	Gravimetric
	CAS # 108-05-4 (Lot STBD7333V)		+/-	301.8795	µg/mL	Unstressed
	Purity 99%		+/-	302.5961	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods. Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

Column:
.05m x 0.53mm x 3.0µm
tx-502.2 (cat.#10910)

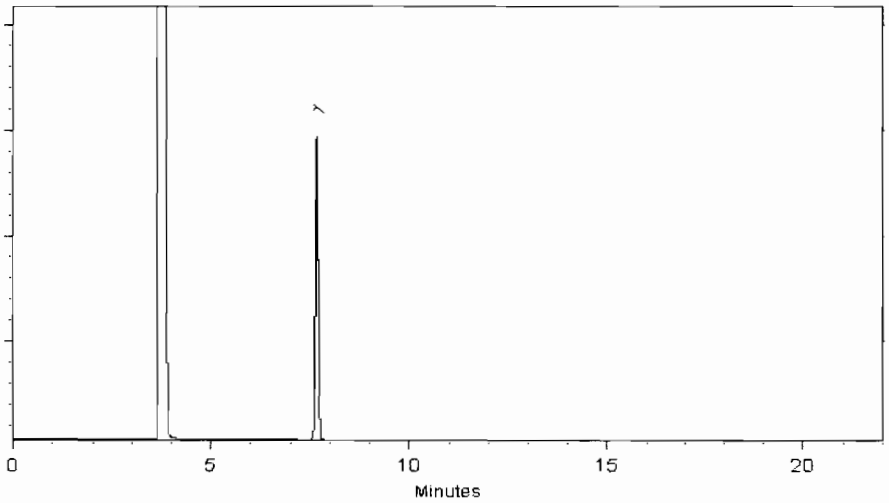
Carrier Gas:
ydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

nj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
ID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 23-Mar-2016 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 28-Mar-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Acetic Acid G_00007

Acetic Acid, Glacial
AR® (ACS)

Material No.: V193-45
Batch No.: 0000130629
Manufactured Date: 2015/11/12
Expiration Date: 2017/11/11

Certificate of Analysis

Meets ACS Reagent Chemical Requirements,

Test	Specification	Result
ACS - Assay (by GC, corrected for water)	>= 99.7 %	100.0
ACS - Acetic Anhydride ($(CH_3CO)_2O$)	<= 0.01 %	0.01
ACS - Chloride (Cl)	<= 0.4 ppm	< 0.4
ACS - Color (APHA)	<= 10	5
Dilution Test	Passes Test	PT
ACS - Heavy Metals (as Pb)	<= 0.00005 %	< 0.00005
ACS - Residue after Evaporation	<= 8 ppm	2
ACS - Substances Reducing Dichromate	Passes Test	PT
ACS - Substances Reducing Permanganate	Passes Test	PT
ACS - Sulfate (SO_4)	<= 0.4 ppm	< 0.4
ACS - Titrable Base (meq/g)	<= 0.0004	0.0002
Trace Impurities - Aluminum (Al)	<= 0.300 ppm	0.002
Trace Impurities - Arsenic (As)	<= 0.050 ppm	< 0.005
Trace Impurities - Boron (B)	<= 0.200 ppm	< 0.001
Trace Impurities - Calcium (Ca)	<= 0.300 ppm	0.008
Trace Impurities - Chromium (Cr)	<= 0.200 ppm	0.002
Trace Impurities - Copper (Cu)	<= 0.100 ppm	<0.05
Trace Impurities - Gold (Au)	<= 0.300 ppm	< 0.001
Trace Impurities - Iron (Fe)	<= 0.2 ppm	< 0.1
Trace Impurities - Lead (Pb)	<= 0.300 ppm	< 0.001
Trace Impurities - Magnesium (Mg)	<= 0.300 ppm	0.001
Trace Impurities - Manganese (Mn)	<= 0.300 ppm	< 0.001
Trace Impurities - Nickel (Ni)	<= 0.100 ppm	< 0.100
Trace Impurities - Potassium (K)	<= 0.300 ppm	< 0.002

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.573.2600
Avantor ™ Performance Materials Inc.
3477 Corporate Parkway. Suite #200. Center Valley, PA 18034. U.S.A. Phone: 610.573.2600 . Fax: 610.573.2610

Material No.: V193-45
Batch No.: 0000130629

Test	Specification	Result
Trace Impurities - Sodium (Na)	<= 0.300 ppm	0.006
Trace Impurities - Tin (Sn)	<= 0.300 ppm	< 0.001
Trace Impurities - Titanium (Ti)	<= 0.300 ppm	< 0.001
Trace Impurities - Zinc (Zn)	<= 0.300 ppm	0.002

For Laboratory, Research or Manufacturing Use
Appearance (clear, colorless liquid)

Storage Conditions:	IMPORTANT: Material will freeze if stored below 17 °C (63°F).
Country of Origin:	US
Packaging Site:	Phillipsburg Mfg Ctr & DC

ISO
Phillipsburg, NJ 9001:2008, 14001:2004, FSSC 22000
Paris, KY 9001:2008
Mexico City, Mexico 9001:2008
Deventer, The Netherlands 9001:2008, 14001:2004, 13485:2003
Gliwice, Poland 9001:2008
Selangor, Malaysia 9001:2008
Dehradun, India, 9001:2008, 14001:2004, 13485:2003
Mumbai, India, 9001:2008, 17025:2005
Panoli, India 9001:2008

Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.573.2600
Avantor ™ Performance Materials Inc.
3477 Corporate Parkway. Suite #200. Center Valley, PA 18034. U.S.A. Phone: 610.573.2600 . Fax: 610.573.2610

Reagent

Acrolein_00035

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 568720 **Lot No.:** A0118994

Description : 8260 List 1/Std #5 Acrolein High

8260 List 1/Std #5 Acrolein High 19,750 µg/mL, Water, 1 mL/ampul

REC'D 7-6-16
JOH
946636-637

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : August 31, 2016 **Storage:** 0°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)			
1	Acrolein		19,761.0 µg/mL	+/-	115.7050	µg/mL	Gravimetric
	CAS # 107-02-8	(Lot 150923JLM)		+/-	633.5998	µg/mL	Unstressed
	Purity 99%			+/-	736.4904	µg/mL	Stressed

Solvent: Water
CAS # 7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

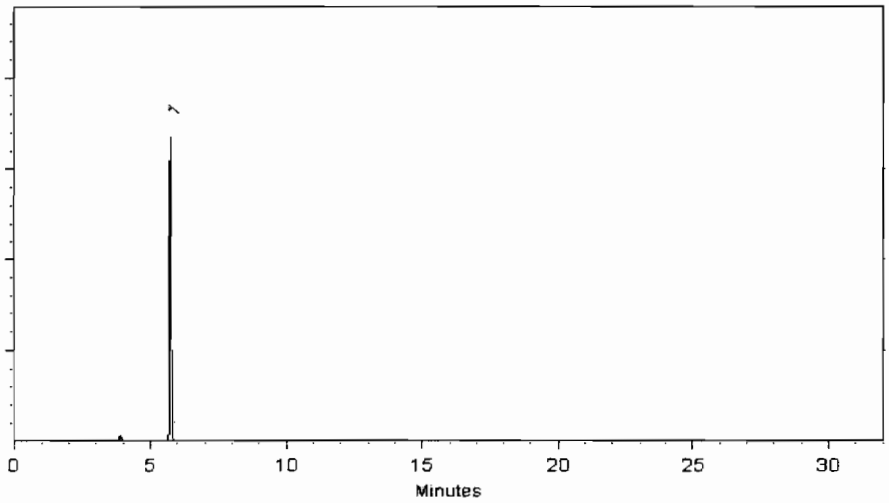
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 29-Apr-2016 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 03-May-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Adds (B) 2016_00004

RESTEK®
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

Certificate of Analysis

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570809 **Lot No.:** A0116077

Description : 8260 List 2 / Std #7

8260 List 2 / Std #7 2500-5000 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2017 **Storage:** 0°C or colder

REC'D 5-26-16
JDH
945938

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Ethyl acetate **CAS #** 141-78-6 **Purity** 99%	(Lot SHBF6909V)	5,016.0 µg/mL	+/- 29.1635 µg/mL +/- 302.6375 µg/mL +/- 303.3560 µg/mL		Gravimetric Unstressed Stressed
2	Ethyl acrylate **CAS #** 140-88-5 **Purity** 99%	(Lot 10129902)	2,502.5 µg/mL	+/- 14.5498 µg/mL +/- 150.9869 µg/mL +/- 151.3454 µg/mL		Gravimetric Unstressed Stressed
3	Methyl methacrylate **CAS #** 80-62-6 **Purity** 99%	(Lot MKBN8882V)	5,007.8 µg/mL	+/- 29.1155 µg/mL +/- 302.1397 µg/mL +/- 302.8571 µg/mL		Gravimetric Unstressed Stressed
4	Butyl acetate **CAS #** 123-86-4 **Purity** 99%	(Lot SHBF4442V)	2,501.3 µg/mL	+/- 14.5425 µg/mL +/- 150.9115 µg/mL +/- 151.2698 µg/mL		Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

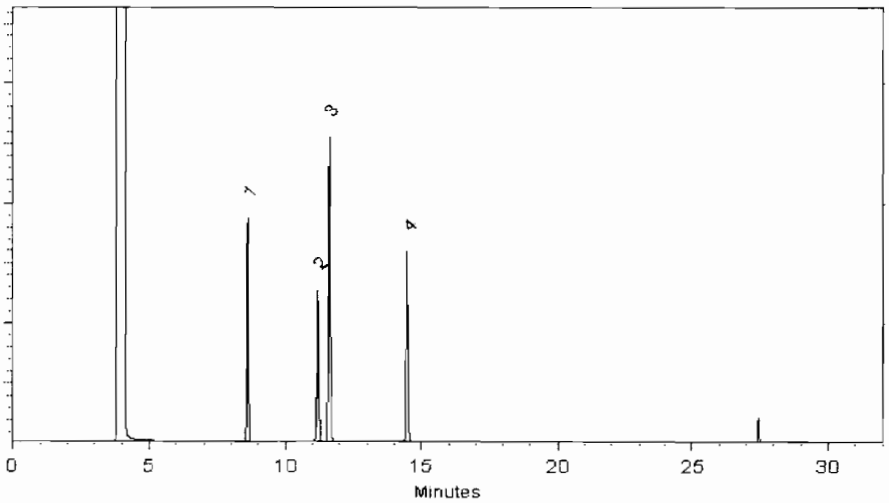
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Rebecca Sauer

Jennifer L Pollino

Jennifer L. Pollino - QC Analyst

Date Mixed: 21-Dec-2015 **Balance:** 1125113331

Date Passed: 22-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Adds(A) 2016_00004

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570808 **Lot No.:** A0116133

Description : 8260 List 2 / Std #6

8260 List 2 / Std #6 2500-62500 µg/ml, P&T Methanol, 1 ml/ampul

REC'D 5-26-16
JDH
945936

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2017 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)			
1	2-Propanol (isopropanol)		25,021.0	µg/mL	+/-	145.4666	µg/mL	Gravimetric
	CAS # 67-63-0	(Lot SHBF0274V)			+/-	1,237.7341	µg/mL	Unstressed
	Purity 99%				+/-	1,268.5115	µg/mL	Stressed
2	Chloroprene		2,515.8	µg/mL	+/-	14.6268	µg/mL	Gravimetric
	CAS # 126-99-8.A	(Lot 151210JLM)			+/-	124.4487	µg/mL	Unstressed
	Purity 99%				+/-	127.5433	µg/mL	Stressed
3	Methacrylonitrile		25,005.8	µg/mL	+/-	145.3780	µg/mL	Gravimetric
	CAS # 126-98-7	(Lot 1012014)			+/-	1,236.9798	µg/mL	Unstressed
	Purity 99%				+/-	1,267.7384	µg/mL	Stressed
4	2,2,4-Trimethylpentane (isooctane)		2,501.3	µg/mL	+/-	14.5425	µg/mL	Gravimetric
	CAS # 540-84-1	(Lot SHBD2922V)			+/-	123.7315	µg/mL	Unstressed
	Purity 99%				+/-	126.8081	µg/mL	Stressed
5	1-Butanol		62,520.3	µg/mL	+/-	363.4791	µg/mL	Gravimetric
	CAS # 71-36-3	(Lot SHBF1679V)			+/-	3,092.7400	µg/mL	Unstressed
	Purity 99%				+/-	3,169.6438	µg/mL	Stressed
6	2-Nitropropane		5,001.3	µg/mL	+/-	29.0781	µg/mL	Gravimetric
	CAS # 79-46-9	(Lot BCBB8938)			+/-	247.4045	µg/mL	Unstressed
	Purity 97%				+/-	253.5565	µg/mL	Stressed
7	1-Chlorohexane		2,503.2	µg/mL	+/-	14.5536	µg/mL	Gravimetric
	CAS # 544-10-5	(Lot 05107LK)			+/-	123.8262	µg/mL	Unstressed
	Purity 98%				+/-	126.9052	µg/mL	Stressed

8	1,2,3-Trimethylbenzene			2,501.4	µg/mL	+/-	14.5433	µg/mL	Gravimetric
	CAS #	526-73-8	(Lot 877605-14)			+/-	123.7383	µg/mL	Unstressed
	Purity	97%				+/-	126.8151	µg/mL	Stressed
9	Benzyl chloride			2,502.0	µg/mL	+/-	14.5468	µg/mL	Gravimetric
	CAS #	100-44-7	(Lot SHBB7346V)			+/-	123.7686	µg/mL	Unstressed
	Purity	99%				+/-	126.8462	µg/mL	Stressed
10	1,3,5-Trichlorobenzene			2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS #	108-70-3	(Lot 11319AS)			+/-	123.7067	µg/mL	Unstressed
	Purity	99%				+/-	126.7828	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

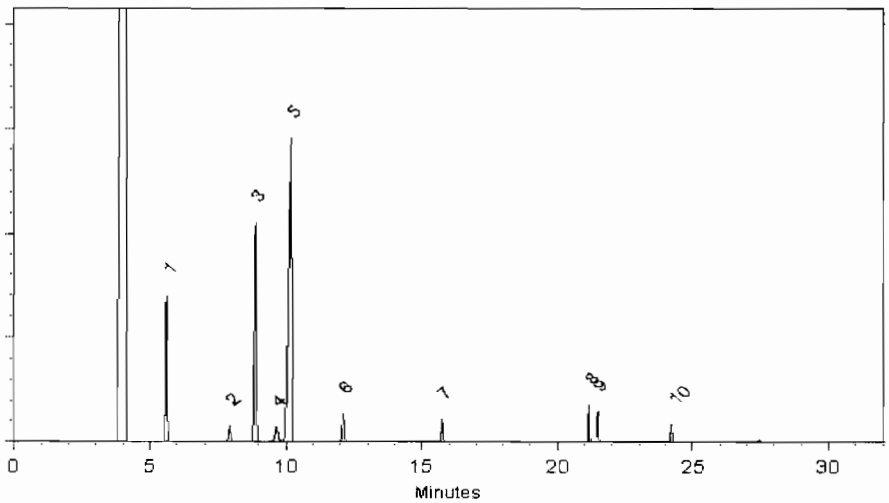
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 28-Dec-2015 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 29-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Am-234 Cal NP_00001

St. Louis Radiological Standard Reverification Form

Standard ID Number: Rad11-0114
True Value = 2219.8 DPM/L or g
Date Analyzed: 12/12/2012

Radionuclide: Am-243

	Replicates	
#1	2150	DPM/L or g
#2	2206	DPM/L or g
#3	2328	DPM/L or g

Mean = 2228

1 sigma = 91.01648 1.96 sigma = 178.3923

True Value minus 5% = 2108.81 (True Value - 5%)
True Value plus 5% = 2330.79 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: UM 12/13/12

SOP Reference: STL-QA-0002, Current Revision

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Am-243 Calibration Verification

Actinide Prep

Batch No. : _____

Balance ID : _____

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A.
i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	Am-243 -1	0.1	135	
2	2	1	137	
3	3	1	138	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Tracer ☐ N/A

	Initials / Date
Isotope :	Cm-244
Std Sol'n No. :	Rad11-0096
Vol (mL) :	0.1
Ref Activity (dpm/mL) :	57.008
Act Ref Date :	08-25-2011

Samples Spiked and Traced By: SUB 12/11/12
Initials / Date

Verification Signature & Date: MUB 12-11-12
Initials / Date

LCS Standard ☐ N/A

		Initials / Date
Isotope :	Am-243	
Std Sol'n ID. :	Rad11-0114	
Vol (mL) :	0.1	
Ref Activity (dpm/mL) :	2,219.8	
Act Ref Date :	09-19-2011	

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.		
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.		
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.		
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.		
☐	ST-RC-0021 Rev.	☑	ST-RC-0100 Rev.	☑	ST-RC-0240 Rev.		
				☐	ST-RC-0241 Rev.		
				☐	ST-RC-0242 Rev.		
				☐	ST-RC-5016 Rev.		
				☐			
				☐			

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☑	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time		Matrix	
Long Count	☐	Soil	☐
Short Count	☐	H_2O	☐

Prepared By : SUB
Date : 12/11/12

Reviewed by: UM
Date: 12/13/12

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:51:20AM 12/13/2012

Sample

Sample Name: Ver01
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Rad11-0114_Am243calver
AnalysisID: 552404

Analyst: 60040

Tracer

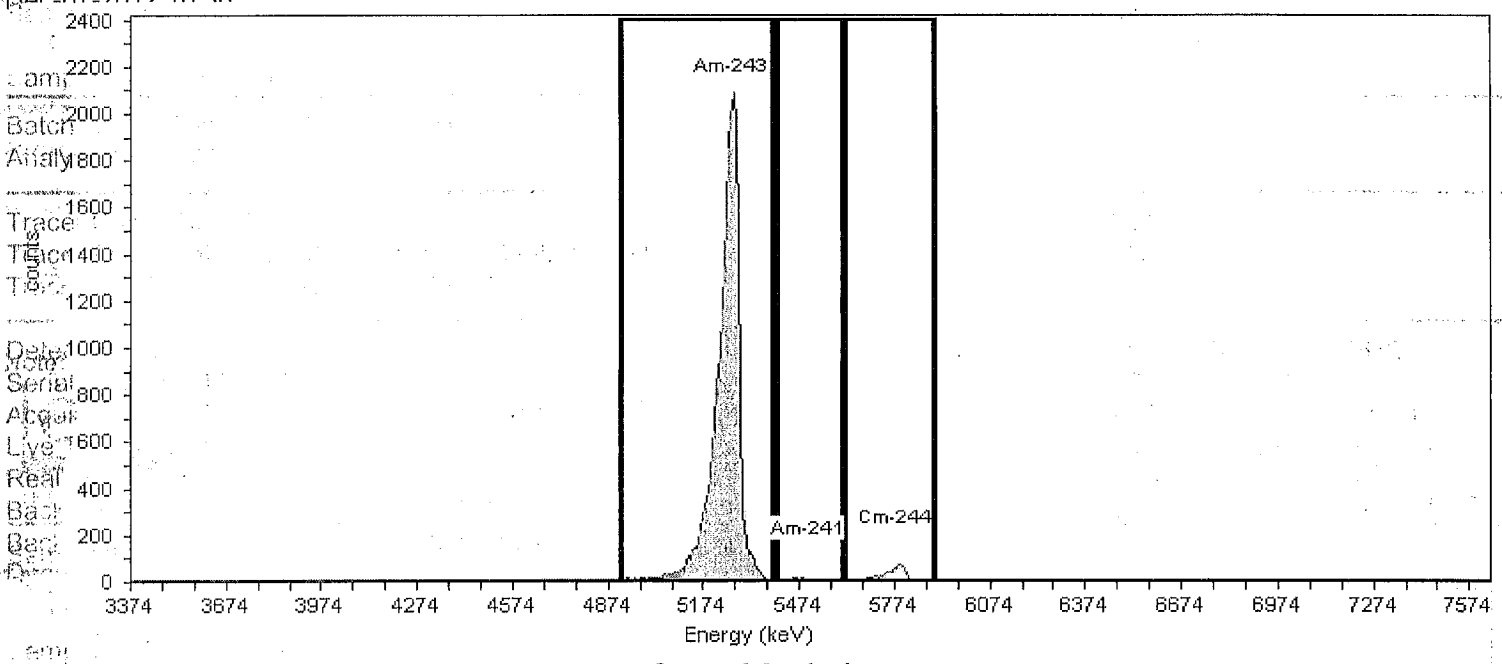
Tracer Name: Rad11-0096_Cm244
Tracer Activity: 57.01 DPM/mL x (Vol.)0.10 mL = 5.70 DPM
Tracer Ref. Date: 8/25/2011 11:00:33AM

Tracer Nuclide: Cm-244
Tracer Recovery: 92.81%

Acquisition

Detector: AV135
Serial Number: 49-164N2
Acquisition Start Date: 12/12/2012 1:07:21PM
Live Time: 400.00 min.
Real Time: 400.03 min.
Background Date: 12/7/2012 4:36:08PM
Background Info: Sample: ICB; AV135; Det: AV135; Spectrum #1; Dec-07-2012 16:36

Calibration Name: IC-9817;AV135-20120612
Calibration Date: 6/12/2012 10:16:38PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.10% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 12/12/2012 1:05:40PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity DPM/mL	2.00 Sigma UncCount DPM/mL	2.00 Sigma TPU DPM/mL	Critical Level DPM/mL	MDA DPM/mL
Am-243	5261.170	4910.666	5387.948	66.100	100.0	20834	0.4167	20833.58	**2.150E+003**	2.979E-005	1.81E+002	1.550E-007	5.401E-001
Am-241	5499.812	5402.864	5611.675	44.447	98.0	54	0.0000	54.00	**5.686E+000**	1.548E-006	4.78E-001	1.581E-007	2.849E-001
Cm-244	5775.741	5619.132	5902.520	66.964	100.0	526	0.4167	525.58	**5.291E+001**	4.734E-006	4.44E+000	1.550E-007	5.677E-001

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:52:15AM 12/13/2012

Sample

Sample Name: Ver02
SampleType: Sample
MDA:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Rad11-0114_Am243calver
AnalysisID: 552405

Analyst: 60040

Tracer

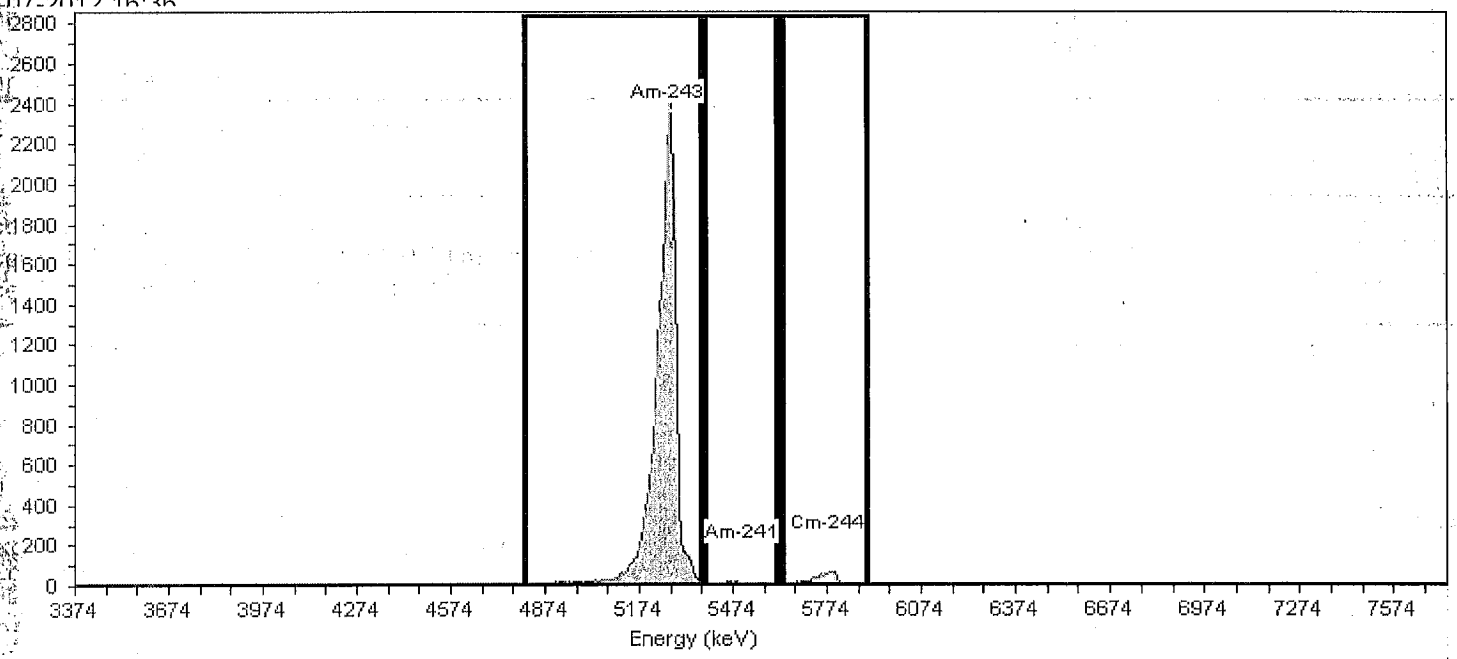
Tracer Name: Rad11-0096_Cm244
Tracer Activity: 57.01 DPM/mL x (Vol.)0.10 mL = 5.70 DPM
Tracer Ref. Date: 8/25/2011 11:00:33AM

Tracer Nuclide: Cm-244
Tracer Recovery: 93.42%

Acquisition

Detector: AV137
Serial Number: 49-16904
Acquisition Start Date: 12/12/2012 1:07:19PM
Live Time: 400.00 min.
Real Time: 400.03 min.
Background Date: 12/7/2012 4:36:06PM
Background Info: Sample: ICB; AV137; Det: AV137; Spectrum #1; Rec-07-2012 16:36

Calibration Name: IC-9885;AV137-20120621
Calibration Date: 6/21/2012 2:01:56PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.74% +/- 0.39% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 12/12/2012 1:05:40PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity DPM/mL	2.00 Sigma UncCount DPM/mL	2.00 Sigma TPU DPM/mL	Critical Level DPM/mL	MDA DPM/mL
Am-243	5261.170	4806.260	5373.033	62.069	100.0	22045	0.4167	22044.58	**2.206E+003**	2.972E-005	1.85E+002	1.503E-007	5.237E-001
Am-241	5499.812	5380.491	5611.675	48.221	98.0	64	0.4167	63.58	**6.493E+000**	1.636E-006	5.45E-001	1.533E-007	5.344E-001
Cm-244	5775.741	5634.047	5902.520	65.643	100.0	542	0.0000	542.00	**5.326E+001**	4.659E-006	4.47E+000	1.503E-007	2.846E-001

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:53:16AM 12/13/2012

Sample

Sample Name: Ver03
SampleType: Sample
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Rad11-0114_Am243calver
AnalysisID: 552406

Analyst: 60040

Tracer

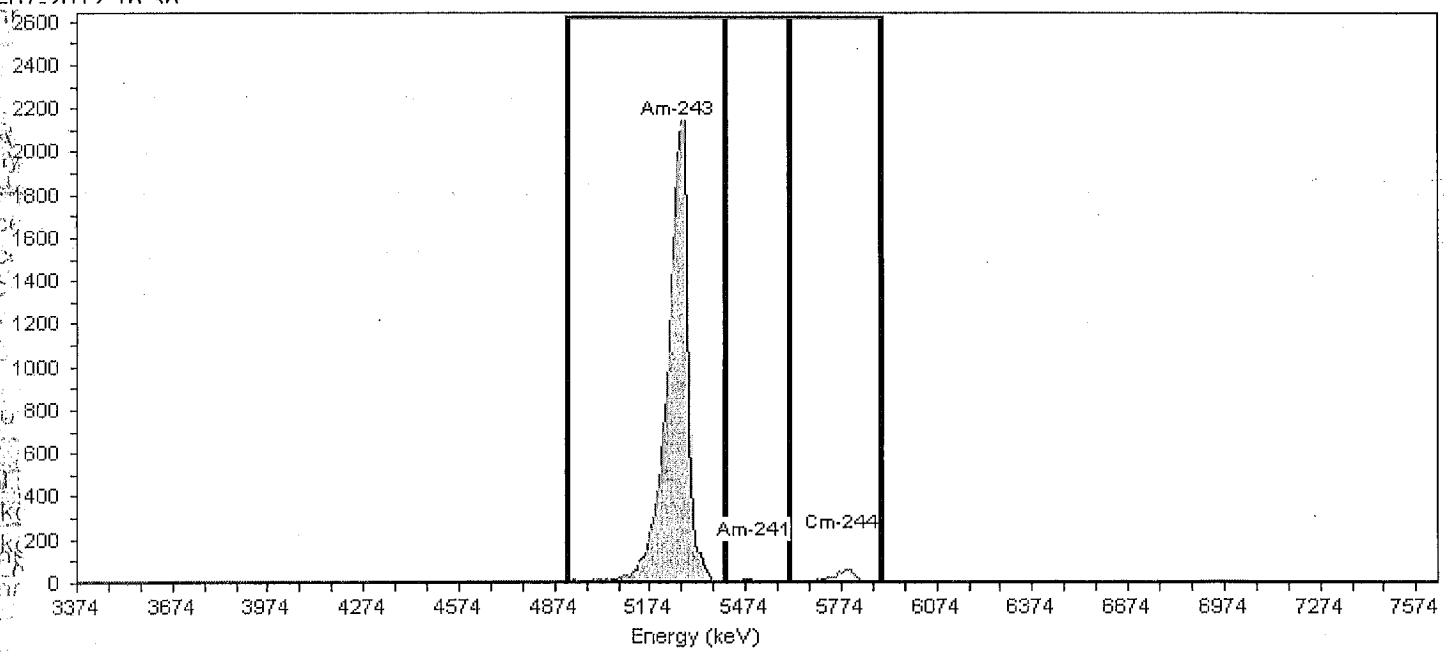
Tracer Name: Rad11-0096_Cm244
Tracer Activity: 57.01 DPM/mL x (Vol.)0.10 mL = 5.70 DPM
Tracer Ref. Date: 8/25/2011 11:00:33AM

Tracer Nuclide: Cm-244
Tracer Recovery: 87.70%

Acquisition

Detector: AV138
Serial Number: 49-179B7
Acquisition Start Date: 12/12/2012 1:07:23PM
Live Time: 400.00 min.
Real Time: 400.03 min.
Background Date: 12/7/2012 4:36:12PM
Background Info: Sample: ICB; AV138; Det: AV138; Spectrum #1; Dec-07-2012 16:36

Calibration Name: IC-9886;AV138-20120608
Calibration Date: 6/8/2012 8:55:45AM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.83% +/- 0.36% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 12/12/2012 1:05:40PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity DPM/mL	2.00 Sigma UncCount DPM/mL	TPU DPM/mL	Critical Level DPM/mL	MDA DPM/mL
Am-243	5261.170	4910.666	5410.321	66.273	100.0	21912	0.0000	21912.00	**2.328E+003**	3.145E-005	1.96E+002	1.595E-007	2.875E-001
Am-241	5499.812	5410.321	5611.675	49.653	98.0	45	0.0000	45.00	**4.878E+000**	1.454E-006	4.10E-001	1.628E-007	2.933E-001
Cm-244	5775.741	5611.675	5902.520	68.723	100.0	511	0.4167	510.58	**5.000E+001**	4.803E-006	4.20E+000	1.595E-007	5.844E-001

Reagent

Am-241_00001

Rec'd 11/6/96
ML

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EXPOSURE RESEARCH LABORATORY
P.O. BOX 93478 • LAS VEGAS, NV 89193-3478

Calibration Certificate

OFFICE OF
RESEARCH AND DEVELOPMENT

Description

Principal Radionuclide	Americium-241
Total Mass of this Solution	Approx. 5 grams
Total Activity	Approx. 48 nanocuries
Half-life	432.7 ± 0.5 years
Activity Concentration	9.6 nanocuries/gram
Date and Time of Standardization	April 18, 1996 0400 hours PST
Solution Number	94030.1

Measurement

Method of Measurement:

The activity of the dilution was measured using liquid scintillation.

The activity of the primary solution was measured using a liquid scintillation counter.

Activity of daughter radionuclide:

The principal activity was accompanied at the quoted time by less than:
[ ] of the daughter nuclide..... [ ]

Useful Life

We recommend that this solution should not be used after..... January, 2003

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on 100% Recycled Paper (40% Postconsumer)

Reagent

Am-241_00010

St. Louis Radiological Standard Reverification Form

Standard ID Number: Am-241_00009
True Value = 85.6 DPM/L or g
Date Analyzed: 3/24/2016

Radionuclide: Am-241

	Replicates	
#1	86.745	DPM/L or g
#2	83.244	DPM/L or g
#3	92.057	DPM/L or g

Mean = 87.34867

1 sigma = 4.437404 1.96 sigma = 8.697311

True Value minus 5% = 81.32 (True Value - 5%)
True Value plus 5% = 89.88 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Amanda Leigh Dick 03/29/2016

SOP Reference: STL-QA-0002, Current Revision

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:44:18AM 3/29/2016

Sample

Sample Name: Verification 1
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.2000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Am-241_00009
AnalysisID: 671259

Analyst: 60040

Tracer

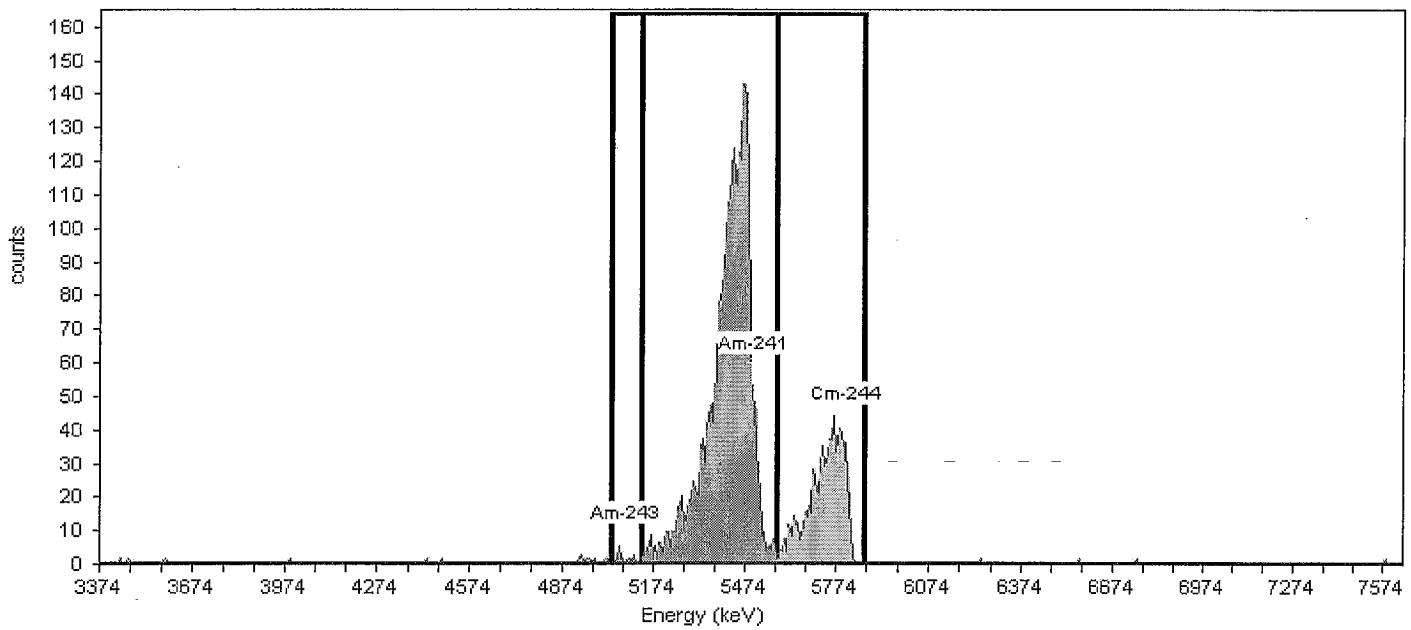
Tracer Name: Cm-244_00012
Tracer Activity: 53.76 DPM/mL x (Vol.)0.10 mL = 5.38 DPM
Tracer Ref. Date: 5/28/2013 11:00:35AM

Tracer Nuclide: Cm-244
Tracer Recovery: 59.71%

Acquisition

Detector: AV136
Serial Number: 49-169O2
Acquisition Start Date: 3/24/2016 6:14:33PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 3/16/2016 3:25:16PM
Background Info: Sample: ICB;AV136; Det: AV136; Spectrum #1; Mar-16-2016 15:25

Calibration Name: IC-8876;AV136-20150607
Calibration Date: 6/8/2015 7:46:28PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.66% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Am_CmTracer
Decay Correction: 3/24/2016 6:12:51PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5085.9	5,275.4	-189.5	5037.4	5134.4	19.8	100.0	12	0.0000	12.00	0.425	DPM/mL
Am-241	5499.8	5,485.7	14.1	5134.4	5581.8	114.9	98.0	2404	1.0000	2403.00	86.745	DPM/mL
Cm-244	5805.6	5,805.0	0.6	5581.8	5865.2	116.2	100.0	683	1.0000	682.00	16.051	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:44:03AM 3/29/2016

Sample

Sample Name: Verification 2
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.2000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Am-241_00009
AnalysisID: 671260

Analyst: 60040

Tracer

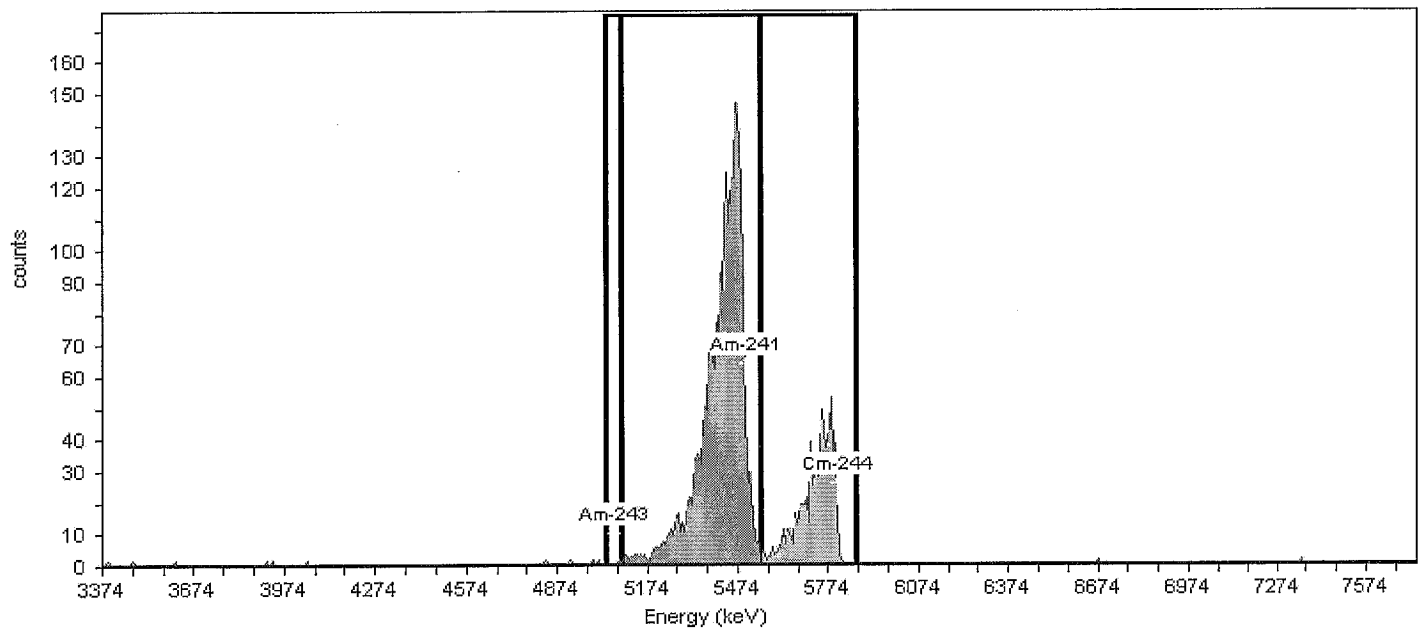
Tracer Name: Cm-244_00012
Tracer Activity: 53.76 DPM/mL x (Vol.)0.10 mL = 5.38 DPM
Tracer Ref. Date: 5/28/2013 11:00:35AM

Tracer Nuclide: Cm-244
Tracer Recovery: 56.72%

Acquisition

Detector: AV137
Serial Number: 49-16904
Acquisition Start Date: 3/24/2016 6:14:31PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 3/16/2016 3:25:13PM
Background Info: Sample: ICB;AV137; Det: AV137; Spectrum #1; Mar-16-2016 15:25

Calibration Name: IC-8877;AV137-20150607
Calibration Date: 6/8/2015 7:47:02PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.16% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Am_CmTracer
Decay Correction: 3/24/2016 6:12:51PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5063.5	5,275.4	-211.9	5037.4	5089.6	10.1	100.0	1	0.0000	1.00	0.037	DPM/mL
Am-241	5499.8	5,485.7	14.1	5089.6	5552.0	102.3	98.0	2236	1.0000	2235.00	83.244	DPM/mL
Cm-244	5805.6	5,805.0	0.6	5552.0	5865.2	96.7	100.0	661	0.0000	661.00	15.247	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:43:13AM 3/29/2016

Sample

Sample Name: Verification 3
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.2000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Am-241_00009
AnalysisID: 671261

Analyst: 60040

Tracer

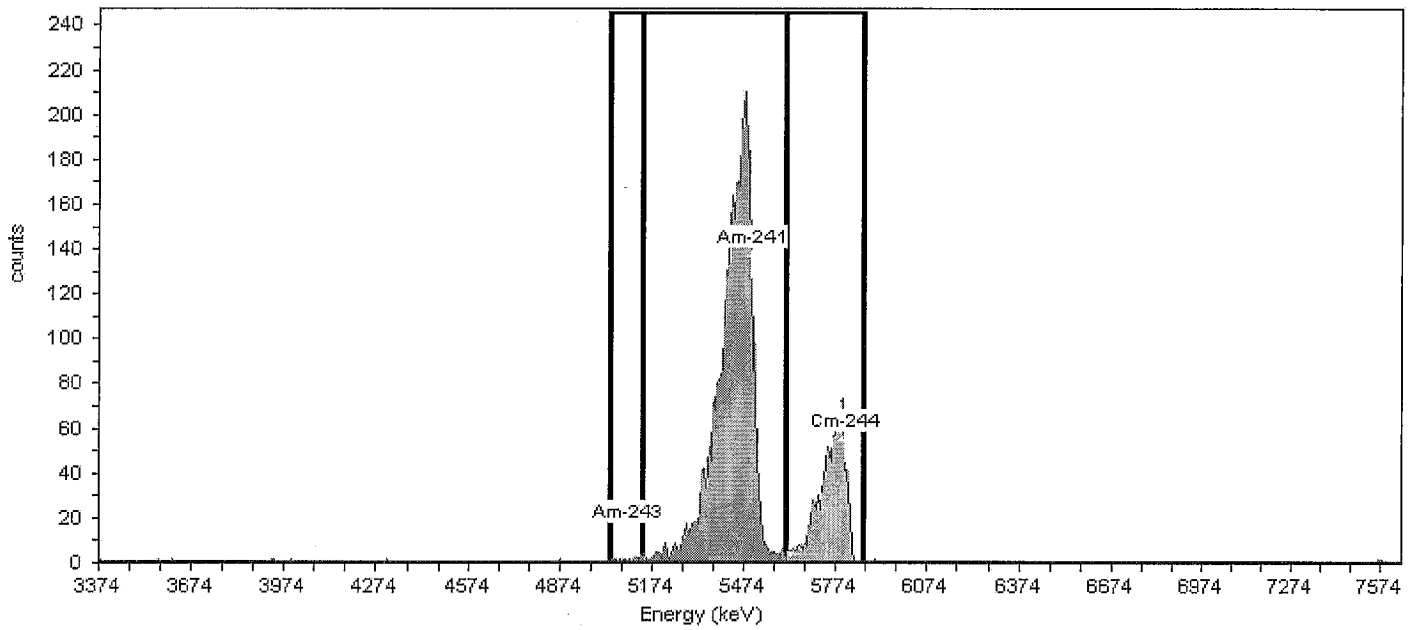
Tracer Name: Cm-244_00012
Tracer Activity: 53.76 DPM/mL x (Vol.)0.10 mL = 5.38 DPM
Tracer Ref. Date: 5/28/2013 11:00:35AM

Tracer Nuclide: Cm-244
Tracer Recovery: 74.89%

Acquisition

Detector: AV138
Serial Number: 49-179B7
Acquisition Start Date: 3/24/2016 6:14:36PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 3/16/2016 3:25:18PM
Background Info: Sample: ICB;AV138; Det: AV138; Spectrum #1; Mar-16-2016 15:25

Calibration Name: IC-9520;AV138-20150607
Calibration Date: 6/8/2015 7:47:13PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.10% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Am_CmTracer
Decay Correction: 3/24/2016 6:12:51PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5089.6	5,275.4	-185.8	5037.4	5141.9	14.1	100.0	12	0.0000	12.00	0.346	DPM/mL
Am-241	5499.8	5,485.7	14.1	5141.9	5611.7	104.6	98.0	3126	0.0000	3126.00	92.057	DPM/mL
Cm-244	5805.6	5,805.0	0.6	5611.7	5865.2	88.1	100.0	836	0.0000	836.00	20.132	DPM/mL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Am-241 Spike ver.

Aliquot Only (coppt.)

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	verification-1	0.2	136	
2	2	1	137	
3	3	1	138	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : Cm-244

Std Sol'n No. : Cm-244-00012

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 53.7646

Act Ref Date : 05-28-13

Samples Spiked and Traced By: SUB 3/23/16
Initials / Date

Verification Signature & Date: SUB 3-23-16
Initials / Date

LCS Standard ☐ N/A

Initials / Date

Isotope : Am-241

Std Sol'n ID. : Am-241-00009

Vol (mL) : 0.2

Ref Activity (dpm/mL) : 85.6

Act Ref Date : 04-18-1996

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.		
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.		
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.		
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.		
☐	ST-RC-0021 Rev.	☐	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.		
				☐	ST-RC-0241 Rev.		
				☐	ST-RC-0242 Rev.		
				☐	ST-RC-5016 Rev.		
				☐			
				☐			

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☑	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☑	Soil ☐
Short Count ☐	H_2O ☐

Prepared By : SUB

Date : 3/21/16

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Am-241 Spike Verification
Actinide Prep

Batch No.: —

Balance ID: —

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	Verification-1	0.2	118	
2	2	1	119	
3	3	1	122	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope: Cm-244
Std Sol'n No. Cm-244-00011
Vol (mL): 0.1
Ref Activity (dpm/mL): 537446
Act Ref Date: 05-28-13

Samples Spiked and Traced By: SLB 4/8/15 (Initials / Date)

Verification Signature & Date: NN 4.8.15 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope: Am-241
Std Sol'n ID.: Am-241-00008
Vol (mL): 0.2
Ref Activity (dpm/mL): 85.6
Act Ref Date: 4-18-1996

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.
☐	ST-RC-0021 Rev.	☐	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.
				☐	ST-RC-0241 Rev.
				☐	ST-RC-0242 Rev.
				☐	ST-RC-5016 Rev.
				☐	
				☐	

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☑	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☑	Soil ☐
Short Count ☐	H_2O ☐

Prepared By: SLB
Date: 4/7/15

Reviewed by:
Date:

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Am-241_00009

Reagent ID: Am-241_00009

Description:	Am-241 Spike
No. of Bottles:	1
Storage Location:	RAD Actinide STDs
Reagent Volume:	250.000 mL
Creation Date:	05/28/2013
Open Date:	
Container(s):	611452
Comment:	re-ceritifed from Am-241_00008

Expiration Date:	04/09/2016
Laboratory:	TestAmerica St. Louis
Prepared By:	Bernsen, Sarah C
Solvent:	1M HNO3
Solvent Lot:	n/a

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Am-241	Am-241_00001	04/06/2016	2140.00000	dpm/mL	85.60000	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Am-241_00001	Am-241	ASTD	04/06/16	EPA	94030 1		10.00000	mL

Reagent

Am-243_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

80973-334
5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2332160, Item 1

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated with a germanium gamma spectrometer system. Radionuclide purity and calibration were checked with a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Am-243	2.692E+06	3.730E+03	0.5	1.8	3.7	11/03/2009

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: none detected. 5.11132 grams 1M HCl solution.

Source Prepared by: M. I. Taskaeva, Radiochemist

QA Approved: D. M. Montgomery, QA Manager Date: 11-13-09

ACCREDITED SOURCE CALIBRATION LABORATORY
HEALTH PHYSICS SOCIETY
FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts, Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd., Atlanta, Georgia 30318

...A Form005 Rev. —

Reagent

Am-243_00002

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

85737-334
Am-243 5 mL Liquid in Flame Sealed Vial

Customer: Test America St. Louis
P.O. No.: 2441027, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution calibrated by Eckert & Ziegler Analytics, using a germanium gamma spectrometer system. Radionuclide purity and calibration were checked with a germanium gamma spectrometer system. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Am-243	2.692E+06	3.739E+03	0.5	1.8	3.7	09/19/2011

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: γ-impurities < 0.1 %. 5.12479 g 1M HCl solution, carrier free.

Source Prepared by: _____
Z. Dimitrova, Radiochemist

QA Approved: _____ Date: 9/29/11
J. D. McCorvey, QA Manager Alternate

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia 30318

Reagent

Am-243_00007

St. Louis Radiological Standard Reverification Form

Standard ID Number: Rad12-0046
True Value = 66.688 DPM/L or g
Date Analyzed: 12/12/2012

Radionuclide: Am-243

	Replicates	
#1	66.55	DPM/L or g
#2	68.7	DPM/L or g
#3	70.76	DPM/L or g

Mean = 68.67

1 sigma = 2.10516 1.96 sigma = 4.126114

True Value minus 5% = 63.3536 (True Value - 5%)
True Value plus 5% = 70.0224 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: WM 12/13/12

SOP Reference: STL-QA-0002, Current Revision

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Am-243 verifications

Actinide Prep

Batch No. : —

Balance ID : —

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	verification-1	0.1	131	
2	2	1	132	
3	3	1	133	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Tracer ☐ N/A

Initials / Date

Isotope : Cm-244

Std Sol'n No. : Rad11-0096

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 57.008

Act Ref Date : 08-25-2011

Samples Spiked and Traced By: SLB 12/11/12 (Initials / Date)

Verification Signature & Date: MLB 12-11-12 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope : Am-243

Std Sol'n ID. : Rad12-0046

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 66.688

Act Ref Date :

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.
☐	ST-RC-0021 Rev.	☑	ST-RC-0100 Rev.	☑	ST-RC-0240 Rev.
				☐	ST-RC-0241 Rev.
				☐	ST-RC-0242 Rev.
				☐	ST-RC-5016 Rev.
				☐	
				☐	

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☑	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time		Matrix	
Long Count	☐	Soil	☐
Short Count	☐	H_2O	☐

Prepared By : SLB

Date : 12/11/12

Reviewed by: um

Date: 12/13/12

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:22:25AM 12/13/2012

Sample

Sample Name: Ver01
SampleType: Sample
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Rad12-0046_Am243ver
AnalysisID: 552408

Analyst: 60040

Tracer

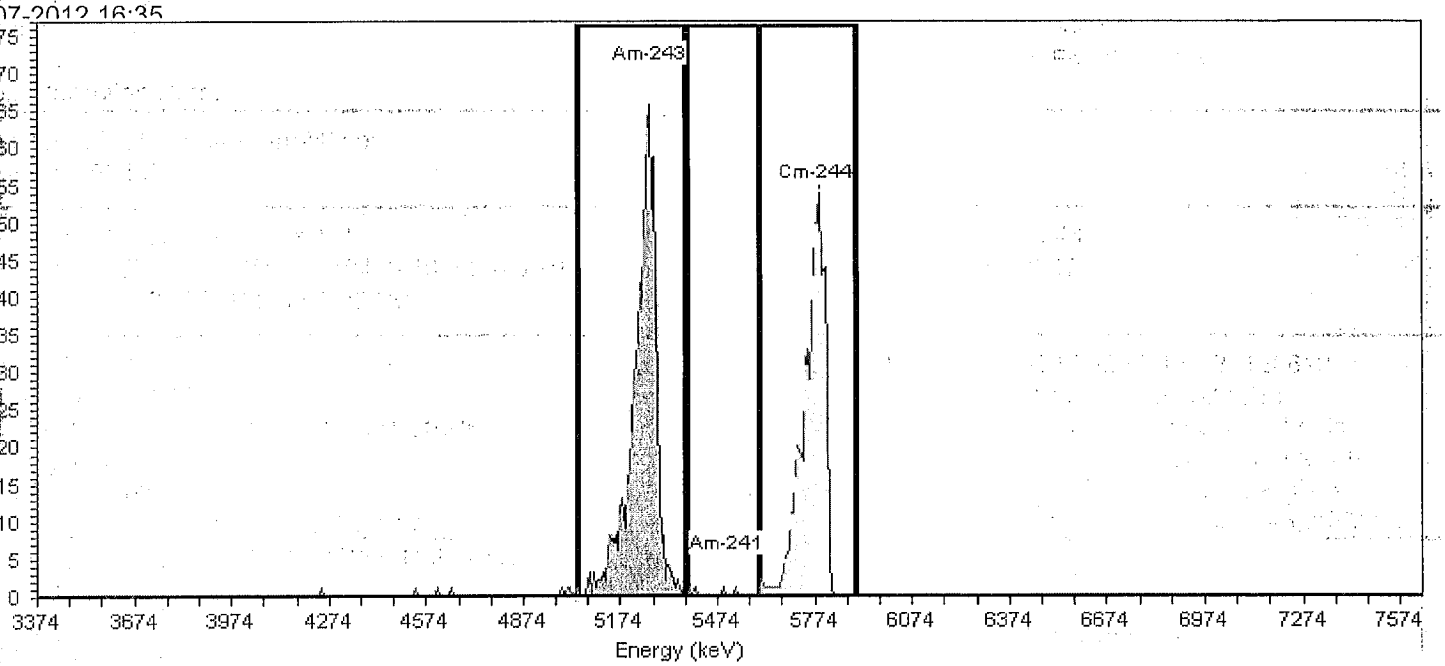
Tracer Name: Rad11-0096_Cm244
Tracer Activity: 57.01 DPM/mL x (Vol.)0.10 mL = 5.70 DPM
Tracer Ref. Date: 8/25/2011 11:00:33AM

Tracer Nuclide: Cm-244
Tracer Recovery: 88.47%

Acquisition

Detector: AV131
Serial Number: 49-164O2
Acquisition Start Date: 12/12/2012 1:04:45PM
Live Time: 400.00 min.
Real Time: 400.03 min.
Background Date: 12/7/2012 4:35:59PM
Background Info: Sample: ICB; AV131; Det: AV131; Spectrum #1; Dec-07-2012 16:35

Calibration Name: IC-9792;AV131-20120612
Calibration Date: 6/12/2012 10:16:29PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.77% +/- 0.32% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 12/12/2012 1:03:30PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity DPM/mL	2.00 Sigma UncCount DPM/mL	2.00 Sigma TPU DPM/mL	Critical Level DPM/mL	MDA DPM/mL
Am-243	5261.170	5037.444	5373.033	67.154	100.0	654	0.0000	654.00	**6.655E+001**	5.205E-006	5.59E+000	1.528E-007	2.754E-001
Am-241	5499.812	5380.491	5604.217	23.380	98.0	4	0.0000	4.00	**4.153E-001**	4.153E-007	3.49E-002	1.559E-007	2.810E-001
Cm-244	5775.741	5604.217	5902.520	69.559	100.0	533	0.0000	533.00	**5.044E+001**	4.699E-006	4.24E+000	1.528E-007	2.894E-001

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:22:44AM 12/13/2012

Sample

Sample Name: Ver02
SampleType: Sample

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Sample Collection Date:

Batch

Batch Name: Rad12-0046_Am243ver
AnalysisID: 552278

Analyst: 60040

Tracer

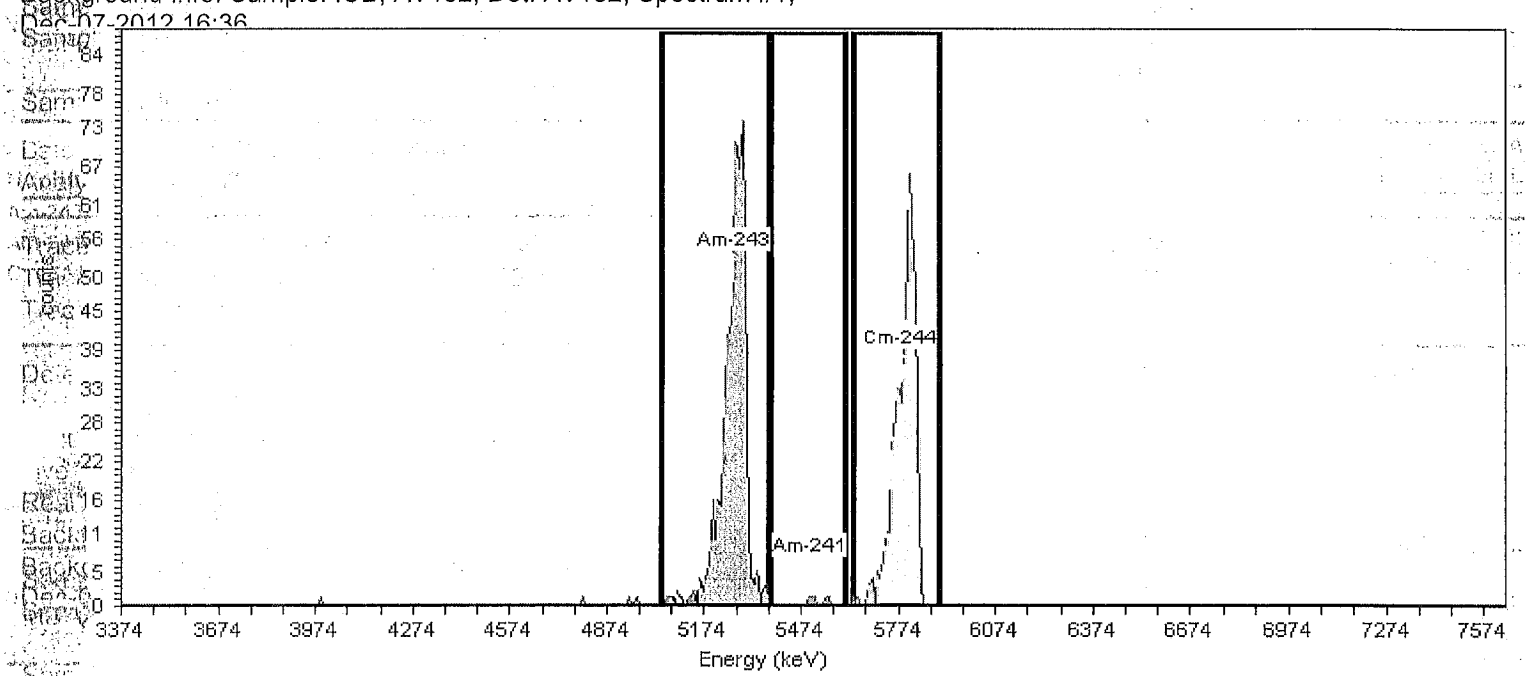
Tracer Name: Rad11-0096_Cm244
Tracer Activity: 57.01 DPM/mL x (Vol.)0.10 mL = 5.70 DPM
Tracer Ref. Date: 8/25/2011 11:00:33AM

Tracer Nuclide: Cm-244
Tracer Recovery: 91.81%

Acquisition

Detector: AV132
Serial Number: 49-164O4
Acquisition Start Date: 12/12/2012 1:04:48PM
Live Time: 400.00 min.
Real Time: 400.03 min.
Background Date: 12/7/2012 4:36:01PM
Background Info: Sample: ICB; AV132; Det: AV132; Spectrum #1;
Dec 07-2012 16:36

Calibration Name: IC-9793;AV132-20120612
Calibration Date: 6/12/2012 10:16:32PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.11% +/- 0.33% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 12/12/2012 1:03:30PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity DPM/mL	2.00 Sigma UncCount DPM/mL	2.00 Sigma TPU DPM/mL	Critical Level DPM/mL	MDA DPM/mL
Am-243	5261.170	5037.444	5373.033	62.961	100.0	684	0.0000	684.00	**6.870E+001**	5.254E-006	5.77E+000	1.508E-007	2.718E-001
Am-241	5499.812	5380.491	5611.675	19.277	98.0	5	0.0000	5.00	**5.125E-001**	4.584E-007	4.30E-002	1.539E-007	2.773E-001
Cm-244	5775.741	5634.047	5902.520	65.683	100.0	540	0.0000	540.00	**5.234E+001**	4.668E-006	4.40E+000	1.508E-007	2.857E-001

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:23:01AM 12/13/2012

Sample

Sample Name: Ver03
SampleType: Sample

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Sample Collection Date:

Batch

Batch Name: Rad12-0046_Am243ver
AnalysisID: 552279

Analyst: 60040

Tracer

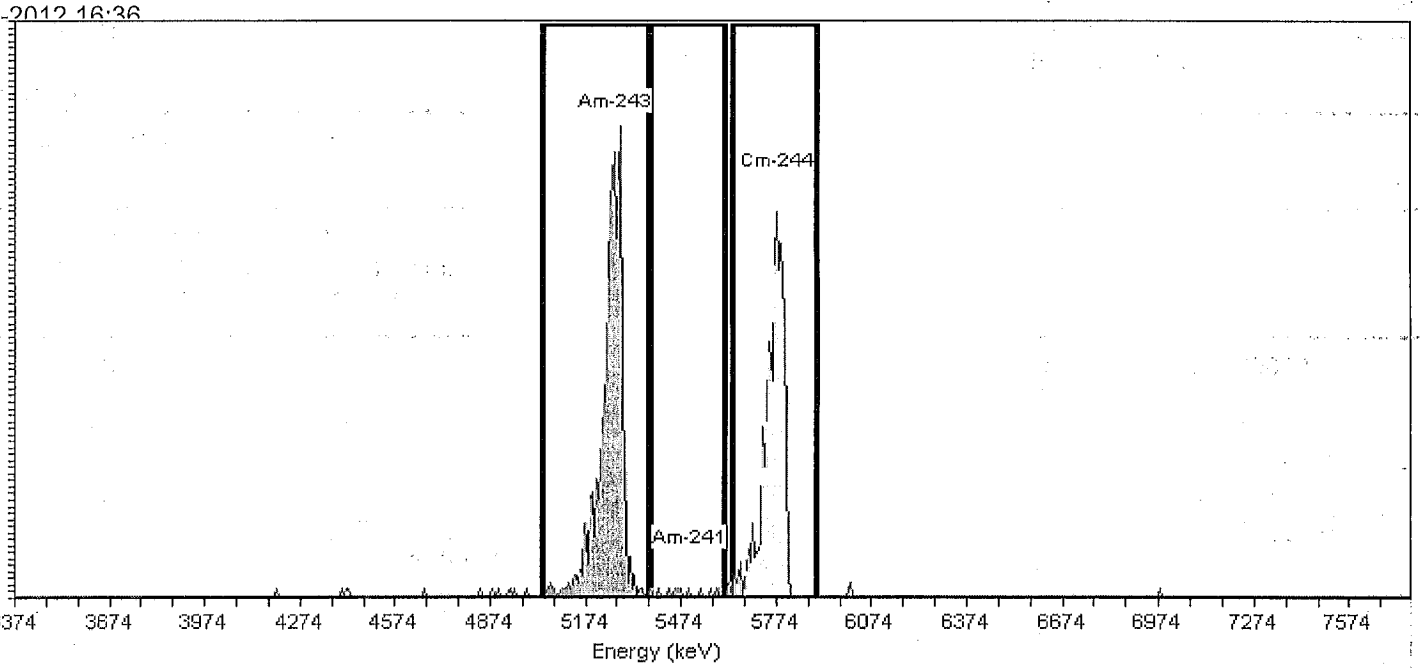
Tracer Name: Rad11-0096_Cm244
Tracer Activity: 57.01 DPM/mL x (Vol.)0.10 mL = 5.70 DPM
Tracer Ref. Date: 8/25/2011 11:00:33AM

Tracer Nuclide: Cm-244
Tracer Recovery: 85.81%

Acquisition

Detector: AV133
Serial Number: 49-169B4
Acquisition Start Date: 12/12/2012 1:04:48PM
Live Time: 400.00 min.
Real Time: 400.03 min.
Background Date: 12/7/2012 4:36:02PM
Background Info: Sample: ICB; AV133; Det: AV133; Spectrum #1; Dec-07-2012 16:36

Calibration Name: IC-9794;AV133-20120612
Calibration Date: 6/12/2012 3:43:51PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.27% +/- 0.33% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction: 12/12/2012 1:03:30PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity DPM/mL	2.00 Sigma UncCount DPM/mL	2.00 Sigma TPU DPM/mL	Critical Level DPM/mL	MDA DPM/mL
Am-243	5261.170	5037.444	5373.033	61.913	100.0	638	0.0000	638.00	**7.076E+001**	5.603E-006	5.94E+000	1.666E-007	3.001E-001
Am-241	5499.812	5380.491	5611.675	19.000	98.0	10	0.4167	9.58	**1.085E+000**	7.220E-007	9.11E-002	1.700E-007	5.924E-001
Cm-244	5775.741	5634.047	5902.520	60.610	100.0	489	0.0000	489.00	**4.892E+001**	4.905E-006	4.11E+000	1.666E-007	3.155E-001

Reagent

Am-243_00008

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

81335-334

5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica/St. Louis
P.O. No.: 2340308, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution calibrated by Eckert & Ziegler Analytics, using a germanium gamma spectrometer system. Radionuclide purity and calibration were checked with a germanium gamma spectrometer system. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty* , % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Am-243	2.692E+06	3.759E+03	0.5	1.8	3.7	01/12/2010

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
5.15115 grams 1M HCl solution.

Source Prepared by: _____
W. Mao, Radiochemist

QA Approved: _____ Date: 1/12/10
J. D. McCorvey, QA Manager Alternate

ACCREDITED SOURCE CALIBRATION LABORATORY
HEALTH PHYSICS SOCIETY
FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

Am-243_00014

St. Louis Radiological Standard Reverification Form

Standard ID Number: Am-243_00014
True Value = 66.688 DPM/L or g
Date Analyzed: 11/8/2015

Radionuclide: Am-243

	Replicates	
#1	69.433	DPM/L or g
#2	71.904	DPM/L or g
#3	68.204	DPM/L or g

Mean = 69.847

1 sigma = 1.884422 1.96 sigma = 3.693467

True Value minus 5% = 63.3536 (True Value - 5%)
True Value plus 5% = 70.0224 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: RTM 11/9/2015

SOP Reference: STL-QA-0002, Current Revision

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:20:15PM 11/9/2015

Sample

Sample Name: Verification 1
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Am-243_00014
AnalysisID: 663581

Analyst: 60040

Tracer

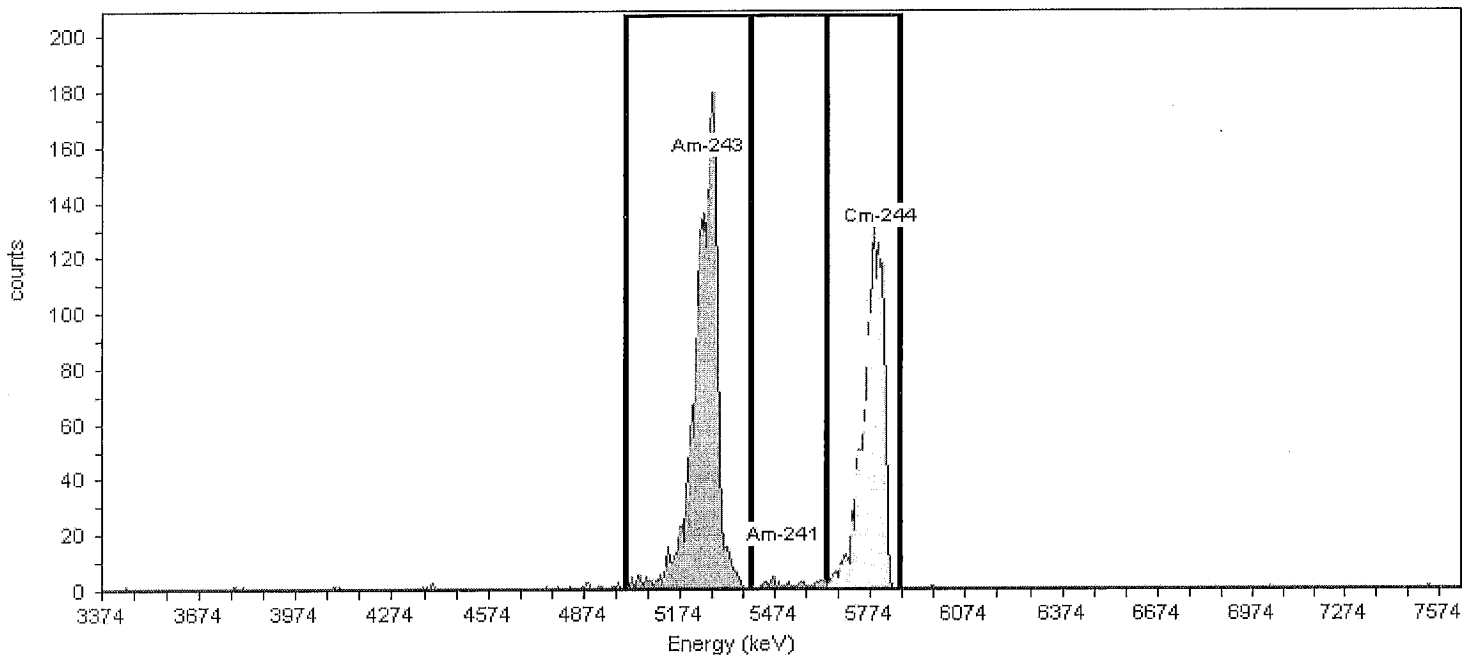
Tracer Name: Cm-244_00012
Tracer Activity: 53.76 DPM/mL x (Vol.)0.10 mL = 5.38 DPM
Tracer Ref. Date: 5/28/2013 11:00:35AM

Tracer Nuclide: Cm-244
Tracer Recovery: 102.48%

Acquisition

Detector: AV131
Serial Number: 49-164O2
Acquisition Start Date: 11/8/2015 10:53:04PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 11/7/2015 6:34:10PM
Background Info: Sample: ICB;AV131; Det: AV131; Spectrum #1; Nov-07-2015 18:34

Calibration Name: IC-9885;AV131-20150604
Calibration Date: 6/4/2015 6:23:27PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.60% +/- 0.39% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Am_CmTracer
Decay Correction: 11/8/2015 10:52:08PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5007.6	5395.4	76.6	100.0	1817	0.0000	1817.00	69.433	DPM/mL
Am-241	5499.8	5,485.7	14.1	5395.4	5634.0	33.0	98.0	44	0.0000	44.00	1.716	DPM/mL
Cm-244	5805.6	5,805.0	0.6	5634.0	5865.2	65.9	100.0	1281	0.0000	1281.00	55.100	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:21:01PM 11/9/2015

Sample

Sample Name: Verification 2
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Am-243_00014
AnalysisID: 663582

Analyst: 60040

Tracer

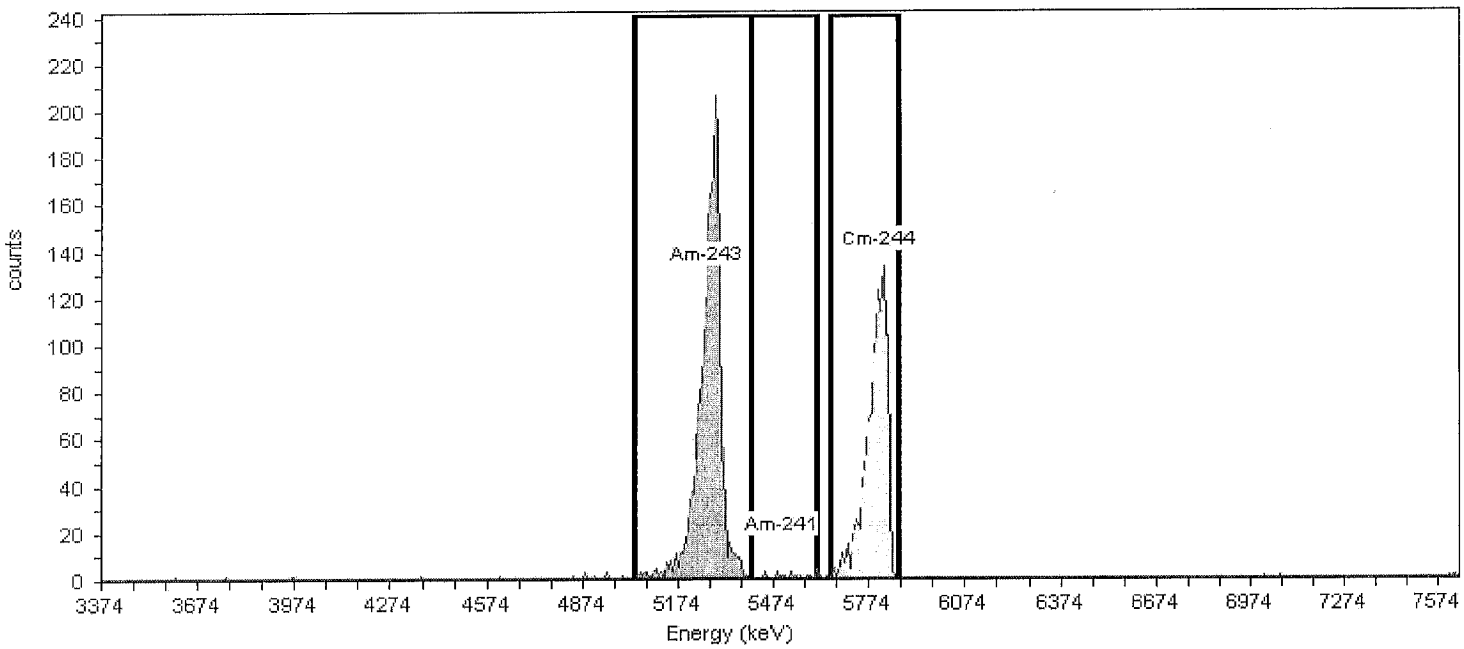
Tracer Name: Cm-244_00012
Tracer Activity: 53.76 DPM/mL x (Vol.)0.10 mL = 5.38 DPM
Tracer Ref. Date: 5/28/2013 11:00:35AM

Tracer Nuclide: Cm-244
Tracer Recovery: 106.92%

Acquisition

Detector: AV132
Serial Number: 49-164O4
Acquisition Start Date: 11/8/2015 10:53:05PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 11/6/2015 12:30:50PM
Background Info: Sample: ICB;AV132; Det: AV132; Spectrum #1; Nov-06-2015 12:30

Calibration Name: IC-9886;AV132-20150604
Calibration Date: 6/4/2015 6:23:37PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.32% +/- 0.33% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Am_CmTracer
Decay Correction: 11/8/2015 10:52:08PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5037.4	5402.9	63.2	100.0	1796	1.0000	1795.00	71.904	DPM/mL
Am-241	5499.8	5,485.7	14.1	5402.9	5611.7	.3	98.0	17	0.0000	17.00	0.695	DPM/mL
Cm-244	5805.6	5,805.0	0.6	5656.4	5865.2	64.0	100.0	1222	0.0000	1222.00	57.484	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:21:51PM 11/9/2015

Sample

Sample Name: Verification 3
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Am-243_00014
AnalysisID: 663583

Analyst: 60040

Tracer

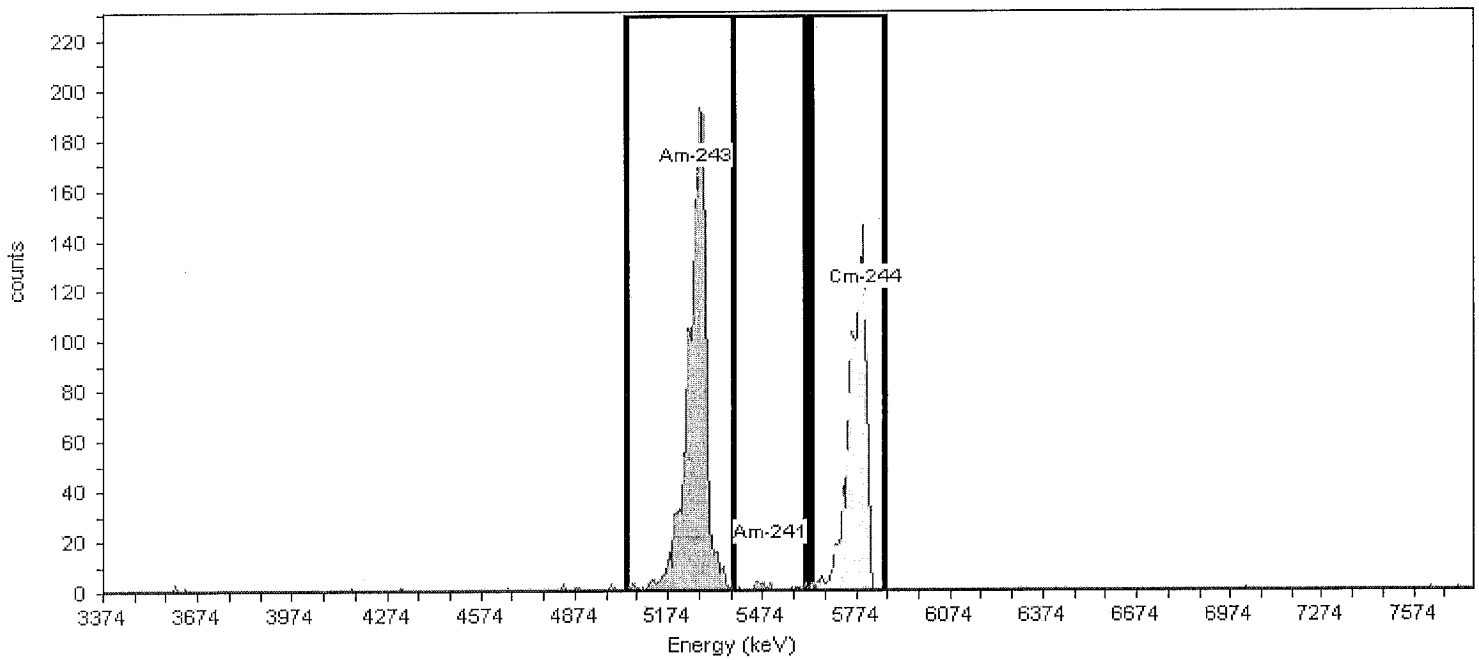
Tracer Name: Cm-244_00012
Tracer Activity: 53.76 DPM/mL x (Vol.)0.10 mL = 5.38 DPM
Tracer Ref. Date: 5/28/2013 11:00:35AM

Tracer Nuclide: Cm-244
Tracer Recovery: 97.96%

Acquisition

Detector: AV133
Serial Number: 49-169B4
Acquisition Start Date: 11/8/2015 10:53:07PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 11/6/2015 12:30:52PM
Background Info: Sample: ICB;AV133; Det: AV133; Spectrum #1; Nov-06-2015 12:30

Calibration Name: IC-7107;AV133-20150607
Calibration Date: 6/8/2015 7:46:18PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.35% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Am_CmTracer
Decay Correction: 11/8/2015 10:52:08PM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5037.4	5380.5	59.6	100.0	1626	0.0000	1626.00	68.204	DPM/mL
Am-241	5499.8	5,485.7	14.1	5380.5	5611.7	159.6	98.0	19	1.0000	18.00	0.770	DPM/mL
Cm-244	5805.6	5,805.0	0.6	5634.0	5865.2	61.2	100.0	1167	0.0000	1167.00	52.666	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Am- 243 ver. (by Coppt)

Aliquot Only

Batch No. : —

Balance ID : —

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	Ver 1	0.1	131	
2	2	1	132	
3	3	1	133	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : Cm-244
Std Sol'n No. : Cm-244.0002
Vol (mL) : 0.1
Ref Activity (dpm/mL) : 53.71646
Act Ref Date : 05-28-13

Samples Spiked and Traced By: SUB 11/5/15
Initials / Date

Verification Signature & Date: OMC 11/5/15
Initials / Date

LCS Standard ☐ N/A

Initials / Date

Isotope : Am-243
Std Sol'n ID. : Am-243 ~~00010~~ -00014
Vol (mL) : 0.1 SUB 11/5/15
Ref Activity (dpm/mL) : 66.688
Act Ref Date : 11-03-09

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.
☐	ST-RC-0021 Rev.	☐	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.
				☐	ST-RC-0241 Rev.
				☐	ST-RC-0242 Rev.
				☐	ST-RC-5016 Rev.
				☐	
				☐	

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☑	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time		Matrix	
Long Count	☑	Soil	☐
Short Count	☐	H_2O	☐

Prepared By : SUB
Date : 11/5/15

Reviewed by:
Date:

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Am-243_00014

Reagent ID: Am-243_00014

		Expiration Date:	12/31/2015
Description:	Am-243 Tracer	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Solvent:	1M HCL
Reagent Volume:	250.000 mL	Solvent Lot:	0
Creation Date:	11/05/2015		
Open Date:			
Container(s):	783093		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Am-243	Am-243_00003	11/03/2059	2222.92500	dpm/mL	66.68774	dpm/mL
Np-239	Am-243_00003	11/03/2059	2222.92500	dpm/mL	66.68774	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Am-243_00003	Am-243 Parent		11/03/59				7.50000	mL

Reagent

Am-243_00015

St. Louis Radiological Standard Reverification Form

Standard ID Number: Am-243_00013 (Np)
True Value = 134.34 DPM/L or g
Date Analyzed: 1/8/2016

Radionuclide: Am-243

	Replicates	
#1	137.1	DPM/L or g
#2	131.3	DPM/L or g
#3	139.1	DPM/L or g

Mean = 135.8333

1 sigma = 4.051337 1.96 sigma = 7.940621

True Value minus 5% = 127.623 (True Value - 5%)
True Value plus 5% = 141.057 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: RTM 1/17/2016

SOP Reference: STL-QA-0002, Current Revision

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Am-243 (Np) Tracer

Aliquot Only

Ver. by Coppt

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	Ver. 1	0.1	231	
2	2	1	232	
3	3		233	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : Cm-244

Std Sol'n No. : Cm-244.00012

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 53.76465

Act Ref Date : 5-28-13

Samples Spiked and Traced By: SLB 1/7/16 (Initials / Date)

Verification Signature & Date: SEK 1/7/16 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope : Am-243 (Np)

Std Sol'n ID. : Am-243-00013

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 134.34

Act Ref Date : 01-12-10

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.
☐	ST-RC-0021 Rev.	☐	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.
				☐	ST-RC-0241 Rev.
				☐	ST-RC-0242 Rev.
				☐	ST-RC-5016 Rev.
				☐	
				☐	

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☑	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time		Matrix	
Long Count	☑	Soil	☐
Short Count	☐	H_2O	☐

Prepared By : SLB

Date : 1/7/16

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Am-243_00013

Reagent ID: Am-243_00013

		Expiration Date:	01/20/2016
Description:	Am-243 for Np	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD STDs Cabinet in Gamma Closet	Solvent:	1M HCL
Reagent Volume:	250.000 mL	Solvent Lot:	0
Creation Date:	02/06/2013		
Open Date:			
Container(s):	545522		
Comment:	Rad13-0005 Standard was re-certified from Am-243_00009 (82437) Re-certified from Am-243_00011		

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Am-243	Am-243CalStd_00001	01/12/2060	2239.00300	dpm/mL	134.34017	dpm/mL
Np-239	Am-243CalStd_00001	01/12/2060	2239.00300	dpm/mL	134.34017	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Am-243CalStd_00001	Am-243 for Np		01/12/60				15.00000	mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:45:09PM 1/17/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Am-243_00013
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

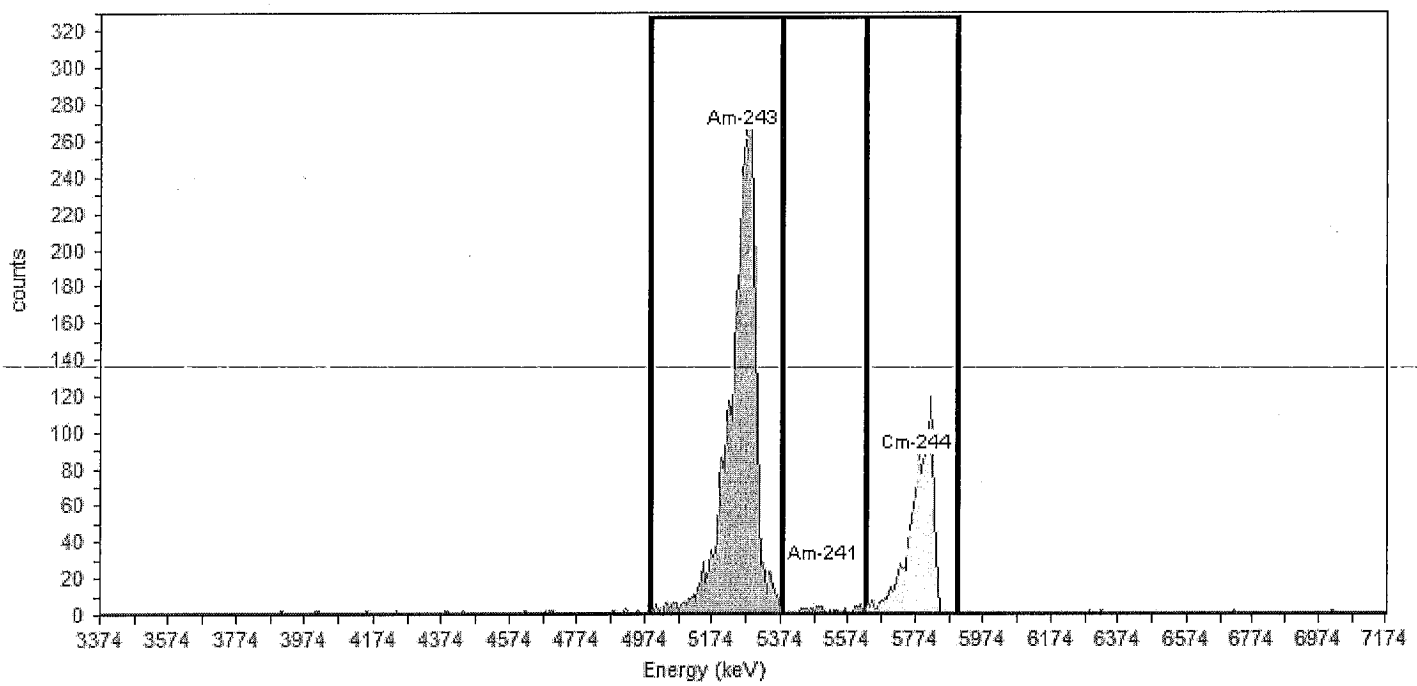
Tracer Name: Cm-244_00012
Tracer Activity: 53.76 DPM / mL x (Vol.) 0.10 mL = 5.38 DPM
Tracer Ref. Date: 5/28/2013 2:23:13PM

Tracer Nuclide: Cm-244
Tracer Recovery: 88.67%

Acquisition

Detector: AV231 SN: 50-120DD4
Acquisition Start Date: 1/8/2016 2:32:38PM
Live Time: 960.00 min.
Real Time: 960.03 min.
Background Date: 12/13/2015 6:06:32PM
Bkgd Info: Sample: ICB;AV231; Det: AV231; Spectrum #1; 12/13/2015 6:06:32 PM

Energy Calibration: IC-7107;AV231-20151018
Efficiency Calibration:IC-7107;AV231-20151018
Calibration Date: 10/19/2015 4:11:26PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.54% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:1/8/2016 2:31:09PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	4992.7	5380.5	69.2	100.0	3145	2.0000	3143.00	1.391E+002	DPM/mL
Am-241	5499.8	5,485.7	14.1	5380.5	5626.6	25.0	98.0	35	6.0000	29.00	1.310E+000	DPM/mL
Cm-244	5775.7	5,805.0	-29.3	5626.6	5902.5	75.5	100.0	1102	3.0000	1099.00	4.768E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:45:42PM 1/17/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Am-243_00013
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

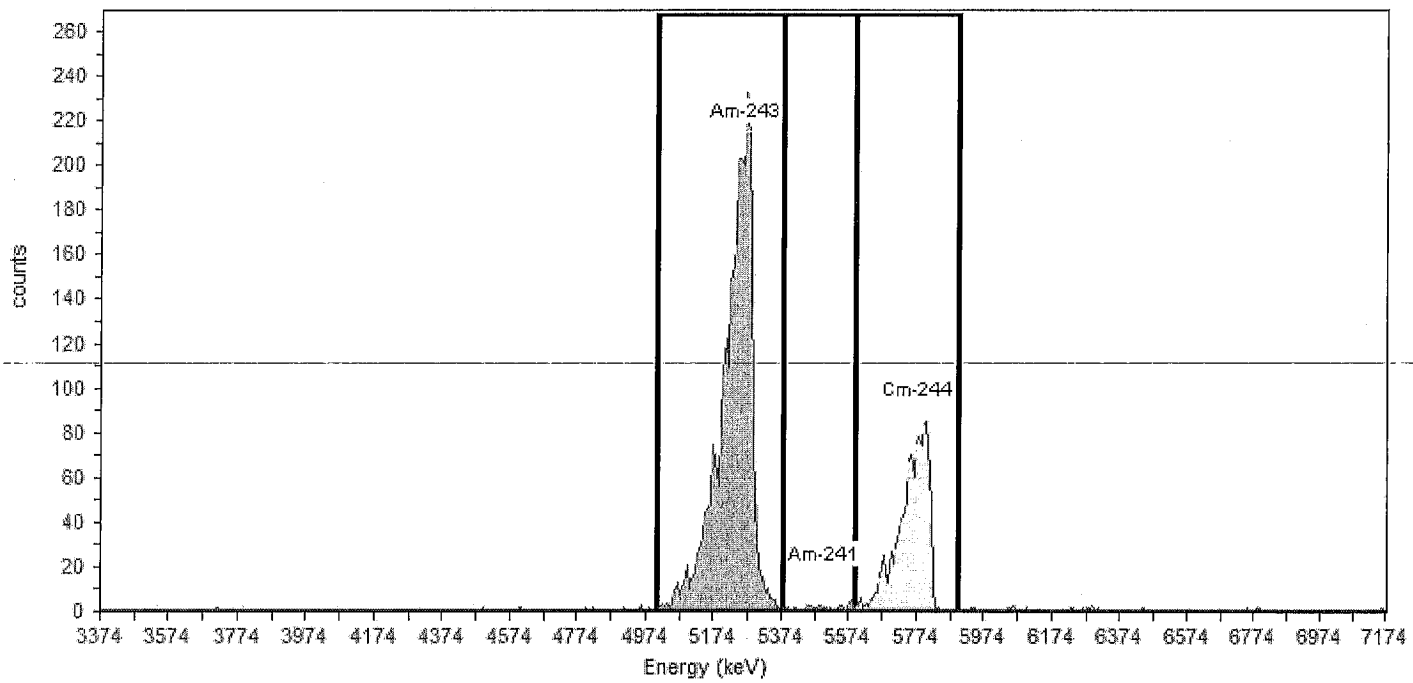
Tracer Name: Cm-244_00012
Tracer Activity: 53.76 DPM / mL x (Vol.) 0.10 mL = 5.38 DPM
Tracer Ref. Date: 5/28/2013 2:23:13PM

Tracer Nuclide: Cm-244
Tracer Recovery: 85.66%

Acquisition

Detector: AV232 SN: 46-033p2
Acquisition Start Date: 1/8/2016 2:32:38PM
Live Time: 960.00 min.
Real Time: 960.15 min.
Background Date: 12/13/2015 6:06:32PM
Bkgd Info: Sample: ICB;AV232; Det: AV232; Spectrum #1; 12/13/2015 6:06:32 PM

Energy Calibration: IC-8874;AV232-20151018
Efficiency Calibration:IC-8874;AV232-20151018
Calibration Date: 10/19/2015 4:11:30PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.40% +/- 0.38% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:1/8/2016 2:31:09PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5007.6	5380.5	81.5	100.0	2853	2.0000	2851.00	1.313E+002	DPM/mL
Am-241	5499.8	5,485.7	14.1	5380.5	5596.8	11.1	98.0	25	8.0000	17.00	7.990E-001	DPM/mL
Cm-244	5775.7	5,805.0	-29.3	5596.8	5902.5	89.9	100.0	1060	4.0000	1056.00	4.606E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:46:07PM 1/17/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Am-243_00013
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

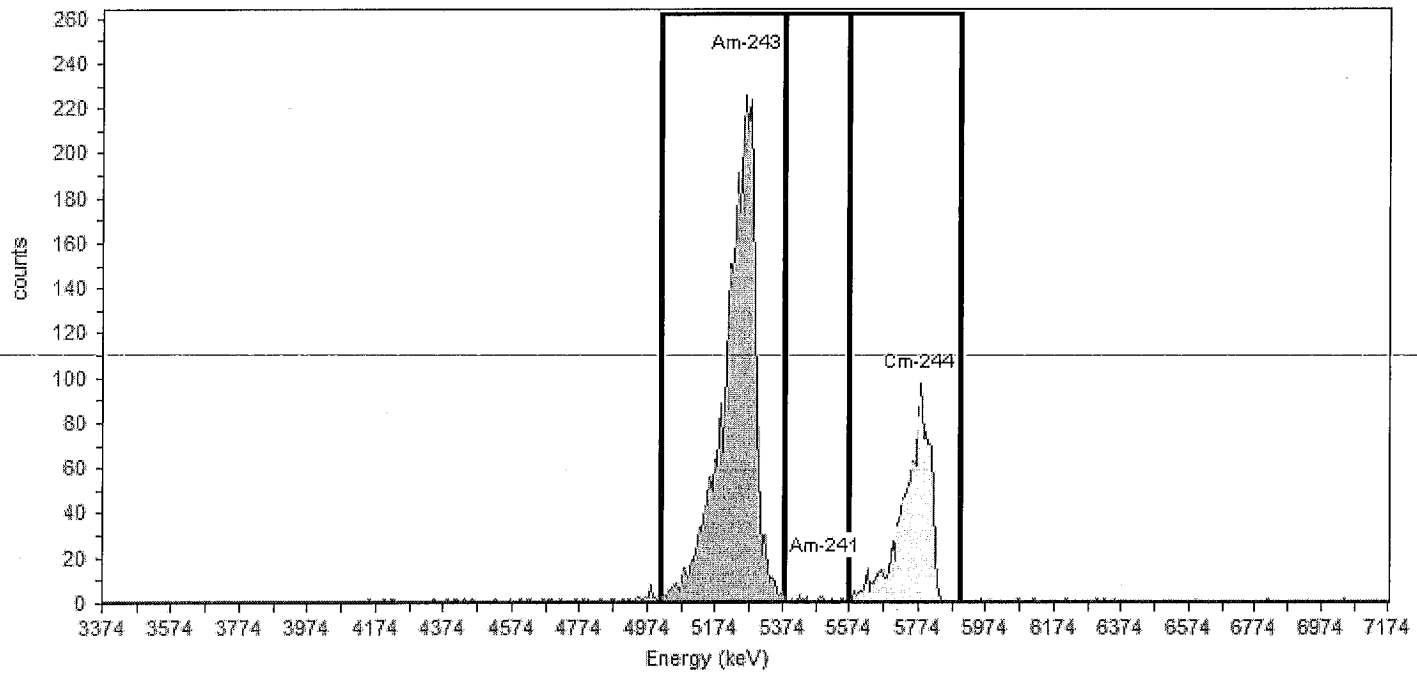
Tracer Name: Cm-244_00012
Tracer Activity: 53.76 DPM / mL x (Vol.) 0.10 mL = 5.38 DPM
Tracer Ref. Date: 5/28/2013 2:23:13PM

Tracer Nuclide: Cm-244
Tracer Recovery: 100.35%

Acquisition

Detector: AV233 SN: 51-005Q7
Acquisition Start Date: 1/8/2016 2:32:37PM
Live Time: 960.00 min.
Real Time: 960.09 min.
Background Date: 12/13/2015 6:06:32PM
Bkgd Info: Sample: ICB;AV233; Det: AV233; Spectrum #1; 12/13/2015 6:06:32 PM

Energy Calibration: IC-8875;AV233-20151018a
Efficiency Calibration:IC-8875;AV233-20151018a
Calibration Date: 10/19/2015 4:12:25PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 23.60% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:1/8/2016 2:31:09PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5015.1	5380.5	90.0	100.0	3124	7.0000	3117.00	1.371E+002	DPM/mL
Am-241	5499.8	5,485.7	14.1	5380.5	5574.4	19.5	98.0	13	7.0000	6.00	2.693E-001	DPM/mL
Cm-244	5775.7	5,805.0	-29.3	5574.4	5902.5	91.8	100.0	1110	4.0000	1106.00	5.395E+001	DPM/mL

Reagent

Benzoic Acid_00014

Rec'd: 6-29-15 MA

RESTEK® CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31879 **Lot No.:** A0109720

Description : Benzoic Acid Mix

Benzoic Acid 2000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 31, 2019 **Storage:** 10°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Benzoic acid	2,002.5 µg/mL	+/- 11.7518	µg/mL	Gravimetric
	CAS # 65-85-0 (Lot MKBL6689V)		+/- 49.9217	µg/mL	Unstressed
	Purity 99%		+/- 62.7678	µg/mL	Stressed

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

670928
ID: Benzoic Acid_00014
Exp: 03/31/19 Prpd: MAK
Benzoic Acid Mix parent s

670946
ID: Benzoic Acid_00015
Exp: 03/31/19 Prpd: MAK
Benzoic Acid Mix parent s

670948
ID: Benzoic Acid_00016
Exp: 03/31/19 Prpd: MAK
Benzoic Acid Mix parent s

670950
ID: Benzoic Acid_00017
Exp: 03/31/19 Prpd: MAK
Benzoic Acid Mix parent s

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

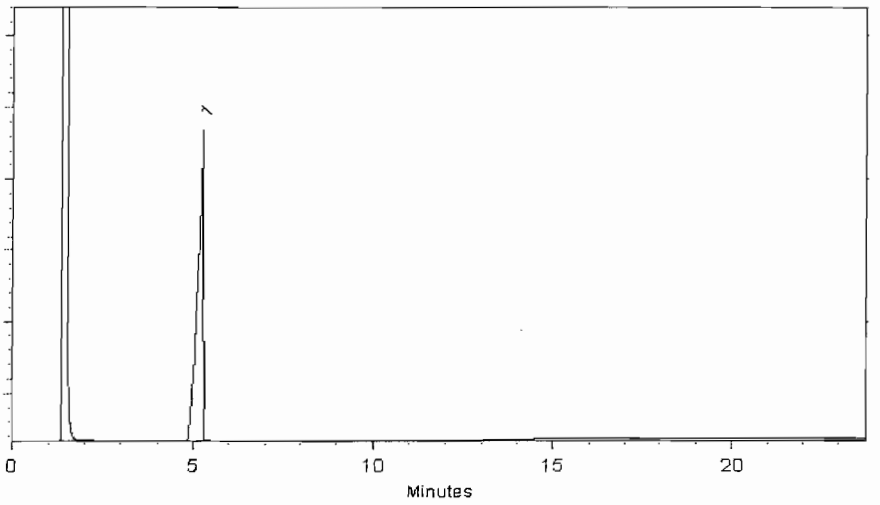
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Connor Flanney - Mix Technician

Date Mixed: 17-Mar-2015 **Balance:** 1128360905

Tyler Brown - QA Analyst

Date Passed: 19-Mar-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

Cyclohexanol_00032

Rec'd: 7-1-15 MA

125 Market Street
New Haven, CT 06513
USA

AccuStandard®, Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

Catalog No: S-8402
Description: Cyclohexanol Standard
Lot: 214081290
Solvent: Methanol
Hazards: **HIGHLY FLAMMABLE** - *Refer to SDS for safety info*

Date Certified: Aug 13, 2014
Expiration: Aug 13, 2017
Sample Size: 1 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO Guide 34 Scope of Accreditation: Yes

Danger 2

Component	CAS #	Purity % (GC/FID)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
Cyclohexanol	108-93-0	100.0	2000	2000

670847
ID: Cyclohexanol_00031
Exp: 08/13/17 Prpd: MAK
Cyclohexanol parent stand

670848
ID: Cyclohexanol_00032
Exp: 08/13/17 Prpd: MAK
Cyclohexanol parent stand

670849
ID: Cyclohexanol_00033
Exp: 08/13/17 Prpd: MAK
Cyclohexanol parent stand

670850
ID: Cyclohexanol_00034
Exp: 08/13/17 Prpd: MAK
Cyclohexanol parent stand

670851
ID: Cyclohexanol_00035
Exp: 08/13/17 Prpd: MAK
Cyclohexanol parent stand

A product with a suffix (-1A, -2B, etc. or -01, -02, etc.) on its lot number has had its expiration date extended and is identical to the same lot number without the suffix.

[1] All weights are traceable through NIST, Test No. 822-275872-11

[2] Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty associated with the gravimetric values reported on this certificate is ±0.24%. The CRM Uncertainty calculated for this product is ±5%. These values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.

Labels and certificates follow U.S. Conventions in reporting numerical values:
A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

See reverse side for additional information

Certified By: Larry Decker, Organic QC Manager

Page 1 of 1 - Rev. 1

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

OR-ORG/INO-001
Rev. 7/11

Reagent

Gamma Ampuole_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

79670-334

5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2303925, Item 1
Calibration Date: 01-Apr-2009 12:00 EST **Grams of Master Source:** 0.028371

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	157860	———	3.390E+03	0.1	0.9	1.8	4π LS
Cd-109	88.0	462.60	1.691E+05	4.798E+03	0.4	1.7	3.5	HPGe
Co-57	122.1	271.79	8.904E+04	2.526E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	137.6	1.256E+05	3.563E+03	0.4	1.1	2.3	HPGe
Hg-203	279.2	46.61	2.788E+05	7.910E+03	0.3	1.1	2.3	HPGe
Sn-113	391.7	115.1	1.725E+05	4.894E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	10983	1.120E+05	3.178E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	106.6	4.205E+05	1.193E+04	0.8	1.1	2.7	HPGe
Co-60	1173.2	1925.4	2.184E+05	6.196E+03	0.7	1.1	2.6	HPGe
Co-60	1332.5	1925.4	2.185E+05	6.199E+03	0.7	1.1	2.6	HPGe
Y-88	1836.1	106.6	4.444E+05	1.261E+04	0.7	1.1	2.6	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
5.31740 grams 4M HCl solution with approximately 30 microg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the calibration date.

Source Prepared by: [signature] for
W. Mao, Radiochemist

QA Approved: [signature] Date: 5-13-09
D. M. Montgomery, QA Manager

End of Certificate

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

H-3_00017

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

H - 3 _ 0 0 0 1 7

681634
ID: H-3_00017
Exp:02/15/65 Prpd:SCB Opn:07/15/15
H-3 Ampoule

Reagent ID: H-3_00017

Type:	ASTD	Expiration Date:	02/15/2065
Description:	H-3 Ampoule	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Vendor:	Eckert &Ziegler
Reagent Volume:	5.000 mL	Vendor Lot #:	1794-39
Creation Date:	01/29/2015	Vendor Cat #:	7003
Open Date:	07/15/2015		
Container(s):	681634		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Low Energy Beta					36.96000	kBq/g
Tritium					36.96000	kBq/g

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

CERTIFICATE OF CALIBRATION
BETA STANDARD SOLUTION

Radionuclide:	H-3	**Customer:**	TEST AMERICA
Half-life:	12.35 ± 0.01 years	**P.O. No.:**	2594334
Catalog No.:	7003	**Reference Date:**	15-Feb-15 12:00 PST
Source No.:	1794-39	**Contained Radioactivity:**	4.994 **µCi** 184.8 **kBq**

Physical Description:

A. Mass of solution: 4.99952 g in 5 mL flame-sealed ampoule
B. Chemical form: T_2O in H_2O
C. Carrier content: None
D. Density: 0.9982 g/mL @ 20°C

Radioimpurities:

None detected

Radionuclide Concentration: 0.9989 µCi/g, 36.96 kBq/g

Method of Calibration:

This source was prepared from a weighed aliquot of solution whose activity in µCi/g was determined using a liquid scintillation counter.

Uncertainty of Measurement:

A. Type A (random) uncertainty: ± 1.0 %
B. Type B (systematic) uncertainty: ± 3.2 %
C. Uncertainty in aliquot weighing: ± 0.4 %
D. Total uncertainty at the 99% confidence level: ± 3.4 %

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from NCRP Report No. 58, 1985.
- This solution has a working life of 5 years.

Daniel James Van Dalsem
Quality Control

20-Jan-15
Date

EZIP Ref. No.: 1794-39

Reagent

H-3_00018

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

H - 3 _ 0 0 0 1 8

Reagent ID: H-3_00018

Description:	H-3 Parent	Expiration Date:	02/15/2065
No. of Bottles:	1	Laboratory:	TestAmerica St. Louis
Storage Location:	RAD Actinide STDs	Prepared By:	Bernsen, Sarah C
Reagent Volume:	100.000 mL	Solvent:	DI Water
Creation Date:	07/15/2015	Solvent Lot:	n/a
Open Date:			
Container(s):	681751		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Low Energy Beta	H-3_00017	02/15/2065	36.96000	kBq/g	110081.66400	dpm/mL
Tritium	H-3_00017	02/15/2065	36.96000	kBq/g	110081.66400	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
H-3_00017	H-3 Ampoule	ASTD	02/15/65	Eckert &Ziegler	1794-39	7003	4.96400	g

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

CERTIFICATE OF CALIBRATION
BETA STANDARD SOLUTION

Radionuclide:	H-3	**Customer:**	TEST AMERICA
Half-life:	12.35 ± 0.01 years	**P.O. No.:**	2594334
Catalog No.:	7003	**Reference Date:**	15-Feb-15 12:00 PST
Source No.:	1794-39	**Contained Radioactivity:**	4.994 **µCi** 184.8 **kBq**

Physical Description:

A. Mass of solution: 4.99952 g in 5 mL flame-sealed ampoule
B. Chemical form: T_2O in H_2O
C. Carrier content: None
D. Density: 0.9982 g/mL @ 20°C

Radioimpurities:

None detected

Radionuclide Concentration: 0.9989 µCi/g, 36.96 kBq/g

Method of Calibration:

This source was prepared from a weighed aliquot of solution whose activity in µCi/g was determined using a liquid scintillation counter.

Uncertainty of Measurement:

A. Type A (random) uncertainty: ± 1.0 %
B. Type B (systematic) uncertainty: ± 3.2 %
C. Uncertainty in aliquot weighing: ± 0.4 %
D. Total uncertainty at the 99% confidence level: ± 3.4 %

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from NCRP Report No. 58, 1985.
- This solution has a working life of 5 years.

Daniel James Van Dalsem
Quality Control

20-Jan-15
Date

EZIP Ref. No.: 1794-39

Reagent

H-3_00023

St. Louis Radiological Standard Reverification Form

Standard ID Number: H-3_00023 (725752)
True Value = 1367.7 DPM/L or g
Date Analyzed: 5/23/2016

Radionuclide: H-3

	Replicates	
#1	1381.9	DPM/L or g
#2	1391.9	DPM/L or g
#3	1381.9	DPM/L or g

Mean = 1385.233

1 sigma = 5.773503 1.96 sigma = 11.31607

True Value minus 5% = 1299.315 (True Value - 5%)
True Value plus 5% = 1436.085 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Amanda Leigh Dick 05/24/2016

SOP Reference: STL-QA-0002, Current Revision

Teal
Prot. 2
45 min

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

H-3 standard verification

Std #: H-3_00023 (725752)
Activity: 2255.98308 dpm/mL
Reference Date: 07/01/07

Vial #	mL H2O	STD mL	mL UGLLT
1	9	1	10
2	9	1	10
3	9	1	10

Prepared by: JPR
Date: 5/20/16

Decay Correction

Tritium						
Initial Activity:	1016.208595	pCi				
Reference Date:	7/1/2007					
Current Date:	5/23/2016		(or date at which you wish to determine activity)			
Elapsed Time:	3249	days				
Half Life:	4500	days	108000			
Exponential Term:	0.60625641					
Corrected Activity:	616.0829739	pCi	1367.70	dpm/mL		

H3_2016 Protocol 2

Assay Definition

Assay Description:

Assay Type: DPM (Single)
Report Name: H3_Protocol 2
Output Data Path: Z:\
Raw Results Path: C:\Packard\Tricarb\Results\Default\H3_2016 Protocol 2\20160523_1635\20160523_1635.results
Assay File Name: C:\Packard\TriCarb\Assays\H3_2016 Protocol 2.lsa

Additional Data Files Generated with this Protocol:
2H3
[Auto] 2H3.001

Count Conditions

Nuclide: H3_2016
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 15 sec
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H3_2016
Count Time (min): 45.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

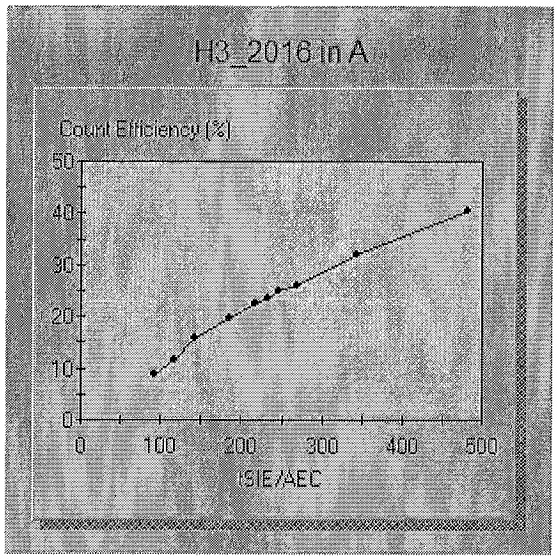
Regions	LL	UL	2Sigma % Terminator
A	0.0	18.6	1.50
B	2.0	18.6	0.00
C	18.7	100.0	0.00

Count Corrections

Static Controller: On Luminescence Correction: Off
Colored Samples: On Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Cycle 1 Results
Quench Curve Block Data

H3_2016 Protocol 2

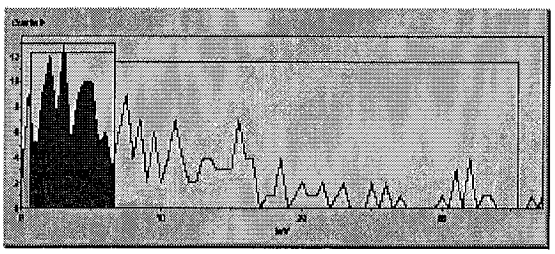


Date Acquired: 04/04/2016
Date Modified:
H3_2016 in A

tSIE/AEC	Count Efficiency (%)
482.64	40.34
344.44	32.00
269.51	26.11
246.71	24.89
234.08	23.46
217.14	22.68
186.02	19.72
143.22	15.73
117.82	11.48
92.25	8.88

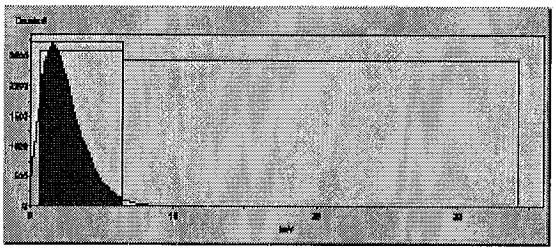
S#	Count	Time	CPMA	CPMB	DPM1	tSIE	MESSAGES	EFF
CPMC	LUM	DATE	TIME		SMPL_ID			
1	45.00	2.24e+000	2.13e+000		8.10e+000	288.61		0.276
2.67e+000	14	5/23/2016	4:37:01 PM			BKG		

SpectraView Block Data



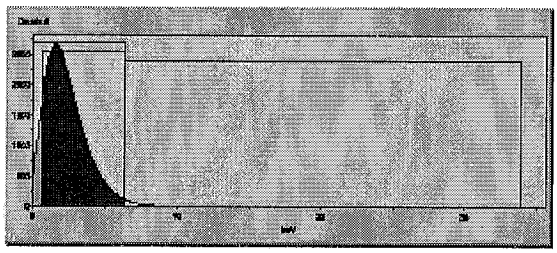
2	45.00	3.68e+002	3.49e+002	1.39e+003	274.79		0.265
9.41e+000	0	5/23/2016	5:27:37 PM		Verification 1		

SpectraView Block Data



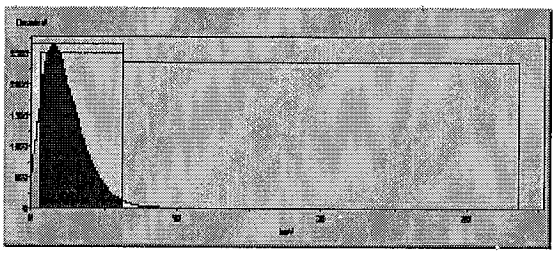
3 45.00 3.66e+002 3.47e+002 1.40e+003 271.33 0.262
9.55e+000 0 5/23/2016 6:18:09 PM Verification 2

SpectraView Block Data



4 45.00 3.63e+002 3.43e+002 1.39e+003 268.04 0.260
1.11e+001 0 5/23/2016 7:08:43 PM Verification 3

SpectraView Block Data



Reagent

Herb LCS RTS_00017

Qs. 929871 - 929874.

RESTEK® CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Certificate of Analysis

ACCREDITED ISO Guide 34 Accredited Reference Material Producer Certificate #3222.01

ilac-MRA

ACCREDITED ISO/IEC 17025 Accredited Testing Laboratory Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569750 **Lot No.:** A0116679

Description : Herbicide LCS RTS (2015)

Herbicide LCS RTS (2015) 5-2000 µg/ml, Methanol, 25 ml/bottle

Container Size : 25 mL **Pkg Amt:** > 25 mL

Expiration Date : July 31, 2017 **Storage:** 10°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Dalapon		20.0 µg/mL	+/- 0.1602	µg/mL	Gravimetric
	CAS # 75-99-0	(Lot 4141200)		+/- 1.0718	µg/mL	Unstressed
	Purity 96%			+/- 1.0735	µg/mL	Stressed
2	Picloram		20.0 µg/mL	+/- 0.1599	µg/mL	Gravimetric
	CAS # 1918-02-1	(Lot 34ATO)		+/- 1.0700	µg/mL	Unstressed
	Purity 98%			+/- 1.0718	µg/mL	Stressed
3	Dicamba		10.0 µg/mL	+/- 0.0799	µg/mL	Gravimetric
	CAS # 1918-00-9	(Lot 3719800)		+/- 0.5342	µg/mL	Unstressed
	Purity 97%			+/- 0.5351	µg/mL	Stressed
4	2,4-D		20.0 µg/mL	+/- 0.1602	µg/mL	Gravimetric
	CAS # 94-75-7	(Lot 4457200)		+/- 1.0715	µg/mL	Unstressed
	Purity 99%			+/- 1.0733	µg/mL	Stressed
5	MCPA		2,000.3 µg/mL	+/- 11.6297	µg/mL	Gravimetric
	CAS # 94-74-6	(Lot 4006300)		+/- 106.3871	µg/mL	Unstressed
	Purity 96%			+/- 106.5653	µg/mL	Stressed
6	MCPP (Mecoprop)		2,000.2 µg/mL	+/- 11.6293	µg/mL	Gravimetric
	CAS # 93-65-2	(Lot PB041700)		+/- 106.3841	µg/mL	Unstressed
	Purity 99%			+/- 106.5623	µg/mL	Stressed
7	Dichlorprop		20.1 µg/mL	+/- 0.1608	µg/mL	Gravimetric
	CAS # 120-36-5	(Lot 3204400)		+/- 1.0758	µg/mL	Unstressed
	Purity 99%			+/- 1.0776	µg/mL	Stressed

8	2,4-DB **CAS #** 94-82-6 **Purity** 99%	(Lot 1327400)	20.1	µg/mL	+/- +/- +/-	0.1605 1.0737 1.0754	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	2,4,5-T **CAS #** 93-76-5 **Purity** 99%	(Lot 2219100)	5.0	µg/mL	+/- +/- +/-	0.0446 0.2691 0.2696	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
10	2,4,5-TP (silvex) **CAS #** 93-72-1 **Purity** 99%	(Lot 4185600)	5.0	µg/mL	+/- +/- +/-	0.0444 0.2680 0.2685	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
11	Dinoseb **CAS #** 88-85-7 **Purity** 99%	(Lot 50001)	20.1	µg/mL	+/- +/- +/-	0.1608 1.0758 1.0776	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
12	Pentachlorophenol **CAS #** 87-86-5 **Purity** 98%	(Lot 150902JLM)	5.0	µg/mL	+/- +/- +/-	0.0446 0.2690 0.2694	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Specific Reference Material Notes:
Failure to derivatize this standard will lead to incorrect quantitative results.

Column:
150mm x 4.6mm
Allure C18 (cat.# 9164565)

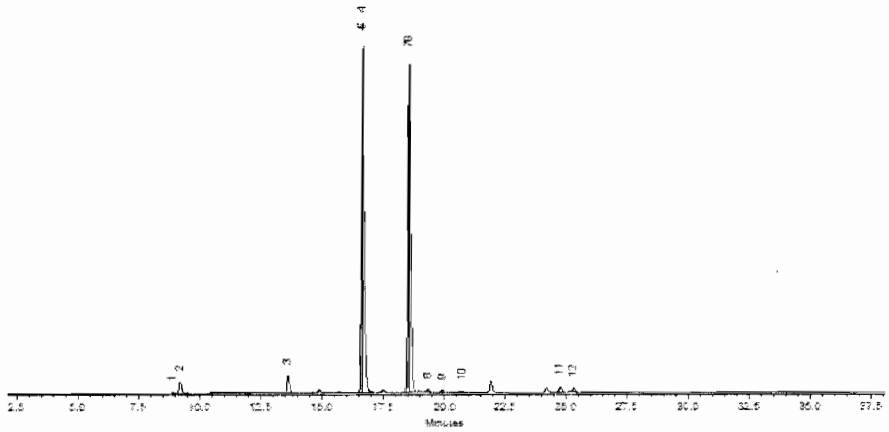
Flow Rate:
1 ml/min.

Mobile Phase A:
0.14% H3PO4 in water

Mobile Phase B:
Acetonitrile

Mobile Phase Composition:
0 min.-10%B; 30 min.-90%B; 40 min- 90%B

Det. Type:
Wavelength: 220 & 254nm



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael Maye

Jodi E. Breon

Jodi E. Breon - QA Analyst

Date Mixed: 19-Jan-2016 **Balance:** 1128353505

Date Passed: 27-Jan-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Herb Surr RTS_00013

recieved by CS 5/23/16 ID# 915484-915486.

RESTEK®
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

Certificate of Analysis

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

ıtalog No. : 568751 **Lot No.:** A0115101

scription : Herbicide Surrogate RTS

Herbicide Surrogate RTS 10 µg/ml, Methanol, 100 ml/bottle

ntainer Size : 100 mL **Pkg Amt:** > 100 mL

piration Date : May 31, 2017 **Storage:** 10°C or colder

ndling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2,4-dichlorophenylacetic acid **CAS #** 19719-28-9 (Lot S30618V) **Purity** 99%	10.0 µg/mL	+/- 0.0708 µg/mL +/- 0.5351 µg/mL +/- 0.5360 µg/mL	Gravimetric Unstressed Stressed

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Column:
150mm x 4.6mm
Allure C18 (cat.# 9164565)

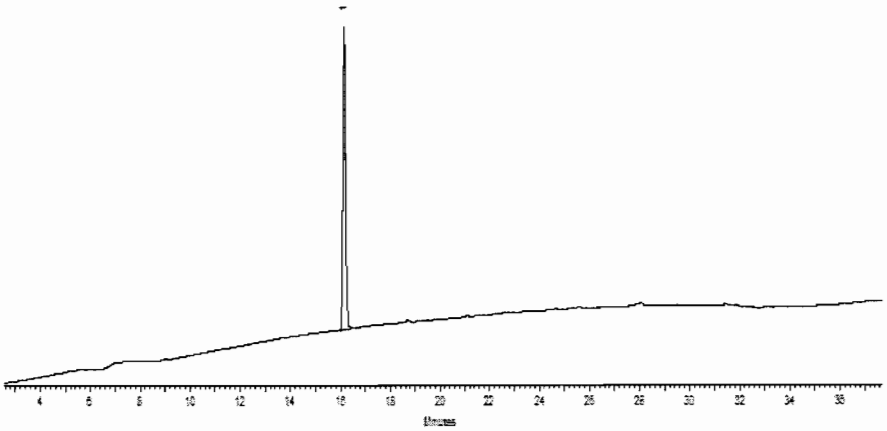
Flow Rate:
1 ml/min.

Mobile Phase A:
0.14% H3PO4 in water

Mobile Phase B:
Acetonitrile

Mobile Phase Composition:
0 min.-10%B; 30 min.-90%B; 40 min- 90%B

Det. Type:
Wavelength: 220 & 254nm



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cathleen Soltis

Cathleen Soltis - Mix Technician

Date Mixed: 02-Nov-2015 **Balance:** B442140311

Jodi E. Breon

Jodi E. Breon - QA Analyst

Date Passed: 05-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Herb Surr_00004

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

11/3/15
~~8151-Pr~~ 8151_SURR_A0110521

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

atalog No. : 567804 **Lot No.:** A0110521

escription : DCAA Standard

DCAA Standard 1,000 µg/ml, Methanol, 1 ml/ampul

ontainer Size : 2 mL **Pkg Amt:** > 1 mL

xpiration Date : Octobar 31, 2016 **Storage:** 10°C or colder

andling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	2,4-dichlorophenylacetic acid	1,002.0 µg/mL	+/- 5.9516	µg/mL	Gravimetric
	CAS # 19719-28-9 (Lot S30618V)		+/- 37.7755	µg/mL	Unstressed
	Purity 99%		+/- 37.8255	µg/mL	Stressed

Solvent: Methanol
CAS # 67-56-1
Purity 99%

lumn:
mm x 4.6mm
e C18 Cat.(#9164565)

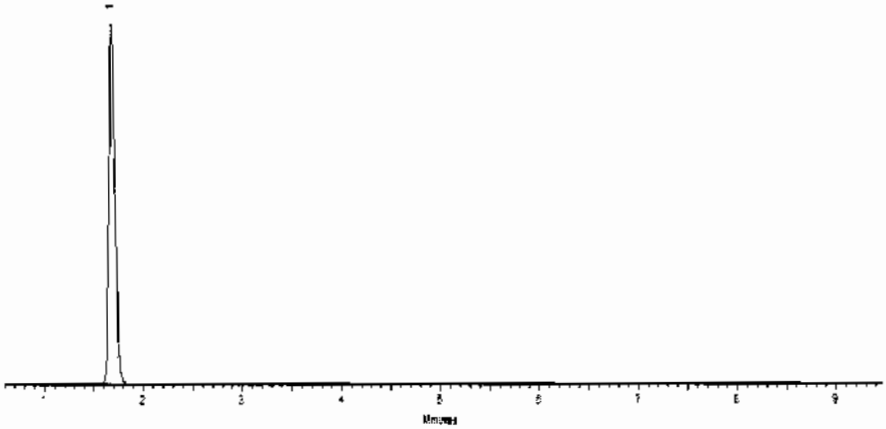
w Rate:
ml/min.

bile Phase A:
% H3PO4 in water

bile Phase B:
onitrile

bile Phase Composition:
B Isocratic

L Type:
elength. 220 & 254 nm



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Kendra Swope - Mix Technician

Date Mixed: 20-Apr-2015 Balance: B442140311

Amanda Miller - QC Analyst

Date Passed: 21-Apr-2015

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Reagent

ICP CAL A_00001

INORGANIC™ VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com
tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

CERTIFICATE OF ANALYSIS

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO Guide 34, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.03

2.0 PRODUCT DESCRIPTION

919997
ID: ICP CAL A_00001
Exp:05/26/17 Prpd:KLE Opn:05/26/16
ICP CAL A

Product Code:	Multi Analyte Custom Grade Solution		
Catalog Number:	ICP CAL-A		
Lot Number:	K2-MEB639046		
Matrix:	15% (v/v) HNO3		
Value / Analyte(s):	10 000 mg/L ea:		
	Iron,	Sodium,	Sulfur,
	1 000 mg/L ea:		
	Arsenic,	Barium,	Beryllium,
	Bismuth,	Cadmium,	Cobalt,
	Chromium+3,	Copper,	Lithium,
	Manganese,	Nickel,	Lead,
	Strontium,	Thorium,	Uranium,
	Vanadium,	Zinc,	
	200 mg/L ea:		
	Silver,	Boron,	Selenium,
	Thallium		

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	1 000 ± 9 mg/L	Barium, Ba	1 000 ± 4 mg/L

Characterization of CRM by two independent methods

Characterization of CRM by one method

Characterization of CRM/RM by Two Methods

Certified Value, $X_{CRM/RM}$, where two methods of characterization are used is the weighted mean of the two results:

$X_{CRM/RM} = [(w_a)(X_a) + (w_b)(X_b)]$

X_a = mean of Assay Method A with standard uncertainty $u_{char\ a}$

X_b = mean of Assay Method B with standard uncertainty $u_{char\ b}$

w_a and w_b = the weighting factors for each method calculated using the inverse square of the variance:

$w_a = (1/u_{char\ a})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

$w_b = (1/u_{char\ b})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a\&b} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a\&b} = [(w_a)^2 (u_{char\ a})^2 + (w_b)^2 (u_{char\ b})^2]^{1/2}$ where $u_{char\ a}$ and $u_{char\ b}$ are the square root of the sum of the squares of errors from characterization which include instrument measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM}$ = mean of Assay Method A with standard uncertainty $u_{char\ a}$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a}$ = square root of the sum of the squares of the errors from characterization which include instrumental measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Certified Abundance:

IV's Certified Abundance

Isotope	Atom %
Uranium 238U	99.8 ± 0.1
Uranium 235U	0.207 ± 0.002

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag keep cap tightly sealed when not in use. Store and use at 20° ± 4° C. Do not pippette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

- Keep cap tightly sealed when not in use. Store and use at 20 ± 4° C. Do not pipette from the container. Do not return removed aliquots to container.

Uranium Note: If uranium is present in this standard, it is natural abundance unless specified in Section 3.0

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 10CFR50 Appendix B - Nuclear Regulatory Commission

- Domestic Licensing of Production and Utilization Facilities

10.2 10CFR21 - Nuclear Regulatory Commission

- Reporting defects and Non-Compliance

10.3 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.4 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.5 ISO Guide 34 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va 24073, USA; Telephone: 800 669.6799, 540 585 3030, Fax 540.585 3012, inorganicventures.com, info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 18, 2016

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- May 18, 2019

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year from the date of removal from the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being handled and stored in accordance with the instructions given in Sec 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Maurice Harris
Product Documentation Technician

Certificate Approved By:

Michael Booth
QC Supervisor

Certifying Officer:

Paul Gaines
PhD., Senior Technical Director

Reagent

ICP ICSA A_00001

INORGANIC VENTURES™
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com
tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

CERTIFICATE OF ANALYSIS

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO Guide 34, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 863.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

920000
ID: ICP ICSA A_00001
Exp:05/26/17 Prpd:KLE Opn:05/26/16
ICP ICSA A

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	ICP ICSA-A
Lot Number:	K2-MEB639051
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	20 000 mg/L ea: Aluminum, Iron

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	20 000.0 ± 90.0 mg/L	Iron, Fe	20 000.0 ± 80.0 mg/L

Certified Density: 1.221 g/mL (measured at 20 ± 1 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Al	ICP Assay	3101a	060502
Al	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM by two independent methods

Characterization of CRM/RM by Two Methods

Certified Value, $X_{CRM/RM}$, where two methods of characterization are used is the weighted mean of the two results:

$X_{CRM/RM} = [(w_a)(X_a) + (w_b)(X_b)]$

X_a = mean of Assay Method A with standard uncertainty $u_{char\ a}$

X_b = mean of Assay Method B with standard uncertainty $u_{char\ b}$

w_a and w_b = the weighting factors for each method calculated using the inverse square of the variance:

$w_a = (1/u_{char\ a})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

$w_b = (1/u_{char\ b})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a\&b} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a\&b} = [(w_a)^2 (u_{char\ a})^2 + (w_b)^2 (u_{char\ b})^2]^{1/2}$ where $u_{char\ a}$ and $u_{char\ b}$ are the square root of the sum of the squares of errors from characterization which include instrument measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM by one method

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM}$ = mean of Assay Method A with standard uncertainty $u_{char\ a}$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a}$ = square root of the sum of the squares of the errors from characterization which include instrumental measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag keep cap tightly sealed when not in use. Store and use at 20° ± 4° C. Do not pippette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

- Keep cap tightly sealed when not in use. Store and use at 20 ± 4° C. Do not pipette from the container. Do not return removed aliquots to container.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 10CFR50 Appendix B - Nuclear Regulatory Commission

- Domestic Licensing of Production and Utilization Facilities

10.2 10CFR21 - Nuclear Regulatory Commission

- Reporting defects and Non-Compliance

10.3 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.4 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.5 ISO Guide 34 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA, Telephone 800.669.6799; 540.585.3030, Fax. 540 585 3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 18, 2016

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- May 18, 2019

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year from the date of removal from the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being handled and stored in accordance with the instructions given in Sec 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Maurice Harris
Product Documentation Technician

Certificate Approved By:

Michael Booth
QC Supervisor

Certifying Officer:

Paul Gaines
PhD., Senior Technical Director

Reagent

ICP ICSAB A_00001

INORGANIC VENTURES™
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com
tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

CERTIFICATE OF ANALYSIS

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO Guide 34, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

921490
ID: ICP ICSAB A_00001
Exp:05/26/17 Prpd:KLE Opn:05/29/16
ICP ICSAB A

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	ICP ICSAB-A
Lot Number:	K2-MEB639049
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	500 mg/L ea:

Arsenic,	Barium,	Beryllium,
Bismuth,	Cadmium,	Cobalt,
Chromium+3,	Copper,	Lithium,
Manganese,	Nickel,	Lead,
Strontium,	Thorium,	Uranium,
Vanadium,	Zinc,	
100 mg/L ea:		
Silver,	Boron,	Selenium,
Thallium		

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	500.0 ± 4.0 mg/L	Barium, Ba	500.0 ± 2.1 mg/L
Beryllium, Be	500.2 ± 2.8 mg/L	Bismuth, Bi	500.0 ± 2.8 mg/L
Boron, B	100.0 ± 0.6 mg/L	Cadmium, Cd	500.2 ± 1.9 mg/L
Chromium+3, Cr3	500.0 ± 2.7 mg/L	Cobalt, Co	500.0 ± 2.7 mg/L
Copper, Cu	500.0 ± 2.5 mg/L	Lead, Pb	500.0 ± 2.7 mg/L
Lithium, Li	500.1 ± 3.0 mg/L	Manganese, Mn	500.0 ± 2.4 mg/L
Nickel, Ni	500.0 ± 2.6 mg/L	Selenium, Se	100.0 ± 0.7 mg/L
Silver, Ag	100.0 ± 0.6 mg/L	Strontium, Sr	500.0 ± 1.9 mg/L
Thallium, Tl	100.0 ± 0.7 mg/L	Thorium, Th	500.2 ± 2.5 mg/L
Uranium, U	500.2 ± 3.3 mg/L	Vanadium, V	500.0 ± 2.6 mg/L
Zinc, Zn	500.0 ± 2.6 mg/L		

Certified Density: 1.073 g/mL (measured at 20 ± 1 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	992212
Ag	Volhard	999b	999b
As	ICP Assay	3103a	100818
As	Calculated		See Sec. 4.2
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	070222
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Bi	ICP Assay	3106	991212
Bi	Calculated		See Sec. 4.2
Cd	ICP Assay	3108	060531
Cd	EDTA	928	928
Co	ICP Assay	3113	000630 Co
Co	EDTA	928	928
Cr3	ICP Assay	3112a	030730Cr3
Cr3	Calculated		See Sec. 4.2
Cu	ICP Assay	3114	011017
Cu	EDTA	928	928
Li	ICP Assay	3129a	100714
Li	Gravimetric		See Sec. 4.2
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Sr	EDTA	928	928
Sr	ICP Assay	3153a	990906
Th	EDTA	928	928
Tl	ICP Assay	3158	993012
U	ICP Assay	3164	080521
U	Calculated		See Sec. 4.2
V	EDTA	928	928
V	ICP Assay	3165	992706
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM by two independent methods

Characterization of CRM/RM by Two Methods

Certified Value, $X_{CRM/RM}$, where two methods of characterization are used is the weighted mean of the two results:

$X_{CRM/RM} = [(w_a)(X_a) + (w_b)(X_b)]$

X_a = mean of Assay Method A with standard uncertainty $u_{char\ a}$

X_b = mean of Assay Method B with standard uncertainty $u_{char\ b}$

w_a and w_b = the weighting factors for each method calculated using the inverse square of the variance:

$w_a = (1/u_{char\ a})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

$w_b = (1/u_{char\ b})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a\&b} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a\&b} = [(w_a)^2 (u_{char\ a})^2 + (w_b)^2 (u_{char\ b})^2]^{1/2}$ where $u_{char\ a}$ and $u_{char\ b}$ are the square root of the sum of the squares of errors from characterization which include instrument measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM by one method

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM}$ = mean of Assay Method A with standard uncertainty $u_{char\ a}$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a}$ = square root of the sum of the squares of the errors from characterization which include instrumental measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Certified Abundance:

IV's Certified Abundance

Isotope	Atom %
Uranium 238U	99.8 ± 0.1
Uranium 235U	0.21 ± 0.05

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag keep cap tightly sealed when not in use. Store and use at 20° ± 4° C. Do not pippette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

- Keep cap tightly sealed when not in use. Store and use at 20 ± 4° C. Do not pipette from the container. Do not return removed aliquots to container.

Uranium Note: If uranium is present in this standard, it is natural abundance unless specified in Section 3.0

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 10CFR50 Appendix B - Nuclear Regulatory Commission

- Domestic Licensing of Production and Utilization Facilities

10.2 10CFR21 - Nuclear Regulatory Commission

- Reporting defects and Non-Compliance

10.3 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.4 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.5 ISO Guide 34 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA, Telephone 800.669.6799; 540.585.3030, Fax. 540 585 3012, inorganicventures.com, info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 18, 2016

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- May 18, 2019

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year from the date of removal from the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being handled and stored in accordance with the instructions given in Sec 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Maurice Harris
Product Documentation Technician

Certificate Approved By:

Michael Booth
QC Supervisor

Certifying Officer:

Paul Gaines
PhD., Senior Technical Director

Reagent

ICP ICV 2_00002

943947

ID: ICP ICV 2_00002
Exp:06/30/17 Prpd:KLE Opn:06/30/16
ICP ICV 2

ACCREDITED
Reference Materials Producer
Cert #2495.01

SPEXertificate®

Certificate of Reference Material

ILAC-MRA
ACCREDITED
Chemical Testing
Cert #2495.02

Catalog Number: ZITMO-53-250 **Lot No.** 37-107CR

Description: Custom Claritas Standard

Matrix: 5% HNO_3 / Tr. Tart. Acid / Tr. HF

This **CLARITAS PPT®** Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for inorganic spectroscopic instrumentation such as ICP-OES, DCP, AA, ICP-MS, and XRF. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

The CRM is prepared from high purity single element concentrates of individual elements using Class A laboratory ware to give precise concentrations.

Instrumental Analysis by ICP Spectrometer:

Analyte	Labeled	Uncertainty	SRM	Analyte	Labeled	Uncertainty	SRM
As	1000 µg/mL	±20 µg/mL	3103a*	B	200 µg/mL	±4 µg/mL	3107*
Be	1000 µg/mL	±20 µg/mL	3105a*	Mo	200 µg/mL	±4 µg/mL	3134*
Si	1000 µg/mL	±20 µg/mL	3150*	Sb	200 µg/mL	±4 µg/mL	3102a*
Sn	1000 µg/mL	±20 µg/mL	3161a*	Se	200 µg/mL	±4 µg/mL	3149*
Ti	1000 µg/mL	±20 µg/mL	3162a*				

* - indicates NIST SRM † - indicates SPEX CertiPrep CRM (when NIST SRM is not available)

SPEX CertiPrep Reference Multi: Lot# ALL8

Trace Metallic Impurities in the Actual Solution via ICP-MS Analysis:

Element	µg/L	Element	µg/L	Element	µg/L	Element	µg/L	Element	µg/L	Element	µg/L
Ag	<40	Cs	<0.1	Hg	<1	Na	100	Re	2	Tl	<2
Al	90	Cu	<3	Ho	<0.03	Nb	<10	Rh	<0.5	Tm	<0.05
Au	<0.4	Dy	<0.2	In	<0.3	Nd	<0.3	Ru	<1	U	<0.4
Ba	<10	Er	<0.05	Ir	50	Ni	<20	Sc	<10	V	2
Bi	<20	Eu	<0.08	K	<200	P	<1000	Sm	<0.3	W	20
Ca	100	Fe	20	La	<1	Pb	2	Sr	2	Y	<0.6
Cd	<10	Ga	3	Li	<20	Pd	<1	Ta	50	Yb	<0.01
Ce	<0.5	Gd	<0.3	Lu	<0.02	Pr	0.3	Tb	0.1	Zn	50
Co	3	Ge	<10	Mg	300	Pt	<0.4	Te	<0.5	Zr	<1
Cr	10	Hf	2	Mn	<7	Rb	3	Th	0.8		

Balances are calibrated regularly with weight sets traceable to NIST#s 32856, 32867 and others. This CRM is guaranteed stable and accurate to ±2% of the labeled value. This includes uncertainty components due to preparation, measurement, homogeneity, and short-term and long-term stability. This guarantee is valid for a period of one year from the date of certification only when the material is unopened and stored under ambient laboratory conditions.

Date of Certification: JUN 2016 Certifying Officer:

©2016 SPEX CertiPrep, LLC

Report of Certification

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001:2008, ISO 17025:2005, and ISO Guide 34:2009 quality system consistent with the following guides:

- ISO 9001: Quality management systems – Requirements – certified by UL-DQS
- ISO 17025: General requirements for the competence of testing and calibration laboratories – accredited by A2LA
- ISO Guide 34: General requirements for the competence of reference material producers – accredited by A2LA
- ISO Guide 31: Reference Materials – Contents of certificates and labels
- ISO Guide 35: Reference Materials – General & Statistical Principals for Certification
- Guide To The Expression Of Uncertainty In Measurement 1997
- EURACHEM/CITAC Guide: Quantifying Uncertainty in Analytical Measurement – Second Edition
- ASTM Guide D6362-98
- NIST Technical Note 1297
- ILAC-G12-2000: Guidelines for the requirements for the competence of reference materials producers
- ISO/REMCO N280

Material Source:

All analytes and matrix materials are obtained and verified by SPEX CertiPrep from pre-qualified vendors as per ISO 9001:2008, ISO 17025:2005, and ISO Guide 34:2009 guidelines. Vendor identifications are proprietary, however sources of all materials used in the preparation and testing of SPEX CertiPrep CRMs are tracked and documented. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Instructions for Use:

Primary usage of this CRM is in neat form or diluted serially with matrix of a purity at or greater than the purity of the original matrix solution. If dilution is required the diluent must be compatible with all certified analytes and contain stabilizers appropriate for the period of intended use. The CRM can also be used as a spike or with a spike, again with appropriate compatibility considerations. All solutions should be thoroughly mixed, by shaking, prior to use and never pipetted directly from the bottle. All surfaces that come in contact with the solution must be thoroughly cleaned and leached prior to use. Dilutions should be performed only with Class A volumetric glassware.

Method of Preparation:

Clean laboratory procedures and techniques have been used throughout the preparation. All materials, equipment, analytical instrumentation and personnel have been qualified prior to use. The highest purity acids applicable, 18 megohm, double deionized water, acid-leached triple-rinsed bottles (where appropriate), and Class A/calibrated volumetrics have been used in all preparations.

Homogeneity:

The homogeneity of the CRM has been confirmed by procedures consistent with ISO 17025:2005, ISO Guide 34:2009, and ASTM D6362-98 Appendix X2. Random, replicate samples of the final, packaged material have been analyzed to prove homogeneity in accordance with our internal procedure 4600-HOMOGEN-1A. Since the product is highly homogeneous, any sample size taken for analysis would be within the uncertainty budget. This is consistent with the intended use of the CRM.

Statistical Estimator and Confidence Limits:

The certified value 'X' listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

- $X = x \pm U$ where X = certified value, U = expanded uncertainty, x = property value
- $U = ku_c$ where k = 2 is the coverage factor at the 95% confidence level
- u_c is obtained by combining the individual element standard uncertainty components u_i, and $u_c = \sqrt{\sum u_i^2}$

Certification Traveler Report:

All certified values reported were derived from the Traveler Report (SPEX CertiPrep's traceability documentation) identified by the lot number of this CRM. During the stated period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Legal Notice:

SPEX CertiPrep reference materials are not for any cosmetic, drug or household application and are to be used only by qualified individuals who are trained in appropriate procedures. No claims against SPEX CertiPrep, LLC of any kind whatsoever, whether based on breach of warranty, alleged negligence, or otherwise, with respect to this Reference Material shall be greater than the purchase price. In no event shall SPEX CertiPrep, LLC be liable for any loss of profits or any incidental, special, or consequential damages.

SPEX CertiPrep®
Your Science is Our Passion®

203 Norcross Ave, Metuchen, NJ 08840
www.spexcertiprep.com • Email: crmsales@spexcsp.com
Phone: 1-800-LAB-SPEX • Fax: 732-603-9647

Accredited to 17025 & Guide 34 ISO Certified to 9001

Reagent

ICP ICV 3_00002

943948
ID: ICP ICV 3_00002
Exp:06/30/17 Prpd:KLE Opn:06/30/16
ICP ICV 3

ACCREDITED
Reference Materials Producer
Cert #2495.01

SPEXertificate®
Certificate of Reference Material

ilac-MRA
ACCREDITED
Chemical Testing
Cert #2495.02

Catalog Number: ZITMO-54-250 **Lot No.** 37-108CR
Description: Custom Claritas Standard
Matrix: 10% HNO_3

This **CLARITAS PPT®** Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for inorganic spectroscopic instrumentation such as ICP-OES, DCP, AA, ICP-MS, and XRF. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

The CRM is prepared from high purity single element concentrates of individual elements using Class A laboratory ware to give precise concentrations.

Instrumental Analysis by ICP Spectrometer:

Analyte	Labeled	Uncertainty	SRM	Analyte	Labeled	Uncertainty	SRM
Ba	1000 µg/mL	±20 µg/mL	3104a*	Pb	1000 µg/mL	±20 µg/mL	3128*
Bi	1000 µg/mL	±20 µg/mL	3106*	Sr	1000 µg/mL	±20 µg/mL	3153a*
Cd	1000 µg/mL	±20 µg/mL	3108*	Th	1000 µg/mL	±20 µg/mL	3159*
Co	1000 µg/mL	±20 µg/mL	3113*	U	1000 µg/mL	±20 µg/mL	3164*
Cr	1000 µg/mL	±20 µg/mL	3112a*	V	1000 µg/mL	±20 µg/mL	3165*
Cu	1000 µg/mL	±20 µg/mL	3114*	Zn	1000 µg/mL	±20 µg/mL	3168a*
Li	1000 µg/mL	±20 µg/mL	3129a*	Ag	200 µg/mL	±4 µg/mL	3151*
Mn	1000 µg/mL	±20 µg/mL	3132*	Tl	200 µg/mL	±4 µg/mL	3158*
Ni	1000 µg/mL	±20 µg/mL	3136*				

* - indicates NIST SRM † - indicates SPEX CertiPrep CRM (when NIST SRM is not available)

SPEX CertiPrep Reference Multi: Lot# ALL8

Trace Metallic Impurities in the Actual Solution via ICP-MS Analysis:

Element	µg/L	Element	µg/L	Element	µg/L	Element	µg/L	Element	µg/L	Element	µg/L
Al	40	Er	<0.01	In	0.7	Nd	<0.2	Ru	<2	Tb	0.8
As	100	Eu	<6	Ir	<90	P	<500	Sb	50	Te	<8
Au	<2	Fe	400	K	<200	Pd	<50	Sc	<3	Ti	<20
B	10	Ga	20	La	10	Pr	1	Se	<50	Tm	<0.03
Be	<3	Gd	3	Lu	0.05	Pt	<0.4	Si	<500	W	<20
Ca	20	Ge	<10	Mg	100	Rb	5	Sm	20	Y	20
Ce	20	Hf	<0.3	Mo	<10	Re	<0.3	Sn	<2	Yb	<0.07
Cs	<0.2	Hg	<5	Na	100	Rh	<5	Ta	<7	Zr	<2
Dy	0.5	Ho	0.05	Nb	<10						

Balances are calibrated regularly with weight sets traceable to NIST#s 32856, 32867 and others. This CRM is guaranteed stable and accurate to ±2% of the labeled value. This includes uncertainty components due to preparation, measurement, homogeneity, and short-term and long-term stability. This guarantee is valid for a period of one year from the date of certification only when the material is unopened and stored under ambient laboratory conditions.

Date of Certification: JUN 2016 Certifying Officer:

©2016 SPEX CertiPrep, LLC

Report of Certification

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001:2008, ISO 17025:2005, and ISO Guide 34:2009 quality system consistent with the following guides:

- ISO 9001: Quality management systems – Requirements – certified by UL-DQS
- ISO 17025: General requirements for the competence of testing and calibration laboratories – accredited by A2LA
- ISO Guide 34: General requirements for the competence of reference material producers – accredited by A2LA
- ISO Guide 31: Reference Materials – Contents of certificates and labels
- ISO Guide 35: Reference Materials – General & Statistical Principals for Certification
- Guide To The Expression Of Uncertainty In Measurement 1997
- EURACHEM/CITAC Guide: Quantifying Uncertainty in Analytical Measurement – Second Edition
- ASTM Guide D6362-98
- NIST Technical Note 1297
- ILAC-G12-2000: Guidelines for the requirements for the competence of reference materials producers
- ISO/REMCO N280

Material Source:

All analytes and matrix materials are obtained and verified by SPEX CertiPrep from pre-qualified vendors as per ISO 9001:2008, ISO 17025:2005, and ISO Guide 34:2009 guidelines. Vendor identifications are proprietary, however sources of all materials used in the preparation and testing of SPEX CertiPrep CRMs are tracked and documented. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Instructions for Use:

Primary usage of this CRM is in neat form or diluted serially with matrix of a purity at or greater than the purity of the original matrix solution. If dilution is required the diluent must be compatible with all certified analytes and contain stabilizers appropriate for the period of intended use. The CRM can also be used as a spike or with a spike, again with appropriate compatibility considerations. All solutions should be thoroughly mixed, by shaking, prior to use and never pipetted directly from the bottle. All surfaces that come in contact with the solution must be thoroughly cleaned and leached prior to use. Dilutions should be performed only with Class A volumetric glassware.

Method of Preparation:

Clean laboratory procedures and techniques have been used throughout the preparation. All materials, equipment, analytical instrumentation and personnel have been qualified prior to use. The highest purity acids applicable, 18 megohm, double deionized water, acid-leached triple-rinsed bottles (where appropriate), and Class A/calibrated volumetrics have been used in all preparations.

Homogeneity:

The homogeneity of the CRM has been confirmed by procedures consistent with ISO 17025:2005, ISO Guide 34:2009, and ASTM D6362-98 Appendix X2. Random, replicate samples of the final, packaged material have been analyzed to prove homogeneity in accordance with our internal procedure 4600-HOMOGEN-1A. Since the product is highly homogeneous, any sample size taken for analysis would be within the uncertainty budget. This is consistent with the intended use of the CRM.

Statistical Estimator and Confidence Limits:

The certified value 'X' listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

- $X = x \pm U$ where X = certified value, U = expanded uncertainty, x = property value
- $U = ku_c$ where $k = 2$ is the coverage factor at the 95% confidence level
- u_c is obtained by combining the individual element standard uncertainty components u_i, and $u_c = \sqrt{\sum u_i^2}$

Certification Traveler Report:

All certified values reported were derived from the Traveler Report (SPEX CertiPrep's traceability documentation) identified by the lot number of this CRM. During the stated period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Legal Notice:

SPEX CertiPrep reference materials are not for any cosmetic, drug or household application and are to be used only by qualified individuals who are trained in appropriate procedures. No claims against SPEX CertiPrep, LLC of any kind whatsoever, whether based on breach of warranty, alleged negligence, or otherwise, with respect to this Reference Material shall be greater than the purchase price. In no event shall SPEX CertiPrep, LLC be liable for any loss of profits or any incidental, special, or consequential damages.

SPEX CertiPrep®
Your Science is Our Passion.®

203 Norcross Ave, Metuchen, NJ 08840
www.spexcertiprep.com • E-mail: crmsales@spexcsp.com
Phone: 1-800-LAB-SPEX • Fax: 732-603-9647

Accredited to 17025 & Guide 34 ISO Certified to 9001

Reagent

ICP LLC B_00002

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com
tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

CERTIFICATE OF ANALYSIS

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO Guide 34, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	ICP LLC-B
Lot Number:	K2-MEB639045
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	1 000 mg/L ea: Potassium, Sulfur, 200 mg/L ea: Calcium, Magnesium, Sodium, 100 mg/L ea: Uranium, 50 mg/L ea: Phosphorus, 40 mg/L ea: Aluminum, Bismuth, Thorium, 20 mg/L ea: Boron, Iron, 10 mg/L ea: Barium, Cobalt, Lithium, Vanadium, 8 mg/L ea: Nickel, 5 mg/L ea: Copper, 4 mg/L ea: Thallium, Zinc, 3 mg/L ea: Manganese, Selenium, 2 mg/L ea: Silver, Arsenic, Chromium+3, Lead, 1 mg/L ea: Beryllium, Cadmium, Strontium

919996
ID: ICP LLC B_00002
Exp:05/26/17 Prpd:KLE Opn:05/26/16
ICP LLC B

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	40.00 ± 0.19 mg/L	Arsenic, As	2.000 ± 0.012 mg/L
Barium, Ba	10.00 ± 0.06 mg/L	Beryllium, Be	1.000 ± 0.006 mg/L
Bismuth, Bi	40.00 ± 0.18 mg/L	Boron, B	20.00 ± 0.13 mg/L
Cadmium, Cd	1.000 ± 0.007 mg/L	Calcium, Ca	200.1 ± 0.8 mg/L
Chromium+3, Cr3	2.001 ± 0.012 mg/L	Cobalt, Co	10.00 ± 0.04 mg/L
Copper, Cu	5.000 ± 0.029 mg/L	Iron, Fe	20.00 ± 0.10 mg/L
Lead, Pb	2.000 ± 0.010 mg/L	Lithium, Li	10.00 ± 0.05 mg/L
Magnesium, Mg	200.0 ± 0.8 mg/L	Manganese, Mn	3.000 ± 0.015 mg/L
Nickel, Ni	8.00 ± 0.05 mg/L	Phosphorus, P	50.01 ± 0.23 mg/L
Potassium, K	1 000 ± 4 mg/L	Selenium, Se	3.000 ± 0.015 mg/L
Silver, Ag	2.000 ± 0.016 mg/L	Sodium, Na	200.0 ± 0.7 mg/L
Strontium, Sr	1.000 ± 0.006 mg/L	Sulfur, S	1 000 ± 5 mg/L
Thallium, Tl	4.001 ± 0.027 mg/L	Thorium, Th	40.00 ± 0.19 mg/L
Uranium, U	100.0 ± 0.6 mg/L	Vanadium, V	10.01 ± 0.06 mg/L
Zinc, Zn	4.000 ± 0.024 mg/L		

Certified Density: 1.034 g/mL (measured at 20 ± 1 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	992212
Ag	Volhard	999b	999b
Al	ICP Assay	3101a	060502
Al	Calculated		See Sec. 4.2
As	ICP Assay	3103a	100818
As	Calculated		See Sec. 4.2
B	ICP Assay	3107	110830
B	Calculated		See Sec. 4.2
Ba	ICP Assay	3104a	070222
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Bi	ICP Assay	3106	991212
Bi	Calculated		See Sec. 4.2
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Cd	ICP Assay	3108	130116
Co	ICP Assay	3113	000630 Co
Co	EDTA	928	928
Cr3	ICP Assay	3112a	030730Cr3
Cr3	Calculated		See Sec. 4.2
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	051220
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	Calculated		See Sec. 4.2
Mg	ICP Assay	3131a	050302
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
P	ICP Assay	3139a	060717
P	Acidimetric		traceable to 84L
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
S	Acidimetric	84L	84L
S	ICP Assay	3154	892205
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Sr	EDTA	928	928
Sr	ICP Assay	3153a	990906
Th	EDTA	928	928
Th	ICP Assay	Traceable to SRM 3159	992912
Tl	ICP Assay	3158	993012

U	ICP Assay	3164	080521
V	EDTA	928	928
V	ICP Assay	3165	992706
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM by two independent methods

Characterization of CRM/RM by Two Methods

Certified Value, $X_{CRM/RM}$, where two methods of characterization are used is the weighted mean of the two results:

$X_{CRM/RM} = [(w_a)(X_a) + (w_b)(X_b)]$

X_a = mean of Assay Method A with standard uncertainty $u_{char\ a}$

X_b = mean of Assay Method B with standard uncertainty $u_{char\ b}$

w_a and w_b = the weighting factors for each method calculated using the inverse square of the variance:

$w_a = (1/u_{char\ a})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

$w_b = (1/u_{char\ b})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a\&b} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a\&b} = [(w_a)^2 (u_{char\ a})^2 + (w_b)^2 (u_{char\ b})^2]^{1/2}$ where $u_{char\ a}$ and $u_{char\ b}$ are the square root of the sum of the squares of errors from characterization which include instrument measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM by one method

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM}$ = mean of Assay Method A with standard uncertainty $u_{char\ a}$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a}$ = square root of the sum of the squares of the errors from characterization which include instrumental measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Certified Abundance:

IV's Certified Abundance

Isotope	Atom %
Uranium 238U	99.8 ± 0.1
Uranium 235U	0.207 ± 0.002

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag keep cap tightly sealed when not in use. Store and use at 20° ± 4° C. Do not pippette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

- Keep cap tightly sealed when not in use. Store and use at 20 ± 4° C. Do not pipette from the container. Do not return removed aliquots to container.

Low Silver Note: This solution contains "LOW" levels of Silver. Please store this entire bottle inside a sealed glass jar.

Uranium Note: If uranium is present in this standard, it is natural abundance unless specified in Section 3.0

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 10CFR50 Appendix B - Nuclear Regulatory Commission

- Domestic Licensing of Production and Utilization Facilities

10.2 10CFR21 - Nuclear Regulatory Commission

- Reporting defects and Non-Compliance

10.3 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.4 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.5 ISO Guide 34 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va 24073, USA; Telephone 800.669.6799, 540.585.3030, Fax 540.585.3012; inorganicventures.com, info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

May 19, 2016

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- May 19, 2019

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year from the date of removal from the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being handled and stored in accordance with the instructions given in Sec 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Maurice Harris
Product Documentation Technician

Certificate Approved By:

Michael Booth
QC Supervisor

Certifying Officer:

Paul Gaines
PhD., Senior Technical Director

Reagent

Internal Std_00005

RESTEK

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567684 **Lot No.:** A093676

Description : 8270 Internal Standard

8270 Internal Standard 2,000µg/mL, Methylene Chloride, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : February 2018 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	1,4-Dichlorobenzene-d4 CAS # 3855-82-1 Purity 99%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7158 +/- 101.3766	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
2	Naphthalene-d8 CAS # 1146-65-2 Purity 99%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7158 +/- 101.3766	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
3	Acenaphthene-d10 CAS # 15067-26-2 Purity 97%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7163 +/- 101.3771	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
4	Phenanthrene-d10 CAS # 1517-22-2 Purity 99%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7158 +/- 101.3766	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
5	Chrysene-d12 CAS # 1719-03-5 Purity 98%	2,000.0 µg/mL	+/- 11.6281 +/- 92.7150 +/- 101.3758	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
6	Perylene-d12 CAS # 1520-96-3 Purity 99%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7158 +/- 101.3766	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

Rec 7-31-13

190542
ID: Internal Std_00005
Exp: 02/28/18 Prpd JSW
8270 Internal Std parent

190543
ID: Internal Std_00006
Exp: 02/28/18 Prpd: JSW
8270 Internal Std parent

190544
ID: Internal Std_00007
Exp: 02/28/18 Prpd: JSW
8270 Internal Std parent

Column:
30m x .25mm x .25um
Rtx-5 (cat.#10223)

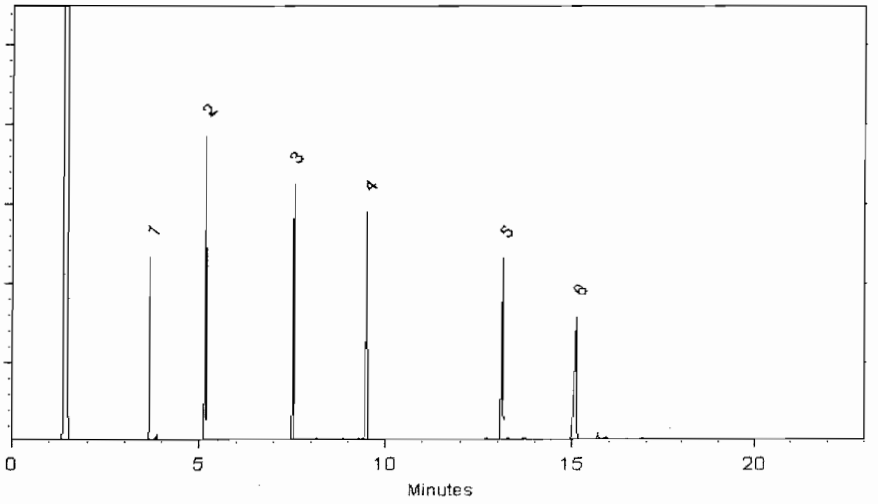
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



Jodi E. Breon - QA Analyst

Date Passed: 27-Feb-2013 **Balance:** 1128342313

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date of the unopened ampul stored at the recommended storage condition is the last day of the month listed in the expiration date field.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31840, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

Internal Std_00007

RESTEK

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567684 **Lot No.:** A093676

Description : 8270 Internal Standard

8270 Internal Standard 2,000µg/mL, Methylene Chloride, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : February 2018 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	1,4-Dichlorobenzene-d4 CAS # 3855-82-1 Purity 99%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7158 +/- 101.3766	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
2	Naphthalene-d8 CAS # 1146-65-2 Purity 99%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7158 +/- 101.3766	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
3	Acenaphthene-d10 CAS # 15067-26-2 Purity 97%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7163 +/- 101.3771	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
4	Phenanthrene-d10 CAS # 1517-22-2 Purity 99%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7158 +/- 101.3766	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
5	Chrysene-d12 CAS # 1719-03-5 Purity 98%	2,000.0 µg/mL	+/- 11.6281 +/- 92.7150 +/- 101.3758	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
6	Perylene-d12 CAS # 1520-96-3 Purity 99%	2,000.0 µg/mL	+/- 11.6282 +/- 92.7158 +/- 101.3766	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

Rec 7-31-13

190542
ID: Internal Std_00005
Exp: 02/28/18 Prpd JSW
8270 Internal Std parent

190543
ID: Internal Std_00006
Exp: 02/28/18 Prpd: JSW
8270 Internal Std parent

190544
ID: Internal Std_00007
Exp: 02/28/18 Prpd: JSW
8270 Internal Std parent

Column:
30m x .25mm x .25um
Rtx-5 (cat.#10223)

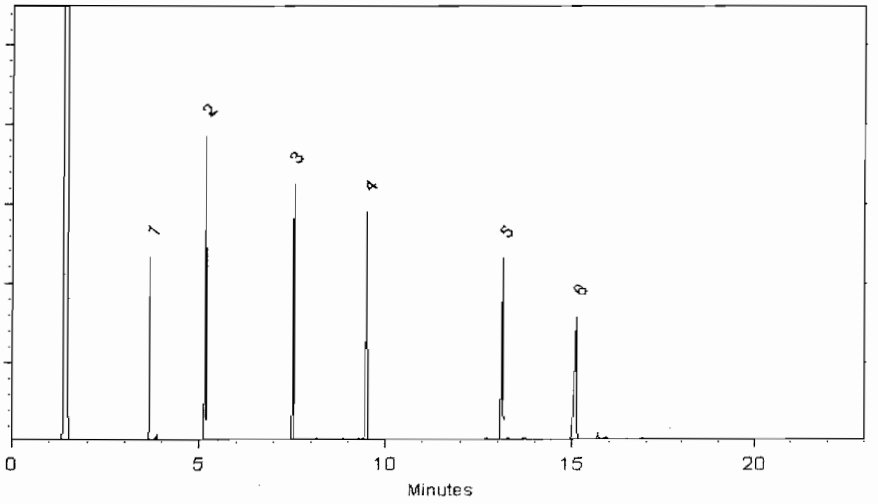
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



Jodi E. Breon - QA Analyst

Date Passed: 27-Feb-2013 **Balance:** 1128342313

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date of the unopened ampul stored at the recommended storage condition is the last day of the month listed in the expiration date field.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31840, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

List 1 Std 1_00026

Recd: 5-25-16

RESTEK® CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

929299
ID: List 1 Std 1_00026
Exp: 04/30/17 Prpd: MAK
8270 List 1 Std #1 Megami

929300
ID: List 1 Std 1_00027
Exp: 04/30/17 Prpd: MAK
8270 List 1 Std #1 Megami

Catalog No. : 570666 **Lot No.:** A0114832

Description : 8270 List 1 / Std #1 MegaMix (2016)

8270 List 1 / Std #1 MegaMix (2016) 500-2000 ug/ml, Methylene Chloride, 5 ml/ampul

Container Size : 10 mL **Pkg Amt:** > 5 mL

Expiration Date : April 30, 2017 **Storage:** 10°C or colder

Handling: Carcinogen/reproductive toxin. Photosensitive. Sonicate.

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	1,4-Dioxane		1,000.9 µg/mL	+/- 5.8193	µg/mL	Gravimetric
	CAS # 123-91-1	(Lot SHBG1461V)		+/- 11.9648	µg/mL	Unstressed
	Purity 99%			+/- 19.0418	µg/mL	Stressed
2	Pyridine		1,004.7 µg/mL	+/- 5.8416	µg/mL	Gravimetric
	CAS # 110-86-1	(Lot SHBC7174V)		+/- 12.0106	µg/mL	Unstressed
	Purity 99%			+/- 19.1148	µg/mL	Stressed
3	N-Nitrosodimethylamine		1,002.6 µg/mL	+/- 5.8294	µg/mL	Gravimetric
	CAS # 62-75-9	(Lot 4370100)		+/- 11.9855	µg/mL	Unstressed
	Purity 99%			+/- 19.0748	µg/mL	Stressed
4	Aniline		1,001.8 µg/mL	+/- 5.8246	µg/mL	Gravimetric
	CAS # 62-53-3	(Lot K22Z462)		+/- 11.9756	µg/mL	Unstressed
	Purity 99%			+/- 19.0590	µg/mL	Stressed
5	Bis(2-chloroethyl)ether		1,000.2 µg/mL	+/- 5.8152	µg/mL	Gravimetric
	CAS # 111-44-4	(Lot SHBD4430V)		+/- 11.9565	µg/mL	Unstressed
	Purity 99%			+/- 19.0285	µg/mL	Stressed
6	2-Chlorophenol		1,001.6 µg/mL	+/- 5.8236	µg/mL	Gravimetric
	CAS # 95-57-8	(Lot STBF2690V)		+/- 11.9736	µg/mL	Unstressed
	Purity 99%			+/- 19.0558	µg/mL	Stressed
7	Phenol		1,000.6 µg/mL	+/- 5.8176	µg/mL	Gravimetric
	CAS # 108-95-2	(Lot SHBF1351V)		+/- 11.9612	µg/mL	Unstressed
	Purity 99%			+/- 19.0361	µg/mL	Stressed

8	n-Decane (C10) **CAS #** 124-18-5 **Purity** 99%	(Lot SHBG1119V)	1,001.4	µg/mL	+/- +/- +/-	5.8224 11.9712 19.0520	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	1,4-Dichlorobenzene **CAS #** 106-46-7 **Purity** 99%	(Lot MKBS1350V)	1,000.5	µg/mL	+/- +/- +/-	5.8170 11.9600 19.0342	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
10	1,3-Dichlorobenzene **CAS #** 541-73-1 **Purity** 99%	(Lot BCBM5751V)	1,000.1	µg/mL	+/- +/- +/-	5.8145 11.9549 19.0260	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
11	1,2-Dichlorobenzene **CAS #** 95-50-1 **Purity** 99%	(Lot SHBD7331V)	1,000.6	µg/mL	+/- +/- +/-	5.8178 11.9616 19.0368	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
12	Benzyl alcohol **CAS #** 100-51-6 **Purity** 99%	(Lot SHBC1850V)	1,000.5	µg/mL	+/- +/- +/-	5.8170 11.9600 19.0342	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
13	2,2'-oxybis(1-chloropropane) **CAS #** 108-60-1 **Purity** 99%	(Lot 2-KMW-57-8)	1,001.3	µg/mL	+/- +/- +/-	5.8215 11.9692 19.0488	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
14	2-Methylphenol (o-cresol) **CAS #** 95-48-7 **Purity** 99%	(Lot SHBC1479V)	1,001.2	µg/mL	+/- +/- +/-	5.8211 11.9684 19.0475	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
15	Hexachloroethane **CAS #** 67-72-1 **Purity** 99%	(Lot 4H3SF)	1,001.7	µg/mL	+/- +/- +/-	5.8238 11.9740 19.0564	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
16	Acetophenone **CAS #** 98-86-2 **Purity** 99%	(Lot MKBR7156V)	1,000.1	µg/mL	+/- +/- +/-	5.8149 11.9557 19.0272	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
17	N-Nitroso-di-n-propylamine **CAS #** 621-64-7 **Purity** 99%	(Lot OPAGF)	1,001.5	µg/mL	+/- +/- +/-	5.8226 11.9716 19.0526	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
18	4-Methylphenol (p-cresol) **CAS #** 106-44-5 **Purity** 99%	(Lot 49396APV)	500.4	µg/mL	+/- +/- +/-	2.9096 5.9822 9.5206	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
19	3-Methylphenol (m-cresol) **CAS #** 108-39-4 **Purity** 99%	(Lot SHBD0627V)	501.7	µg/mL	+/- +/- +/-	2.9167 5.9970 9.5441	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
20	Nitrobenzene **CAS #** 98-95-3 **Purity** 99%	(Lot SHBF2348V)	1,002.1	µg/mL	+/- +/- +/-	5.8265 11.9796 19.0653	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
21	Isophorone **CAS #** 78-59-1 **Purity** 99%	(Lot MKBG2442V)	1,002.2	µg/mL	+/- +/- +/-	5.8271 11.9808 19.0672	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
22	2-Nitrophenol **CAS #** 88-75-5 **Purity** 99%	(Lot BCBH7602V)	1,000.1	µg/mL	+/- +/- +/-	5.8149 11.9557 19.0272	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
23	2,4-Dimethylphenol **CAS #** 105-67-9 **Purity** 99%	(Lot 10165155)	1,000.3	µg/mL	+/- +/- +/-	5.8160 11.9580 19.0311	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

24	Bis(2-chloroethoxy)methane		1,000.2	µg/mL	+/-	5.8151	µg/mL	Gravimetric
	CAS # 111-91-1	(Lot 3299900)			+/-	11.9561	µg/mL	Unstressed
	Purity 99%				+/-	19.0279	µg/mL	Stressed
25	2,4-Dichlorophenol		1,002.2	µg/mL	+/-	5.8271	µg/mL	Gravimetric
	CAS # 120-83-2	(Lot BCBH1617V)			+/-	11.9808	µg/mL	Unstressed
	Purity 99%				+/-	19.0672	µg/mL	Stressed
26	1,2,4-Trichlorobenzene		1,000.1	µg/mL	+/-	5.8144	µg/mL	Gravimetric
	CAS # 120-82-1	(Lot SHBC5541V)			+/-	11.9547	µg/mL	Unstressed
	Purity 98%				+/-	19.0258	µg/mL	Stressed
27	Naphthalene		1,000.4	µg/mL	+/-	5.8164	µg/mL	Gravimetric
	CAS # 91-20-3	(Lot MKBH4351V)			+/-	11.9588	µg/mL	Unstressed
	Purity 99%				+/-	19.0323	µg/mL	Stressed
28	2,6-Dichlorophenol		1,001.1	µg/mL	+/-	5.8205	µg/mL	Gravimetric
	CAS # 87-65-0	(Lot MKBN2776V)			+/-	11.9672	µg/mL	Unstressed
	Purity 99%				+/-	19.0456	µg/mL	Stressed
29	4-Chloroaniline		1,000.7	µg/mL	+/-	5.8182	µg/mL	Gravimetric
	CAS # 106-47-8	(Lot 12528PH)			+/-	11.9624	µg/mL	Unstressed
	Purity 99%				+/-	19.0380	µg/mL	Stressed
30	Hexachlorobutadiene		1,000.7	µg/mL	+/-	5.8182	µg/mL	Gravimetric
	CAS # 87-68-3	(Lot J31X013)			+/-	11.9626	µg/mL	Unstressed
	Purity 98%				+/-	19.0382	µg/mL	Stressed
31	2-Methylnaphthalene		1,001.3	µg/mL	+/-	5.8216	µg/mL	Gravimetric
	CAS # 91-57-6	(Lot 19399MJV)			+/-	11.9696	µg/mL	Unstressed
	Purity 99%				+/-	19.0494	µg/mL	Stressed
32	4-Chloro-3-methylphenol		1,000.2	µg/mL	+/-	5.8151	µg/mL	Gravimetric
	CAS # 59-50-7	(Lot STBC0769V)			+/-	11.9561	µg/mL	Unstressed
	Purity 99%				+/-	19.0279	µg/mL	Stressed
33	1-Methylnaphthalene		1,001.1	µg/mL	+/-	5.8203	µg/mL	Gravimetric
	CAS # 90-12-0	(Lot 525000-10)			+/-	11.9668	µg/mL	Unstressed
	Purity 99%				+/-	19.0450	µg/mL	Stressed
34	1,2,4,5-Tetrachlorobenzene		1,000.1	µg/mL	+/-	5.8145	µg/mL	Gravimetric
	CAS # 95-94-3	(Lot 06024AIV)			+/-	11.9549	µg/mL	Unstressed
	Purity 99%				+/-	19.0260	µg/mL	Stressed
35	Hexachlorocyclopentadiene		999.7	µg/mL	+/-	5.8126	µg/mL	Gravimetric
	CAS # 77-47-4	(Lot 150909)			+/-	11.9510	µg/mL	Unstressed
	Purity 97%				+/-	19.0199	µg/mL	Stressed
36	2,4,6-Trichlorophenol		1,001.4	µg/mL	+/-	5.8220	µg/mL	Gravimetric
	CAS # 88-06-2	(Lot MKBH7393V)			+/-	11.9704	µg/mL	Unstressed
	Purity 99%				+/-	19.0507	µg/mL	Stressed
37	2,4,5-Trichlorophenol		1,000.1	µg/mL	+/-	5.8145	µg/mL	Gravimetric
	CAS # 95-95-4	(Lot 150806JLM)			+/-	11.9549	µg/mL	Unstressed
	Purity 99%				+/-	19.0260	µg/mL	Stressed
38	2-Chloronaphthalene		1,000.9	µg/mL	+/-	5.8193	µg/mL	Gravimetric
	CAS # 91-58-7	(Lot AJ2UI-TE)			+/-	11.9648	µg/mL	Unstressed
	Purity 99%				+/-	19.0418	µg/mL	Stressed
39	Biphenyl		1,000.6	µg/mL	+/-	5.8178	µg/mL	Gravimetric
	CAS # 92-52-4	(Lot 1277976)			+/-	11.9616	µg/mL	Unstressed
	Purity 99%				+/-	19.0368	µg/mL	Stressed

40	4-Nitroaniline			1,000.5	µg/mL	+/-	5.8172	µg/mL	Gravimetric
	CAS #	100-01-6	(Lot BCBG4702V)			+/-	11.9604	µg/mL	Unstressed
	Purity	99%				+/-	19.0349	µg/mL	Stressed
41	Acenaphthylene			999.8	µg/mL	+/-	5.8127	µg/mL	Gravimetric
	CAS #	208-96-8	(Lot W01O)			+/-	11.9512	µg/mL	Unstressed
	Purity	98%				+/-	19.0202	µg/mL	Stressed
42	1,3-Dinitrobenzene			1,000.5	µg/mL	+/-	5.8168	µg/mL	Gravimetric
	CAS #	99-65-0	(Lot BCBB1436V)			+/-	11.9596	µg/mL	Unstressed
	Purity	99%				+/-	19.0336	µg/mL	Stressed
43	Dimethylphthalate			1,001.5	µg/mL	+/-	5.8228	µg/mL	Gravimetric
	CAS #	131-11-3	(Lot 10117699)			+/-	11.9720	µg/mL	Unstressed
	Purity	99%				+/-	19.0532	µg/mL	Stressed
44	2,6-Dinitrotoluene			1,000.2	µg/mL	+/-	5.8152	µg/mL	Gravimetric
	CAS #	606-20-2	(Lot 1437483V)			+/-	11.9565	µg/mL	Unstressed
	Purity	99%				+/-	19.0285	µg/mL	Stressed
45	Acenaphthene			1,001.8	µg/mL	+/-	5.8246	µg/mL	Gravimetric
	CAS #	83-32-9	(Lot MKBP0384V)			+/-	11.9756	µg/mL	Unstressed
	Purity	99%				+/-	19.0590	µg/mL	Stressed
46	2,4-Dinitrophenol			1,999.8	µg/mL	+/-	11.6272	µg/mL	Gravimetric
	CAS #	51-28-5	(Lot STBF1268V)			+/-	23.9061	µg/mL	Unstressed
	Purity	99%				+/-	38.0462	µg/mL	Stressed
47	Dibenzofuran			1,000.7	µg/mL	+/-	5.8180	µg/mL	Gravimetric
	CAS #	132-64-9	(Lot MKBH8392V)			+/-	11.9620	µg/mL	Unstressed
	Purity	99%				+/-	19.0374	µg/mL	Stressed
48	3-Nitroaniline			1,000.8	µg/mL	+/-	5.8185	µg/mL	Gravimetric
	CAS #	99-09-2	(Lot MKBQ6338V)			+/-	11.9632	µg/mL	Unstressed
	Purity	99%				+/-	19.0393	µg/mL	Stressed
49	2,4-Dinitrotoluene			1,001.5	µg/mL	+/-	5.8230	µg/mL	Gravimetric
	CAS #	121-14-2	(Lot MKAA0690V)			+/-	11.9724	µg/mL	Unstressed
	Purity	99%				+/-	19.0539	µg/mL	Stressed
50	4-Nitrophenol			2,000.3	µg/mL	+/-	11.6297	µg/mL	Gravimetric
	CAS #	100-02-7	(Lot MKBP6945V)			+/-	23.9113	µg/mL	Unstressed
	Purity	99%				+/-	38.0545	µg/mL	Stressed
51	2,3,4,6-Tetrachlorophenol			1,000.0	µg/mL	+/-	5.8141	µg/mL	Gravimetric
	CAS #	58-90-2	(Lot B15W0912)			+/-	11.9541	µg/mL	Unstressed
	Purity	99%				+/-	19.0247	µg/mL	Stressed
52	Fluorene			1,000.4	µg/mL	+/-	5.8163	µg/mL	Gravimetric
	CAS #	86-73-7	(Lot 10174662)			+/-	11.9587	µg/mL	Unstressed
	Purity	98%				+/-	19.0320	µg/mL	Stressed
53	4-Chlorophenyl phenyl ether			1,001.0	µg/mL	+/-	5.8201	µg/mL	Gravimetric
	CAS #	7005-72-3	(Lot MKBS2248V)			+/-	11.9664	µg/mL	Unstressed
	Purity	99%				+/-	19.0444	µg/mL	Stressed
54	n-Hexadecane (C16)			1,000.7	µg/mL	+/-	5.8180	µg/mL	Gravimetric
	CAS #	544-76-3	(Lot SHBF6942V)			+/-	11.9620	µg/mL	Unstressed
	Purity	99%				+/-	19.0374	µg/mL	Stressed
55	Diethylphthalate			1,000.9	µg/mL	+/-	5.8193	µg/mL	Gravimetric
	CAS #	84-66-2	(Lot MKBJ3578V)			+/-	11.9648	µg/mL	Unstressed
	Purity	99%				+/-	19.0418	µg/mL	Stressed

56	Azobenzene			1,001.2	µg/mL	+/-	5.8213	µg/mL	Gravimetric
	CAS #	103-33-3	(Lot MKBS2559V)			+/-	11.9688	µg/mL	Unstressed
	Purity	99%				+/-	19.0482	µg/mL	Stressed
57	Diphenylamine			850.7	µg/mL	+/-	4.9460	µg/mL	Gravimetric
	CAS #	122-39-4	(Lot MKBN8295V)			+/-	10.1693	µg/mL	Unstressed
	Purity	99%				+/-	16.1843	µg/mL	Stressed
58	2-Nitroaniline			1,000.2	µg/mL	+/-	5.8151	µg/mL	Gravimetric
	CAS #	88-74-4	(Lot MKBK7597V)			+/-	11.9561	µg/mL	Unstressed
	Purity	99%				+/-	19.0279	µg/mL	Stressed
59	4,6-Dinitro-2-methylphenol (Dinitro-o-cresol)			2,000.9	µg/mL	+/-	11.6336	µg/mL	Gravimetric
	CAS #	534-52-1	(Lot LC12394V)			+/-	23.9193	µg/mL	Unstressed
	Purity	99%				+/-	38.0672	µg/mL	Stressed
60	4-Bromophenyl phenyl ether			999.8	µg/mL	+/-	5.8131	µg/mL	Gravimetric
	CAS #	101-55-3	(Lot STBB9729V)			+/-	11.9520	µg/mL	Unstressed
	Purity	98%				+/-	19.0215	µg/mL	Stressed
61	Hexachlorobenzene			1,001.6	µg/mL	+/-	5.8234	µg/mL	Gravimetric
	CAS #	118-74-1	(Lot LC10604V)			+/-	11.9732	µg/mL	Unstressed
	Purity	99%				+/-	19.0551	µg/mL	Stressed
62	Pentachlorophenol			2,000.5	µg/mL	+/-	11.6311	µg/mL	Gravimetric
	CAS #	87-86-5	(Lot 150902JLM)			+/-	23.9142	µg/mL	Unstressed
	Purity	98%				+/-	38.0591	µg/mL	Stressed
63	Phenanthrene			1,001.9	µg/mL	+/-	5.8249	µg/mL	Gravimetric
	CAS #	85-01-8	(Lot MKBT8628V)			+/-	11.9764	µg/mL	Unstressed
	Purity	99%				+/-	19.0602	µg/mL	Stressed
64	n-Octadecane (C18)			1,000.8	µg/mL	+/-	5.8187	µg/mL	Gravimetric
	CAS #	593-45-3	(Lot 27SOF)			+/-	11.9636	µg/mL	Unstressed
	Purity	99%				+/-	19.0399	µg/mL	Stressed
65	Anthracene			1,001.4	µg/mL	+/-	5.8224	µg/mL	Gravimetric
	CAS #	120-12-7	(Lot MKBK5208V)			+/-	11.9712	µg/mL	Unstressed
	Purity	99%				+/-	19.0520	µg/mL	Stressed
66	Carbazole			1,000.4	µg/mL	+/-	5.8161	µg/mL	Gravimetric
	CAS #	86-74-8	(Lot 4017900)			+/-	11.9583	µg/mL	Unstressed
	Purity	98%				+/-	19.0314	µg/mL	Stressed
67	Di-n-butylphthalate			1,003.6	µg/mL	+/-	5.8348	µg/mL	Gravimetric
	CAS #	84-74-2	(Lot MKBL8501V)			+/-	11.9967	µg/mL	Unstressed
	Purity	99%				+/-	19.0926	µg/mL	Stressed
68	Fluoranthene			1,000.7	µg/mL	+/-	5.8184	µg/mL	Gravimetric
	CAS #	206-44-0	(Lot MKBQ6360V)			+/-	11.9629	µg/mL	Unstressed
	Purity	98%				+/-	19.0389	µg/mL	Stressed
69	Pyrene			1,000.2	µg/mL	+/-	5.8151	µg/mL	Gravimetric
	CAS #	129-00-0	(Lot BCBL6786V)			+/-	11.9561	µg/mL	Unstressed
	Purity	99%				+/-	19.0279	µg/mL	Stressed
70	Benzyl butyl phthalate			1,000.3	µg/mL	+/-	5.8158	µg/mL	Gravimetric
	CAS #	85-68-7	(Lot 03027HV)			+/-	11.9576	µg/mL	Unstressed
	Purity	99%				+/-	19.0304	µg/mL	Stressed
71	Benz(a)anthracene			1,000.1	µg/mL	+/-	5.8147	µg/mL	Gravimetric
	CAS #	56-55-3	(Lot ER031412-01)			+/-	11.9553	µg/mL	Unstressed
	Purity	99%				+/-	19.0266	µg/mL	Stressed

72	Chrysene **CAS #** 218-01-9 **Purity** 99%	(Lot PR121912-01)	1,000.0	µg/mL	+/- +/- +/-	5.8143 11.9545 19.0253	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
73	Bis(2-ethylhexyl)phthalate **CAS #** 117-81-7 **Purity** 99%	(Lot MKBK2695V)	1,000.4	µg/mL	+/- +/- +/-	5.8164 11.9588 19.0323	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
74	Di-n-octyl phthalate **CAS #** 117-84-0 **Purity** 99%	(Lot 3998900)	1,004.1	µg/mL	+/- +/- +/-	5.8379 12.0031 19.1027	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
75	Benzo(b)fluoranthene **CAS #** 205-99-2 **Purity** 99%	(Lot ER03101401)	1,002.0	µg/mL	+/- +/- +/-	5.8257 11.9780 19.0628	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
76	Benzo(k)fluoranthene **CAS #** 207-08-9 **Purity** 99%	(Lot 012012K)	1,000.1	µg/mL	+/- +/- +/-	5.8149 11.9557 19.0272	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
77	Benzo(a)pyrene **CAS #** 50-32-8 **Purity** 99%	(Lot ER071309-02)	1,000.3	µg/mL	+/- +/- +/-	5.8160 11.9580 19.0311	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
78	Indeno(1,2,3-cd)pyrene **CAS #** 193-39-5 **Purity** 99%	(Lot ER082107-02)	1,000.8	µg/mL	+/- +/- +/-	5.8189 11.9640 19.0406	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
79	Dibenz(a,h)anthracene **CAS #** 53-70-3 **Purity** 99%	(Lot ER032211-01)	1,001.9	µg/mL	+/- +/- +/-	5.8251 11.9768 19.0609	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
80	Benzo(g,h,i)perylene **CAS #** 191-24-2 **Purity** 99%	(Lot ER05121401)	1,000.8	µg/mL	+/- +/- +/-	5.8185 11.9632 19.0393	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

Specific Reference Material Notes:

N-nitrosodiphenylamine 1000 ug/mL equivalent when used for GC analysis. Actual formulation is diphenylamine 855 ug/mL.
N-Nitrosodiphenylamine is prone to breakdown in the injection port and will be converted to diphenylamine.
N-Nitrosodiphenylamine is also a reactive species that can initiate premature decomposition of other compounds in the mix. For these reasons diphenylamine is used in the preparation of this mixture. When comparing the response of this compound to mixtures manufactured using N-nitrosodiphenylamine, a difference in response will be observed.

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

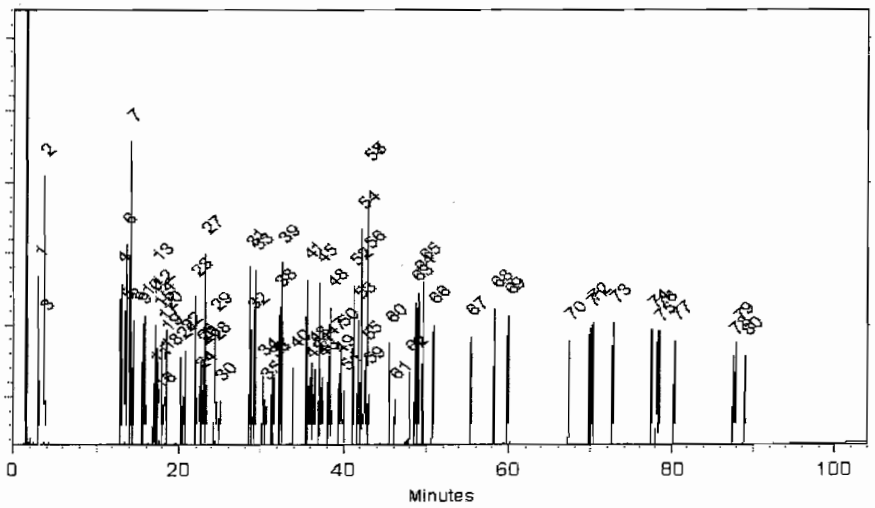
Carrier Gas:
hydrogen-constant pressure 10 psi

Temp. Program:
35°C (hold 3 min.) to 330°C
@ 3°C/min. (hold 3 min.)

Inj. Temp:
250°C

Det. Temp:
300°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Kendra Swope - Mix Technician

Date Mixed: 20-Oct-2015 **Balance:** B442140311

Jodi E. Breon - QA Analyst

Date Passed: 04-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

List 1 Std 9_00010

Rec'd: 5-25-16

RESTEK® CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

Certificate of Analysis

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569730 **Lot No.:** A0112567

Description : 8270 List 1 / Std #9

8270 List 1 / Std #9 2,000 ug/ml, Methylene Chloride, 5 ml/ampul

Container Size : 10 mL **Pkg Amt:** > 5 mL

Expiration Date : January 31, 2017 **Storage:** 10°C or colder

Handling: Contains carcinogen/reproductive toxin.

929313
ID: List 1 Std 9_00010
Exp: 01/31/17 Prpd: MAK
2000 ppm List 1 Std 9 par

929314
ID: List 1 Std 9_00011
Exp: 01/31/17 Prpd: MAK
2000 ppm List 1 Std 9 par

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Benzidine **CAS #** 92-87-5 (Lot 150701JLMB) **Purity** 99%	2,001.0 µg/mL	+/- 11.6337 µg/mL +/- 21.9078 µg/mL +/- 37.1592 µg/mL	Gravimetric Unstressed Stressed
2	3,3'-Dichlorobenzidine **CAS #** 91-94-1 (Lot 150701JLMA) **Purity** 99%	2,001.5 µg/mL	+/- 11.6369 µg/mL +/- 21.9138 µg/mL +/- 37.1694 µg/mL	Gravimetric Unstressed Stressed

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

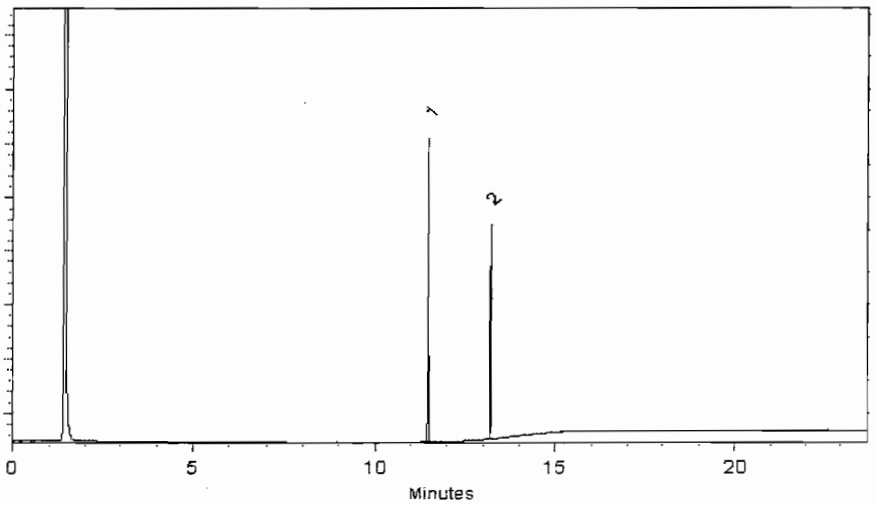
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Kendra Swope - Mix Technician

Date Mixed: 15-Jul-2015 **Balance:** 1122030677

Jennifer L. Pollino - QC Analyst

Date Passed: 17-Jul-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

List1Std1_sec_00011

Rec'd: 5-25-16

RESTEK® CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570666.sec **Lot No.:** A0115803

Description : 8270 List 1 / Std #1 MegaMix (2016)

8270 List 1 / Std #1 MegaMix (2016) 500-2000 ug/ml, Methylene Chloride, 5 ml/ampul

Container Size : 10 mL **Pkg Amt:** > 5 mL

Expiration Date : June 30, 2017 **Storage:** 10°C or colder

Handling: Carcinogen/reproductive toxin. Photosensitive. Sonicate.

929301
ID: List1Std1_sec_00011
Exp: 06/30/17 Prpd: MAK
8270 List1 Std #1 Megamix

929302
ID: List1Std1_sec_00012
Exp: 06/30/17 Prpd: MAK
8270 List1 Std #1 Megamix

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	1,4-Dioxane		1,001.0 µg/mL	+/- 5.8333	µg/mL	Gravimetric
	CAS # 123-91-1.SEC	(Lot CHA4A)		+/- 11.9726	µg/mL	Unstressed
	Purity 99%			+/- 19.0478	µg/mL	Stressed
2	Pyridine		1,000.3 µg/mL	+/- 5.8290	µg/mL	Gravimetric
	CAS # 110-86-1.SEC	(Lot QN8DK)		+/- 11.9636	µg/mL	Unstressed
	Purity 99%			+/- 19.0336	µg/mL	Stressed
3	N-Nitrosodimethylamine		1,001.4 µg/mL	+/- 5.8359	µg/mL	Gravimetric
	CAS # 62-75-9.SEC	(Lot 41B67)		+/- 11.9778	µg/mL	Unstressed
	Purity 98%			+/- 19.0562	µg/mL	Stressed
4	Aniline		1,000.3 µg/mL	+/- 5.8290	µg/mL	Gravimetric
	CAS # 62-53-3.SEC	(Lot ZCD3N)		+/- 11.9636	µg/mL	Unstressed
	Purity 99%			+/- 19.0336	µg/mL	Stressed
5	Bis(2-chloroethyl)ether		1,000.3 µg/mL	+/- 5.8290	µg/mL	Gravimetric
	CAS # 111-44-4.SEC	(Lot FA010143)		+/- 11.9636	µg/mL	Unstressed
	Purity 99%			+/- 19.0336	µg/mL	Stressed
6	2-Chlorophenol		1,000.6 µg/mL	+/- 5.8312	µg/mL	Gravimetric
	CAS # 95-57-8.SEC	(Lot GJ01)		+/- 11.9681	µg/mL	Unstressed
	Purity 99%			+/- 19.0407	µg/mL	Stressed
7	Phenol		1,000.1 µg/mL	+/- 5.8282	µg/mL	Gravimetric
	CAS # 108-95-2.SEC	(Lot EDPYN)		+/- 11.9621	µg/mL	Unstressed
	Purity 99%			+/- 19.0312	µg/mL	Stressed

8	n-Decane (C10)			1,000.1	µg/mL	+/-	5.8282	µg/mL	Gravimetric
	CAS #	124-18-5.SEC	(Lot UCVNN)			+/-	11.9621	µg/mL	Unstressed
	Purity	99%				+/-	19.0312	µg/mL	Stressed
9	1,4-Dichlorobenzene			1,000.3	µg/mL	+/-	5.8290	µg/mL	Gravimetric
	CAS #	106-46-7.SEC	(Lot YWKDC-MK)			+/-	11.9636	µg/mL	Unstressed
	Purity	99%				+/-	19.0336	µg/mL	Stressed
10	1,3-Dichlorobenzene			1,000.0	µg/mL	+/-	5.8275	µg/mL	Gravimetric
	CAS #	541-73-1.SEC	(Lot FMDFD-KA)			+/-	11.9606	µg/mL	Unstressed
	Purity	99%				+/-	19.0288	µg/mL	Stressed
11	1,2-Dichlorobenzene			1,000.0	µg/mL	+/-	5.8275	µg/mL	Gravimetric
	CAS #	95-50-1.SEC	(Lot 4NRGF-OT)			+/-	11.9606	µg/mL	Unstressed
	Purity	99%				+/-	19.0288	µg/mL	Stressed
12	Benzyl alcohol			1,000.4	µg/mL	+/-	5.8297	µg/mL	Gravimetric
	CAS #	100-51-6.SEC	(Lot QZBUO)			+/-	11.9651	µg/mL	Unstressed
	Purity	99%				+/-	19.0360	µg/mL	Stressed
13	2,2'-oxybis(1-chloropropane)			1,000.4	µg/mL	+/-	5.8297	µg/mL	Gravimetric
	CAS #	108-60-1 *	(Lot 2-KMW-57-8)			+/-	11.9651	µg/mL	Unstressed
	Purity	99%				+/-	19.0360	µg/mL	Stressed
14	2-Methylphenol (o-cresol)			1,000.3	µg/mL	+/-	5.8295	µg/mL	Gravimetric
	CAS #	95-48-7.SEC	(Lot NC7HL)			+/-	11.9646	µg/mL	Unstressed
	Purity	98%				+/-	19.0352	µg/mL	Stressed
15	Hexachloroethane			1,000.6	µg/mL	+/-	5.8309	µg/mL	Gravimetric
	CAS #	67-72-1.SEC	(Lot 10173016)			+/-	11.9675	µg/mL	Unstressed
	Purity	98%				+/-	19.0399	µg/mL	Stressed
16	Acetophenone			1,000.3	µg/mL	+/-	5.8290	µg/mL	Gravimetric
	CAS #	98-86-2.SEC	(Lot NSGTI)			+/-	11.9636	µg/mL	Unstressed
	Purity	99%				+/-	19.0336	µg/mL	Stressed
17	N-Nitroso-di-n-propylamine			1,000.6	µg/mL	+/-	5.8312	µg/mL	Gravimetric
	CAS #	621-64-7.SEC	(Lot 1528900)			+/-	11.9681	µg/mL	Unstressed
	Purity	99%				+/-	19.0407	µg/mL	Stressed
18	4-Methylphenol (p-cresol)			500.1	µg/mL	+/-	2.9145	µg/mL	Gravimetric
	CAS #	106-44-5.SEC	(Lot 65S2E)			+/-	5.9818	µg/mL	Unstressed
	Purity	99%				+/-	9.5168	µg/mL	Stressed
19	3-Methylphenol (m-cresol)			500.1	µg/mL	+/-	2.9145	µg/mL	Gravimetric
	CAS #	108-39-4.SEC	(Lot 6LHTM)			+/-	5.9818	µg/mL	Unstressed
	Purity	99%				+/-	9.5168	µg/mL	Stressed
20	Nitrobenzene			1,000.4	µg/mL	+/-	5.8297	µg/mL	Gravimetric
	CAS #	98-95-3.SEC	(Lot FLYIG)			+/-	11.9651	µg/mL	Unstressed
	Purity	99%				+/-	19.0360	µg/mL	Stressed
21	Isophorone			1,000.4	µg/mL	+/-	5.8297	µg/mL	Gravimetric
	CAS #	78-59-1.SEC	(Lot XHGJI)			+/-	11.9651	µg/mL	Unstressed
	Purity	99%				+/-	19.0360	µg/mL	Stressed
22	2-Nitrophenol			1,000.3	µg/mL	+/-	5.8290	µg/mL	Gravimetric
	CAS #	88-75-5.SEC	(Lot GXJ7J)			+/-	11.9636	µg/mL	Unstressed
	Purity	99%				+/-	19.0336	µg/mL	Stressed
23	2,4-Dimethylphenol			1,000.4	µg/mL	+/-	5.8297	µg/mL	Gravimetric
	CAS #	105-67-9.SEC	(Lot MKBL3650V)			+/-	11.9651	µg/mL	Unstressed
	Purity	99%				+/-	19.0360	µg/mL	Stressed

24	Bis(2-chloroethoxy)methane **CAS #** 111-91-1 * **Purity** 99%	(Lot 3299900)	1,000.6	µg/mL	+/- 5.8312 +/- 11.9681 +/- 19.0407	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
25	2,4-Dichlorophenol **CAS #** 120-83-2.SEC **Purity** 99%	(Lot FHM01)	1,000.8	µg/mL	+/- 5.8319 +/- 11.9696 +/- 19.0431	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
26	1,2,4-Trichlorobenzene **CAS #** 120-82-1.SEC **Purity** 99%	(Lot 3LYYC)	1,000.0	µg/mL	+/- 5.8275 +/- 11.9606 +/- 19.0288	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
27	Naphthalene **CAS #** 91-20-3.SEC **Purity** 99%	(Lot 4KW3H-OO)	1,001.1	µg/mL	+/- 5.8341 +/- 11.9741 +/- 19.0502	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
28	2,6-Dichlorophenol **CAS #** 87-65-0.SEC **Purity** 99%	(Lot SIDBB)	1,000.6	µg/mL	+/- 5.8312 +/- 11.9681 +/- 19.0407	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
29	4-Chloroaniline **CAS #** 106-47-8.SEC **Purity** 99%	(Lot 10171860)	1,000.8	µg/mL	+/- 5.8319 +/- 11.9696 +/- 19.0431	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
30	Hexachlorobutadiene **CAS #** 87-68-3.SEC **Purity** 98%	(Lot 3265500)	1,000.8	µg/mL	+/- 5.8323 +/- 11.9705 +/- 19.0445	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
31	2-Methylnaphthalene **CAS #** 91-57-6.SEC **Purity** 99%	(Lot 76023-1)	1,000.8	µg/mL	+/- 5.8319 +/- 11.9696 +/- 19.0431	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
32	4-Chloro-3-methylphenol **CAS #** 59-50-7.SEC **Purity** 99%	(Lot FDO02)	1,000.1	µg/mL	+/- 5.8282 +/- 11.9621 +/- 19.0312	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
33	1-Methylnaphthalene **CAS #** 90-12-0.SEC **Purity** 99%	(Lot UATSA)	1,000.9	µg/mL	+/- 5.8326 +/- 11.9711 +/- 19.0455	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
34	1,2,4,5-Tetrachlorobenzene **CAS #** 95-94-3.SEC **Purity** 99%	(Lot AF02)	1,000.8	µg/mL	+/- 5.8319 +/- 11.9696 +/- 19.0431	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
35	Hexachlorocyclopentadiene **CAS #** 77-47-4.SEC **Purity** 99%	(Lot 0012013)	1,001.1	µg/mL	+/- 5.8341 +/- 11.9741 +/- 19.0502	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
36	2,4,6-Trichlorophenol **CAS #** 88-06-2.SEC **Purity** 98%	(Lot UUMYM)	1,000.9	µg/mL	+/- 5.8330 +/- 11.9719 +/- 19.0469	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
37	2,4,5-Trichlorophenol **CAS #** 95-95-4.SEC **Purity** 97%	(Lot MKBQ9937V)	1,000.9	µg/mL	+/- 5.8329 +/- 11.9716 +/- 19.0463	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
38	2-Chloronaphthalene **CAS #** 91-58-7.SEC **Purity** 99%	(Lot LC03928V)	1,000.3	µg/mL	+/- 5.8290 +/- 11.9636 +/- 19.0336	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
39	Biphenyl **CAS #** 92-52-4.SEC **Purity** 99%	(Lot 330QE)	1,000.1	µg/mL	+/- 5.8282 +/- 11.9621 +/- 19.0312	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

40	4-Nitroaniline **CAS #** 100-01-6.SEC **Purity** 99%	(Lot 5ITRC)	1,000.4	µg/mL	+/- +/- +/-	5.8297 11.9651 19.0360	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
41	Acenaphthylene **CAS #** 208-96-8.SEC **Purity** 98%	(Lot 062013)	1,000.1	µg/mL	+/- +/- +/-	5.8280 11.9617 19.0305	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
42	1,3-Dinitrobenzene **CAS #** 99-65-0.SEC **Purity** 99%	(Lot 3XXLB)	1,000.4	µg/mL	+/- +/- +/-	5.8297 11.9651 19.0360	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
43	Dimethylphthalate **CAS #** 131-11-3.SEC **Purity** 99%	(Lot 483WC)	1,000.3	µg/mL	+/- +/- +/-	5.8290 11.9636 19.0336	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
44	2,6-Dinitrotoluene **CAS #** 606-20-2.SEC **Purity** 99%	(Lot GE01)	1,000.1	µg/mL	+/- +/- +/-	5.8282 11.9621 19.0312	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
45	Acenaphthene **CAS #** 83-32-9.SEC **Purity** 99%	(Lot BWZJE)	1,000.6	µg/mL	+/- +/- +/-	5.8312 11.9681 19.0407	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
46	2,4-Dinitrophenol **CAS #** 51-28-5.SEC **Purity** 99%	(Lot 2TXXH)	2,000.4	µg/mL	+/- +/- +/-	11.6304 23.9126 38.0566	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
47	Dibenzofuran **CAS #** 132-64-9.SEC **Purity** 99%	(Lot 27ZGC)	1,000.5	µg/mL	+/- +/- +/-	5.8304 11.9666 19.0383	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
48	3-Nitroaniline **CAS #** 99-09-2.SEC **Purity** 99%	(Lot FGN03)	1,000.1	µg/mL	+/- +/- +/-	5.8282 11.9621 19.0312	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
49	2,4-Dinitrotoluene **CAS #** 121-14-2.SEC **Purity** 99%	(Lot SHRSA)	1,000.5	µg/mL	+/- +/- +/-	5.8304 11.9666 19.0383	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
50	4-Nitrophenol **CAS #** 100-02-7.SEC **Purity** 99%	(Lot 2J5LB)	2,000.3	µg/mL	+/- +/- +/-	11.6296 23.9111 38.0542	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
51	2,3,4,6-Tetrachlorophenol **CAS #** 58-90-2.SEC **Purity** 98%	(Lot LC10202V)	1,001.1	µg/mL	+/- +/- +/-	5.8338 11.9734 19.0492	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
52	Fluorene **CAS #** 86-73-7.SEC **Purity** 99%	(Lot 1561600)	1,000.4	µg/mL	+/- +/- +/-	5.8297 11.9651 19.0360	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
53	4-Chlorophenyl phenyl ether **CAS #** 7005-72-3.SEC **Purity** 99%	(Lot P31G)	1,000.6	µg/mL	+/- +/- +/-	5.8312 11.9681 19.0407	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
54	n-Hexadecane (C16) **CAS #** 544-76-3.SEC **Purity** 99%	(Lot A0328141)	1,000.8	µg/mL	+/- +/- +/-	5.8319 11.9696 19.0431	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
55	Diethylphthalate **CAS #** 84-66-2.SEC **Purity** 99%	(Lot UMBJC)	1,001.0	µg/mL	+/- +/- +/-	5.8333 11.9726 19.0478	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

56	Azobenzene			1,000.8	µg/mL	+/-	5.8319	µg/mL	Gravimetric
	CAS #	103-33-3.SEC	(Lot JUWAG)			+/-	11.9696	µg/mL	Unstressed
	Purity	99%				+/-	19.0431	µg/mL	Stressed
57	Diphenylamine			850.5	µg/mL	+/-	4.9563	µg/mL	Gravimetric
	CAS #	122-39-4.SEC	(Lot 10164691)			+/-	10.1725	µg/mL	Unstressed
	Purity	99%				+/-	16.1840	µg/mL	Stressed
58	2-Nitroaniline			1,000.5	µg/mL	+/-	5.8304	µg/mL	Gravimetric
	CAS #	88-74-4.SEC	(Lot T6E7B)			+/-	11.9666	µg/mL	Unstressed
	Purity	99%				+/-	19.0383	µg/mL	Stressed
59	4,6-Dinitro-2-methylphenol (Dinitro-o-cresol)			2,000.8	µg/mL	+/-	11.6325	µg/mL	Gravimetric
	CAS #	534-52-1.SEC	(Lot 3256700)			+/-	23.9171	µg/mL	Unstressed
	Purity	99%				+/-	38.0637	µg/mL	Stressed
60	4-Bromophenyl phenyl ether			1,000.9	µg/mL	+/-	5.8326	µg/mL	Gravimetric
	CAS #	101-55-3.SEC	(Lot 84C6D)			+/-	11.9711	µg/mL	Unstressed
	Purity	99%				+/-	19.0455	µg/mL	Stressed
61	Hexachlorobenzene			1,000.4	µg/mL	+/-	5.8297	µg/mL	Gravimetric
	CAS #	118-74-1.SEC	(Lot 20622)			+/-	11.9651	µg/mL	Unstressed
	Purity	99%				+/-	19.0360	µg/mL	Stressed
62	Pentachlorophenol			2,001.1	µg/mL	+/-	11.6347	µg/mL	Gravimetric
	CAS #	87-86-5.SEC	(Lot 2357600)			+/-	23.9216	µg/mL	Unstressed
	Purity	99%				+/-	38.0708	µg/mL	Stressed
63	Phenanthrene			1,000.2	µg/mL	+/-	5.8288	µg/mL	Gravimetric
	CAS #	85-01-8.SEC	(Lot 1777100)			+/-	11.9631	µg/mL	Unstressed
	Purity	98%				+/-	19.0329	µg/mL	Stressed
64	n-Octadecane (C18)			1,000.9	µg/mL	+/-	5.8326	µg/mL	Gravimetric
	CAS #	593-45-3.SEC	(Lot G14U045)			+/-	11.9711	µg/mL	Unstressed
	Purity	99%				+/-	19.0455	µg/mL	Stressed
65	Anthracene			1,000.8	µg/mL	+/-	5.8319	µg/mL	Gravimetric
	CAS #	120-12-7.SEC	(Lot WDFNJ)			+/-	11.9696	µg/mL	Unstressed
	Purity	99%				+/-	19.0431	µg/mL	Stressed
66	Carbazole			1,000.4	µg/mL	+/-	5.8297	µg/mL	Gravimetric
	CAS #	86-74-8.SEC	(Lot LMIZB)			+/-	11.9651	µg/mL	Unstressed
	Purity	99%				+/-	19.0360	µg/mL	Stressed
67	Di-n-butylphthalate			1,000.1	µg/mL	+/-	5.8282	µg/mL	Gravimetric
	CAS #	84-74-2.SEC	(Lot 42FSG)			+/-	11.9621	µg/mL	Unstressed
	Purity	99%				+/-	19.0312	µg/mL	Stressed
68	Fluoranthene			1,000.6	µg/mL	+/-	5.8312	µg/mL	Gravimetric
	CAS #	206-44-0.SEC	(Lot FREGF)			+/-	11.9681	µg/mL	Unstressed
	Purity	99%				+/-	19.0407	µg/mL	Stressed
69	Pyrene			1,000.9	µg/mL	+/-	5.8326	µg/mL	Gravimetric
	CAS #	129-00-0.SEC	(Lot ROVJC)			+/-	11.9711	µg/mL	Unstressed
	Purity	99%				+/-	19.0455	µg/mL	Stressed
70	Benzyl butyl phthalate			1,001.6	µg/mL	+/-	5.8366	µg/mL	Gravimetric
	CAS #	85-68-7.SEC	(Lot GX3GL)			+/-	11.9793	µg/mL	Unstressed
	Purity	98%				+/-	19.0585	µg/mL	Stressed
71	Benz(a)anthracene			1,000.2	µg/mL	+/-	5.8286	µg/mL	Gravimetric
	CAS #	56-55-3.SEC	(Lot MTENF)			+/-	11.9629	µg/mL	Unstressed
	Purity	97%				+/-	19.0325	µg/mL	Stressed

72	chrysene		1,000.4	µg/mL	+/-	5.8297	µg/mL	Gravimetric
	CAS # 218-01-9.SEC	(Lot KQ4SE)			+/-	11.9651	µg/mL	Unstressed
	Purity 99%				+/-	19.0360	µg/mL	Stressed
73	Bis(2-ethylhexyl)phthalate		1,000.8	µg/mL	+/-	5.8319	µg/mL	Gravimetric
	CAS # 117-81-7.SEC	(Lot MT8AG)			+/-	11.9696	µg/mL	Unstressed
	Purity 99%				+/-	19.0431	µg/mL	Stressed
74	Di-n-octyl phthalate		1,000.9	µg/mL	+/-	5.8330	µg/mL	Gravimetric
	CAS # 117-84-0.SEC	(Lot O8DLD)			+/-	11.9719	µg/mL	Unstressed
	Purity 98%				+/-	19.0469	µg/mL	Stressed
75	Benzo(b)fluoranthene		1,000.4	µg/mL	+/-	5.8297	µg/mL	Gravimetric
	CAS # 205-99-2.SEC	(Lot 022011)			+/-	11.9651	µg/mL	Unstressed
	Purity 99%				+/-	19.0360	µg/mL	Stressed
76	Benzo(k)fluoranthene		1,000.9	µg/mL	+/-	5.8326	µg/mL	Gravimetric
	CAS # 207-08-9.SEC	(Lot ER061608-02)			+/-	11.9711	µg/mL	Unstressed
	Purity 99%				+/-	19.0455	µg/mL	Stressed
77	Benzo(a)pyrene		1,000.0	µg/mL	+/-	5.8275	µg/mL	Gravimetric
	CAS # 50-32-8.SEC	(Lot NPEZF)			+/-	11.9606	µg/mL	Unstressed
	Purity 99%				+/-	19.0288	µg/mL	Stressed
78	Indeno(1,2,3-cd)pyrene		1,000.1	µg/mL	+/-	5.8282	µg/mL	Gravimetric
	CAS # 193-39-5.SEC	(Lot 022013)			+/-	11.9621	µg/mL	Unstressed
	Purity 99%				+/-	19.0312	µg/mL	Stressed
79	Dibenz(a,h)anthracene		1,000.8	µg/mL	+/-	5.8319	µg/mL	Gravimetric
	CAS # 53-70-3.SEC	(Lot 0012012)			+/-	11.9696	µg/mL	Unstressed
	Purity 99%				+/-	19.0431	µg/mL	Stressed
80	Benzo(g,h,i)perylene		1,000.6	µg/mL	+/-	5.8308	µg/mL	Gravimetric
	CAS # 191-24-2.SEC	(Lot 0022012)			+/-	11.9673	µg/mL	Unstressed
	Purity 96%				+/-	19.0395	µg/mL	Stressed

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

*** Restek is unable to identify a reliable and/or acceptable second source for this material - the same batch of neat material may have been used to produce both the primary and secondary standard. The primary and secondary standards were prepared using different equipment and personnel.**

Specific Reference Material Notes:

N-nitrosodiphenylamine 1000 ug/mL equivalent when used for GC analysis. Actual formulation is diphenylamine 855 ug/mL.
N-Nitrosodiphenylamine is prone to breakdown in the injection port and will be converted to diphenylamine.
N-Nitrosodiphenylamine is also a reactive species that can initiate premature decomposition of other compounds in the mix. For these reasons diphenylamine is used in the preparation of this mixture. When comparing the response of this compound to mixtures manufactured using N-nitrosodiphenylamine, a difference in response will be observed.

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

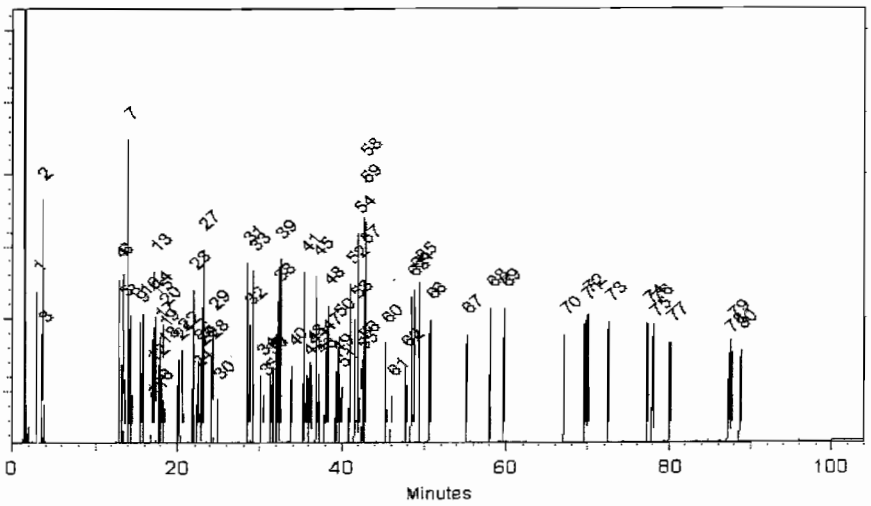
Carrier Gas:
hydrogen-constant pressure 10 psi

Temp. Program:
35°C (hold 3 min.) to 330°C
@ 3°C/min. (hold 3 min.)

Inj. Temp:
250°C

Det. Temp:
300°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Amanda Miller - QC Analyst

Date Mixed: 07-Dec-2015 **Balance:** 1128353505

Date Passed: 17-Dec-2015

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/µECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k\sqrt{U^2_{gravimetric} + U^2_{homogeneity} + U^2_{storage\ stability} + U^2_{shipping\ stability}}$$

  k is a coverage factor of 2, which gives a level of confidence of approximately 95%.
- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

Reagent

LSC Check_00001

PerkinElmer Inc. 549 Albany Street, Boston, MA 02118 USA Tel. No. 800-762-4000

PerkinElmer

Certificate of Radioactivity / Traceability

Product **Unquenched Toluene Standard for Liquid Scintillation Counting**

Part Number **6008500**

Radionuclide	Average Activity Assay		Lot No. = Assay Date	Serial No.
^{3}H (Tritium) - Toluene	**286,200** 0.129	DPM/Std. ± 3 % µCi	**February 23, 2016**	**135**
Carbon 14 - Toluene	**112,100** 0.050	DPM/Std. ± 2 % µCi	**February 23, 2016**	**135**

Expiration Date **February 23, 2021**

REFERENCE STANDARD: National Institute of Standards and Technology SRM 4947C (3H) and SRM 4222C (14C)

METHOD OF STANDARDIZATION:

The ^{3}H bulk solution is standardized by liquid scintillation counting using SRM 4947C as the reference material. The total uncertainty of the assay is ± 1.6 %

The ^{14}C bulk solution is standardized by liquid scintillation counting using SRM 4222C as the reference material. The total uncertainty of the assay is ± 1.3 %

The glass vial may have some imperfections due to the vendor's manufacturing process. These imperfections do not affect the performance of the product.

I hereby certify that the above information is accurate.

Approved by: *Donna Novi* **Date:** May 23, 2016

Chemist

CN 8845270

Reagent

MPREP1_00006

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO Guide 34, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (SAI Global File Number 010105).

ACCREDITED Testing Laboratory Certificate 863.01

ACCREDITED Reference Material Producer Certificate 863.02

2.0 PRODUCT DESCRIPTION

964300

ID: MPREP1_00006

Exp:07/28/17 Prpd:DAS Opn:07/28/16

Metals Prep 1 Spike

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	PREP-1
Lot Number:	J2-MEB616036
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	2 000 mg/L ea: Aluminum, Calcium, Iron, Potassium, Magnesium, Sodium, Sulfur, 400 mg/L ea: Boron, 200 mg/L ea: Arsenic, Barium, Beryllium, Bismuth, Cadmium, Cobalt, Chromium+3, Copper, Lithium, Manganese, Nickel, Phosphorus, Lead, Samarium, Strontium, Thorium, Uranium, Vanadium, Zinc, 100 mg/L ea: Selenium, 40 mg/L ea: Silver, Thallium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	2 000 ± 9 mg/L	Arsenic, As	200.0 ± 1.6 mg/L
Barium, Ba	200.0 ± 0.8 mg/L	Beryllium, Be	200.0 ± 1.0 mg/L
Bismuth, Bi	200.0 ± 1.1 mg/L	Boron, B	400.0 ± 3.2 mg/L
Cadmium, Cd	199.9 ± 0.8 mg/L	Calcium, Ca	2 000 ± 8 mg/L
Chromium+3, Cr3	200.0 ± 1.1 mg/L	Cobalt, Co	200.0 ± 1.1 mg/L
Copper, Cu	200.0 ± 1.0 mg/L	Iron, Fe	2 000 ± 8 mg/L
Lead, Pb	200.0 ± 1.1 mg/L	Lithium, Li	200.0 ± 1.2 mg/L
Magnesium, Mg	2 000 ± 8 mg/L	Manganese, Mn	200.0 ± 1.0 mg/L
Nickel, Ni	200.0 ± 1.0 mg/L	Phosphorus, P	200.0 ± 0.9 mg/L
Potassium, K	2 000 ± 7 mg/L	Samarium, Sm	200.0 ± 1.1 mg/L
Selenium, Se	100.0 ± 0.6 mg/L	Silver, Ag	39.99 ± 0.24 mg/L
Sodium, Na	2 000 ± 7 mg/L	Strontium, Sr	200.0 ± 0.7 mg/L
Sulfur, S	2 000 ± 10 mg/L	Thallium, Tl	39.99 ± 0.22 mg/L
Thorium, Th	200.3 ± 1.0 mg/L	Uranium, U	200.0 ± 1.3 mg/L
Vanadium, V	200.0 ± 1.0 mg/L	Zinc, Zn	200.0 ± 1.0 mg/L

Certified Density: 1.097 g/mL (measured at 20 ± 1 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	992212
Ag	Volhard	999b	999b
Al	ICP Assay	3101a	060502
Al	EDTA	928	928
As	ICP Assay	3103a	100818
As	Calculated		See Sec. 4.2
B	ICP Assay	3107	110830
Ba	ICP Assay	3104a	070222
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
Bi	ICP Assay	3106	991212
Bi	Calculated		See Sec. 4.2
Ca	ICP Assay	3109a	050825
Ca	EDTA	928	928
Cd	ICP Assay	3108	060531
Cd	EDTA	928	928
Co	ICP Assay	3113	000630 Co
Co	EDTA	928	928
Cr3	ICP Assay	3112a	030730Cr3
Cr3	Calculated		See Sec. 4.2
Cu	ICP Assay	3114	011017
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	051220
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	050302
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
S	Acidimetric	84L	84L
S	ICP Assay	3154	892205
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Sm	ICP Assay	3147a	892911
Sm	EDTA	928	928
Sr	EDTA	928	928
Sr	ICP Assay	3153a	990906

Th	EDTA	928	928
Tl	ICP Assay	3158	993012
U	ICP Assay	3164	080521
U	Calculated		See Sec. 4.2
V	EDTA	928	928
V	ICP Assay	3165	992706
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM by two independent methods

Characterization of CRM/RM by Two Methods

Certified Value, $X_{CRM/RM}$, where two methods of characterization are used is the weighted mean of the two results:

$X_{CRM/RM} = [(w_a)(X_a) + (w_b)(X_b)]$

X_a = mean of Assay Method A with standard uncertainty $u_{char\ a}$

X_b = mean of Assay Method B with standard uncertainty $u_{char\ b}$

w_a and w_b = the weighting factors for each method calculated using the inverse square of the variance:

$w_a = (1/u_{char\ a})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

$w_b = (1/u_{char\ b})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a\&b} + u^2_{bb} + u^2_{lts} + u^2_{sts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a\&b} = [(w_a)^2 (u_{char\ a})^2 + (w_b)^2 (u_{char\ b})^2]^{1/2}$ where $u_{char\ a}$ and $u_{char\ b}$ are the square root of the sum of the squares of errors from characterization which include instrument measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{sts} = short term stability standard uncertainty (transportation)

Characterization of CRM by one method

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM}$ = mean of Assay Method A with standard uncertainty $u_{char\ a}$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{sts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a}$ = square root of the sum of the squares of the errors from characterization which include instrumental measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{sts} = short term stability standard uncertainty (transportation)

Certified Abundance:

IV's Certified Abundance

Isotope	Atom %
Uranium 238U	99.8 ± 0.1
Uranium 235U	0.21 ± 0.05

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Keep cap tightly sealed when not in use. Store and use at 20 ± 4° C. Do not pipette from the container. Do not return removed aliquots to container.

Uranium Note: If uranium is present in this standard, it is natural abundance unless specified in Section 3.0

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 10CFR50 Appendix B - Nuclear Regulatory Commission

- Domestic Licensing of Production and Utilization Facilities

10.2 10CFR21 - Nuclear Regulatory Commission

- Reporting defects and Non-Compliance

10.3 ISO 9001 Quality Management System Registration

- SAI Global File Number 010105

10.4 ISO/IEC Guide 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.5 ISO/IEC Guide 34 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

11.0 CERTIFICATION, EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 05, 2016

11.2 Expiration Date

EXPIRES
1 AUG 2017

11.3 Period of Validity

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is handled and stored in accordance with instructions given in Sec 7.0 and used prior to the date given in Sec 11.2. This certification is nullified if the CRM/RM is damaged, contaminated, or otherwise modified.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Maurice Harris
Product Documentation Technician

Certificate Approved By:

Michael Booth
QC Supervisor

Certifying Officer:

Paul Gaines
PhD., Senior Technical Director

Reagent

MPREP2_00005

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO Guide 34, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (SAI Global File Number 010105).

ACCREDITED Testing Laboratory Certificate 883.01 ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

964301
ID: MPREP2_00005
Exp:07/28/17 Prpd:DAS Opn:07/28/15
Metals Prep 2 Spike

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	PREP-2
Lot Number:	J2-MEB616037
Matrix:	7% (v/v) HNO3 1.6% (v/v) HF
Value / Analyte(s):	1 000 mg/L ea: Silicon, 200 mg/L ea: Tin, Titanium, Tungsten, Zirconium, 100 mg/L ea: Molybdenum, Antimony

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.7 mg/L	Molybdenum, Mo	100.0 ± 0.4 mg/L
Silicon, Si	1 000 ± 7 mg/L	Tin, Sn	200.0 ± 0.7 mg/L
Titanium, Ti	200.0 ± 1.0 mg/L	Tungsten, W	200.0 ± 1.3 mg/L
Zirconium, Zr	200.0 ± 1.3 mg/L		

Certified Density: 1.042 g/mL (measured at 20 ± 1 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	891307
Mo	Calculated		See Sec. 4.2
Sb	ICP Assay	3102A	061229
Sb	Calculated		See Sec. 4.2
Si	ICP Assay	3150	071204
Si	Calculated		See Sec. 4.2
Sn	ICP Assay	3161a	070330
Sn	Calculated		See Sec. 4.2
Ti	ICP Assay	3162a	060808
Ti	Calculated		See Sec. 4.2
W	ICP Assay	3163	080331
W	Calculated		See Sec. 4.2
Zr	ICP Assay	3169	071226
Zr	Calculated		See Sec. 4.2

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM by two independent methods

Characterization of CRM/RM by Two Methods

Certified Value, $X_{CRM/RM}$, where two methods of characterization are used is the weighted mean of the two results:

$X_{CRM/RM} = [(w_a)(X_a) + (w_b)(X_b)]$

X_a = mean of Assay Method A with standard uncertainty $u_{char\ a}$

X_b = mean of Assay Method B with standard uncertainty $u_{char\ b}$

w_a and w_b = the weighting factors for each method calculated using the inverse square of the variance:

$w_a = (1/u_{char\ a})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

$w_b = (1/u_{char\ b})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a\&b} + u^2_{bb} + u^2_{lts} + u^2_{sts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a\&b} = [(w_a)^2 (u_{char\ a})^2 + (w_b)^2 (u_{char\ b})^2]^{1/2}$ where $u_{char\ a}$ and $u_{char\ b}$ are the square root of the sum of the squares of errors from characterization which include instrument measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{sts} = short term stability standard uncertainty (transportation)

Characterization of CRM by one method

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM}$ = mean of Assay Method A with standard uncertainty $u_{char\ a}$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{sts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a}$ = square root of the sum of the squares of the errors from characterization which include instrumental measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{sts} = short term stability standard uncertainty (transportation)

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Keep cap tightly sealed when not in use. Store and use at 20 ± 4° C. Do not pipette from the container. Do not return removed aliquots to container.

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 10CFR50 Appendix B - Nuclear Regulatory Commission

- Domestic Licensing of Production and Utilization Facilities

10.2 10CFR21 - Nuclear Regulatory Commission

- Reporting defects and Non-Compliance

10.3 ISO 9001 Quality Management System Registration

- SAI Global File Number 010105

10.4 ISO/IEC Guide 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.5 ISO/IEC Guide 34 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

11.0 CERTIFICATION, EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 05, 2016

11.2 Expiration Date

EXPIRES
1 AUG 2017

11.3 Period of Validity

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is handled and stored in accordance with instructions given in Sec 7.0 and used prior to the date given in Sec 11.2. This certification is nullified if the CRM/RM is damaged, contaminated, or otherwise modified.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Maurice Harris
Product Documentation Technician

Certificate Approved By:

Michael Booth
QC Supervisor

Certifying Officer:

Paul Gaines
PhD., Senior Technical Director

Reagent

NaOH 10N_00009

RICCA CHEMICAL COMPANY®

Arlington, TX 76012
Pocomoke City, MD 21851
Batesville, IN 47006
http://www.riccachemical.com
1-888-GO-RICCA
customerservice@riccachemical.com

Certificate of Analysis

Sodium Hydroxide, 10.0 Normal

Lot Number: 1601863 **Product Number:** 7470

Manufacture Date: JAN 16, 2016
Expiration Date: DEC 2017

Name	CAS#	Grade
Water	7732-18-5	ACS/ASTM/USP/EP
Sodium Hydroxide	1310-73-2	Reagent

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Assay (vs. Sulfuric Acid/Phenolphthalein)	9.95-10.05 N at 20°C	10.03 N at 20°C	723
Heavy Metals (as Pb)	max 10 ppm	< 10 ppm	
Iron (Fe)	max 5 ppm	< 5 ppm	3126

Specification	Reference
Sodium hydroxide Solution (400 g/L)	ASTM (D 3590 A)
Sodium Hydroxide Solution (400 g/L)	ASTM (D 1426 B)
Sodium Hydroxide, 10 N	APHA (4500-NH3 D)
Sodium Hydroxide, 10 N	APHA (4500-CN- L)
Sodium Hydroxide Stock Solution	APHA (4500-NO3- H)
Sodium Hydroxide, 10 N	APHA (7500-Ra D)
ISA Solution (10 M NaOH)	EPA (SW-846) (9213)
Sodium Hydroxide Solution (10 N)	EPA (SW-846) (3510C)
Sodium Hydroxide Solution (10 N)	EPA (SW-846) (3520C)
Sodium Hydroxide (10 N)	EPA (SW-846) (3650B)
Sodium Hydroxide Solution (10 N)	EPA (SW-846) (3535)
Sodium Hydroxide Solution (10 Molar)	EPA (SW-846) (3542)
Sodium Hydroxide, 10 N	EPA (350.3)
Sodium Hydroxide, 10 N	EPA (351.4)
Sodium Hydroxide Stock Solution (10 N)	EPA (353.1)
Sodium Hydroxide, 10 N	EPA (110.1)

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
7470-2.5	10 L Cubitainer®	24 months
7470-4	120 mL natural poly	24 months
7470-32	1 L natural poly	24 months
7470-5HP	20 L Ropak™	24 months
7470-5	20 L Cubitainer®	24 months
7470-220	220 gal tote	24 months
7470-330	330 gal tote	24 months

7470-1	4 L natural poly	24 months
7470-1CT	4 L Cubitainer®	24 months
7470-16	500 mL natural poly	24 months
7470-50	50 gal drum	24 months
7470-55	55 gal drum	24 months

Recommended Storage: 15°C - 30°C (59°F - 86°F)

Katie Schnur
Quality Control Manager

This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

Reagent

NN_DMF_00027

Rec'd: 7-1-15 MA

125 Market Street
New Haven, CT 06513
USA

AccuStandard®, Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

Catalog No: S-6525
Description: N,N-Dimethylformamide Standard
Lot: 210021264-02
Solvent: Methanol
Hazards: **HIGHLY FLAMMABLE** - *Refer to SDS for safety info*

Danger 2

Date Certified: Jan 25, 2015
Expiration: Jan 25, 2018
Sample Size: 1 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO Guide 34 Scope of Accreditation: Yes

Component	CAS #	Purity % (GC/FID)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
N,N-Dimethylformamide	68-12-2	99.2	5001	4961

670852
ID: NN_DMF_00024
Exp: 01/25/18 Prpd: MAK
N,N-Dimethylformamide par

670857
ID: NN_DMF_00025
Exp: 01/25/18 Prpd: MAK
N,N-Dimethylformamide par

670870
ID: NN_DMF_00026
Exp: 01/25/18 Prpd: MAK
N,N-Dimethylformamide par

670871
ID: NN_DMF_00027
Exp: 01/25/18 Prpd: MAK
N,N-Dimethylformamide par

670872
ID: NN_DMF_00028
Exp: 01/25/18 Prpd: MAK
N,N-Dimethylformamide par

A product with a suffix (-1A, -2B, etc. or -01, -02, etc.) on its lot number has had its expiration date extended and is identical to the same lot number without the suffix.

[1] All weights are traceable through NIST, Test No. 822/272103-05

[2] Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty associated with the gravimetric values reported on this certificate is ±0.24%. The CRM Uncertainty calculated for this product is ±5%. These values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.

Labels and certificates follow U.S. Conventions in reporting numerical values:
A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

See reverse side for additional information

Certified By: Larry Decker, Organic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

OR-ORG/INO-001
Rev. 7/11

Reagent

Np-237 (high)_00002

Eckert & Ziegler
Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

783166
ID: Np-237 (high)_00002
Exp: 04/26/61 Prpd: KLE
Np-237 Ampoule *higher co

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide:	Np-237	**Customer:**	TEST AMERICA
Half-life:	(2.14 ± 0.01)E+06 years	**P.O. No.:**	2429693
Catalog No.:	7237	**Reference Date:**	1-Sep-11 12:00 PST
Source No.:	1526-70	**Contained Radioactivity: (Np-237 only)**	101.0 **nCi** 3737 **Bq**

Physical Description:

A. Mass of solution: 5.65126 g in 5 mL V-Vial
B. Chemical form: $Np(NO_3)_4$ in 4M HNO_3
C. Carrier content: None
D. Density: 1.1296 g/mL @ 20°C

Radioimpurities:

Pa-233 daughter in equilibrium; Pu-238 = 0.826% on 1-Sep-11

Radionuclide Concentration: 17.87 nCi/g, 661.2 Bq/g

Method of Calibration:

This source was prepared from a weighed aliquot of solution whose activity in µCi/g was determined using gamma ray spectrometry.

Peak energy used for integration: 312.0 keV
Branching ratio used: 0.3863 gammas per decay

Uncertainty of Measurement:

A. Type A (random) uncertainty: ± 0.4 %
B. Type B (systematic) uncertainty: ± 3.0 %
C. Uncertainty in aliquot weighing: ± 0.0 %
D. Total uncertainty at the 99% confidence level: ± 3.0 %

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from IAEA Technical Reports Series No. 261, 1986.
- This solution has a working life of 5 years.

Daniel James Van Dalsem — Quality Control
10-Aug-11 — Date

EZIP Ref. No.: 1526-70

Reagent

Np-237_00014

St. Louis Radiological Standard Reverification Form

Standard ID Number: Np-237_00014
True Value = 86.0803 DPM/L or g
Date Analyzed: 4/27/2016

Radionuclide: Np-237

	Replicates	
#1	88.172	DPM/L or g
#2	90.251	DPM/L or g
#3	91.412	DPM/L or g

Mean = 89.945

1 sigma = 1.641532 1.96 sigma = 3.217403

True Value minus 5% = 81.77629 (True Value - 5%)
True Value plus 5% = 90.38432 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Amanda Leigh Dick 04/28/2016

SOP Reference: STL-QA-0002, Current Revision

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Np-237 Spike New

Aliquot Only

Batch No. : —

Balance ID :

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	Ver. 1	0.1	120	
2	2	1	121	
3	3	1	122	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : Pu-236

Std Sol'n No. : Pu-236-00009

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 71.46067

Act Ref Date : 03-24-11

Samples Spiked and Traced By: SUB 4/26/14
Initials / Date

Verification Signature & Date: JM 4/26/16
Initials / Date

LCS Standard ☐ N/A

Initials / Date

Isotope : Np-237

Std Sol'n ID. : Np-237-00014

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 86.0803

Act Ref Date : 09-01-11

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.		☐	ST-RC-0040 Rev.		☐	ST-RC-0110 Rev.	
☐	ST-RC-0004 Rev.		☐	ST-RC-0041 Rev.		☐	ST-RC-0120 Rev.	
☐	ST-RC-0014 Rev.		☐	ST-RC-0050 Rev.		☐	ST-RC-0232 Rev.	
☐	ST-RC-0020 Rev.		☐	ST-RC-0090 Rev.		☐	ST-RC-0238 Rev.	
☐	ST-RC-0021 Rev.		☐	ST-RC-0100 Rev.		☐	ST-RC-0240 Rev.	
						☐	ST-RC-0241 Rev.	
						☐	ST-RC-0242 Rev.	
						☐	ST-RC-5016 Rev.	
						☐		
						☐		

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☐	Soil ☐
Short Count ☐	H_2O ☐

Prepared By : _____

Date : _____

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Np-237_00014

Reagent ID: Np-237_00014

		Expiration Date:	07/15/2016
Description:	spike- actinides new	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Solvent:	4M HNO3
Reagent Volume:	250.000 mL	Solvent Lot:	n/a
Creation Date:	04/26/2016		
Open Date:			
Container(s):	896959		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Np-237	Np-237_00013	04/26/2017	2152.00800	dpm/mL	86.08031	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Np-237_00013	Np-237 Parent		04/26/17				10.00000	mL

Neptunium only or sequential *Np/Th* via TEVA

Batch: ——

ST-RC-0232

All rinses should flow at 1 mL/minute (only 3M HNO_3 and 2.5M HNO_3-0.1M ferrous sulfamate may be done at 3 mL/minute)

Teva lot: TESR15P

11.4.3 To samples, add 2mL 0.6M ferrous sulfamate, swirl to mix — COMPLETED ☐

11.4.4 To samples, add 200-300mg ascorbic acid, swirl to mix, wait 2-3 minutes — COMPLETED ☐

11.4.5 Place TEVA cartridge on vacuum box

11.4.6 5mL 3M HNO_3 — COMPLETED ☐

11.4.7 Load sample, record time samples finish draining — Time: 5:48

11.4.8 30mL 2.5M HNO_3-0.1M ferrous sulfamate — COMPLETED ☑ 6/10

11.4.9 5mL 3M HNO_3 — COMPLETED ☑

11.4.11 Elute *Th* into clean tube using 20mL 9M HCl — COMPLETED ☑

11.4.12 5mL 6M HCl into *Th* tube — COMPLETED ☑

11.4.15 Elute *Np* into clean tube with 15mL 0.02M HNO_3-0.02M HF — COMPLETED ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:17:54AM 4/28/2016

Sample

Sample Name: Verification 1
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Np-237_00014
AnalysisID: 673668

Analyst: 60040

Tracer

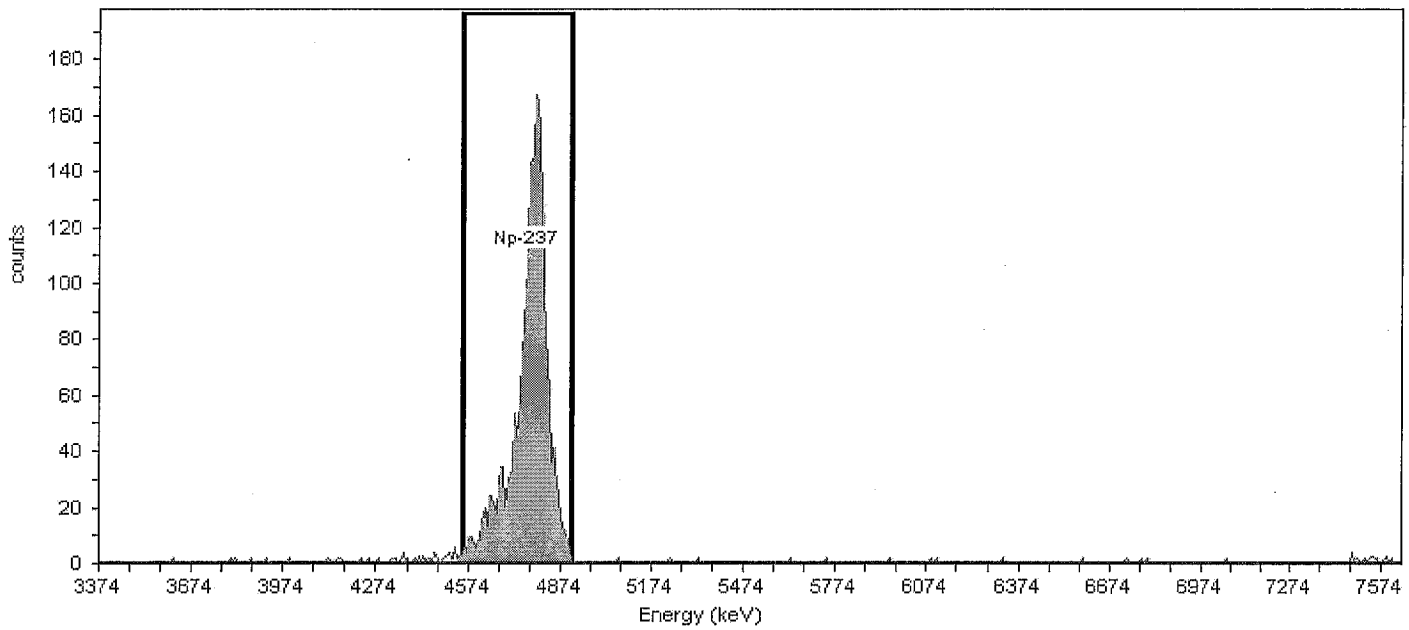
Tracer Name: Pu-236_00009
Tracer Activity: 71.47 DPM/mL x (Vol.)0.10 mL = 7.15 DPM
Tracer Ref. Date: 3/24/2011 12:00:34PM

Tracer Nuclide: Pu-236
Tracer Recovery: 0.00%

Acquisition

Detector: AV120
Serial Number: 49-037W3
Acquisition Start Date: 4/27/2016 10:37:25AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 4/15/2016 3:55:55PM
Background Info: Sample: ICB;AV120; Det: AV120; Spectrum #1; Apr-15-2016 15:55

Calibration Name: IC-8874;AV120-20150604
Calibration Date: 6/4/2015 6:21:32PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 27.18% +/- 0.38% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = NP_ROI_2010
Decay Correction: 4/27/2016 10:34:00AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Neptunium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Np-237	4761.5	4,788.1	-26.6	4552.7	4910.7	76.7	96.2	2214	2.0000	2212.00	88.172	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:17:35AM 4/28/2016

Sample

Sample Name: Verification 2
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Np-237_00014
AnalysisID: 673666

Analyst: 60040

Tracer

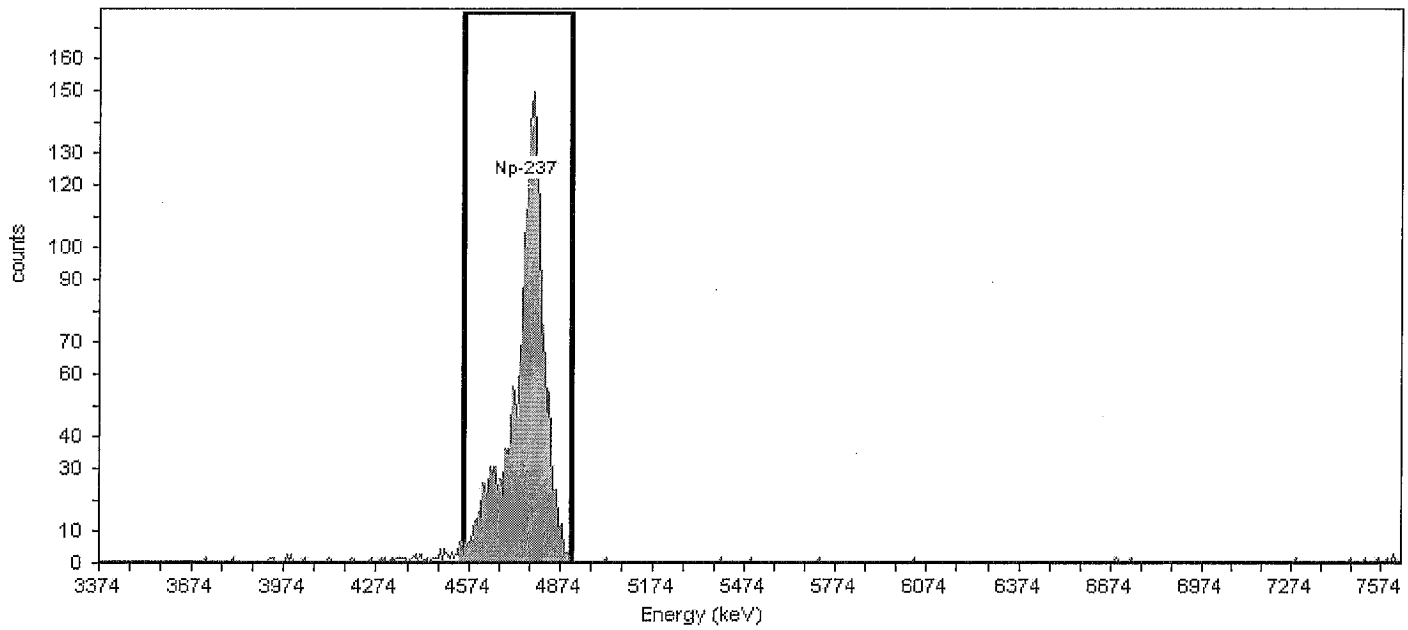
Tracer Name: Pu-236_00009
Tracer Activity: 71.47 DPM/mL x (Vol.)0.10 mL = 7.15 DPM
Tracer Ref. Date: 3/24/2011 12:00:34PM

Tracer Nuclide: Pu-236
Tracer Recovery: 0.00%

Acquisition

Detector: AV121
Serial Number: 49-037W2
Acquisition Start Date: 4/27/2016 10:37:26AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 4/15/2016 3:55:56PM
Background Info: Sample: ICB;AV121; Det: AV121; Spectrum #1; Apr-15-2016 15:55

Calibration Name: IC-8875;AV121-20150604
Calibration Date: 6/4/2015 6:21:42PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.01% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = NP_ROI_2010
Decay Correction: 4/27/2016 10:34:00AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Neptunium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Np-237	4761.5	4,788.1	-26.6	4552.7	4910.7	81.0	96.2	2087	3.0000	2084.00	90.251	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:17:15AM 4/28/2016

Sample

Sample Name: Verification 3
SampleType: Sample
:
Sample Collection Date:

Spectrum #1 Analysis #1
Sample Volume : 0.1000mL
Aliquot: N/A Aliquot Fraction: N/A

Batch

Batch Name: Np-237_00014
AnalysisID: 673667

Analyst: 60040

Tracer

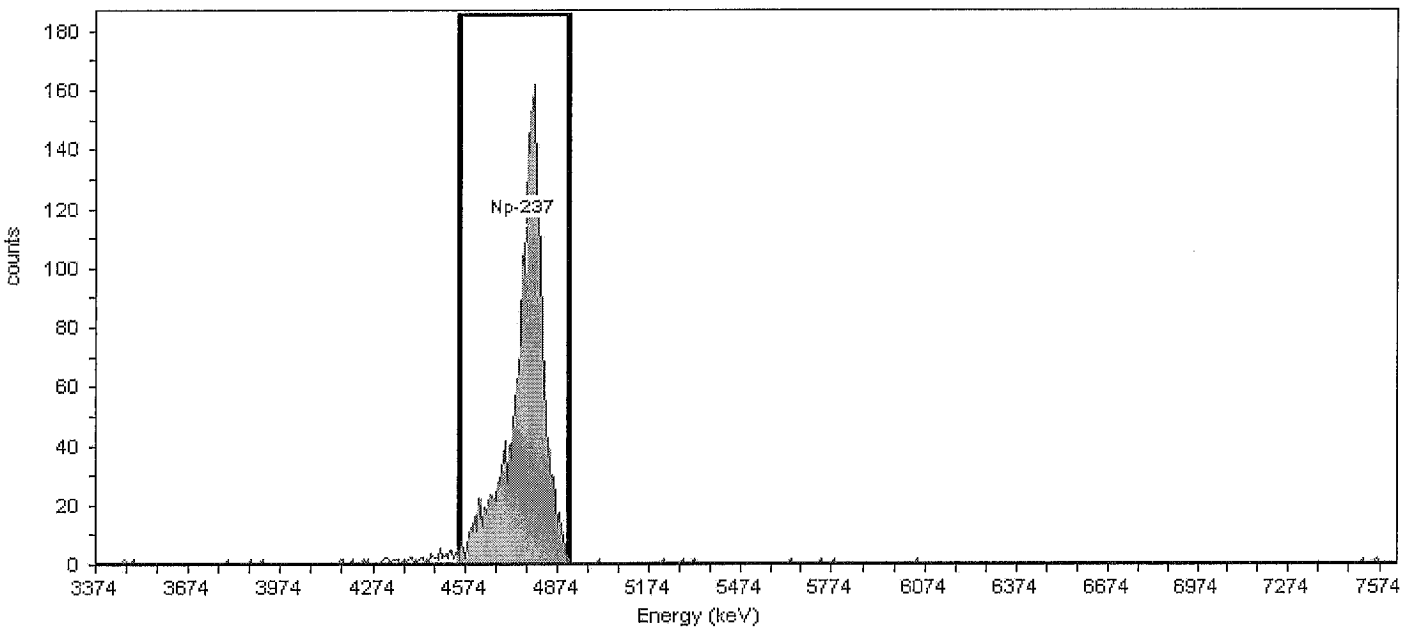
Tracer Name: Pu-236_00009
Tracer Activity: 71.47 DPM/mL x (Vol.)0.10 mL = 7.15 DPM
Tracer Ref. Date: 3/24/2011 12:00:34PM

Tracer Nuclide: Pu-236
Tracer Recovery: 0.00%

Acquisition

Detector: AV122
Serial Number: 49-037G4
Acquisition Start Date: 4/27/2016 10:37:28AM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 4/15/2016 3:56:00PM
Background Info: Sample: ICB;AV122; Det: AV122; Spectrum #1; Apr-15-2016 15:56

Calibration Name: IC-8876;AV122-20150604
Calibration Date: 6/4/2015 6:21:52PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.78% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = NP_ROI_2010
Decay Correction: 4/27/2016 10:34:00AM
MDA Constants: Kα = 1.65 , Kβ = 1.65

Nuclide Library: Neptunium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Np-237	4761.5	4,788.1	-26.6	4552.7	4910.7	73.8	96.2	2092	1.0000	2091.00	91.412	DPM/mL

Reagent

Polar Add._00032

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569728 **Lot No.:** A0114666

Description : 8260 List 3/ Std#1 Polar Additions (2015)

8260 List 3/ Std#1 Polar Additions (2015) 2500-100,000 µg/ml, 1 ml/ampul

REC'D 4-5-2016
JDH

Container Size : 2 mL **Pkg Amt:** > 1 mL

900273-275

Expiration Date : October 31, 2017 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)			
1	Ethanol		100,005.8	µg/mL	+/-	581.4117	µg/mL	Gravimetric
	CAS # 64-17-5	(Lot PG0219)			+/-	4,947.0657	µg/mL	Unstressed
	Purity 99%				+/-	5,070.0789	µg/mL	Stressed
2	Acetonitrile		25,001.0	µg/mL	+/-	145.3505	µg/mL	Gravimetric
	CAS # 75-05-8	(Lot SHBB3177V)			+/-	1,236.7460	µg/mL	Unstressed
	Purity 98%				+/-	1,267.4988	µg/mL	Stressed
3	Diisopropyl ether (DIPE)		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 108-20-3	(Lot SHBB6268V)			+/-	123.7067	µg/mL	Unstressed
	Purity 99%				+/-	126.7828	µg/mL	Stressed
4	Ethyl-tert-butyl ether (ETBE)		2,505.0	µg/mL	+/-	14.5643	µg/mL	Gravimetric
	CAS # 637-92-3	(Lot MKBR1623V)			+/-	123.9170	µg/mL	Unstressed
	Purity 99%				+/-	126.9983	µg/mL	Stressed
5	Propionitrile		25,001.5	µg/mL	+/-	145.3533	µg/mL	Gravimetric
	CAS # 107-12-0	(Lot BCBM6569V)			+/-	1,236.7695	µg/mL	Unstressed
	Purity 99%				+/-	1,267.5229	µg/mL	Stressed
6	tert-Amyl alcohol		25,012.3	µg/mL	+/-	145.4158	µg/mL	Gravimetric
	CAS # 75-85-4	(Lot STBB1898V)			+/-	1,237.3013	µg/mL	Unstressed
	Purity 99%				+/-	1,268.0679	µg/mL	Stressed
7	tert-Amyl methyl ether (TAME)		2,503.5	µg/mL	+/-	14.5556	µg/mL	Gravimetric
	CAS # 994-05-8	(Lot HMBC8037V)			+/-	123.8428	µg/mL	Unstressed
	Purity 99%				+/-	126.9222	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

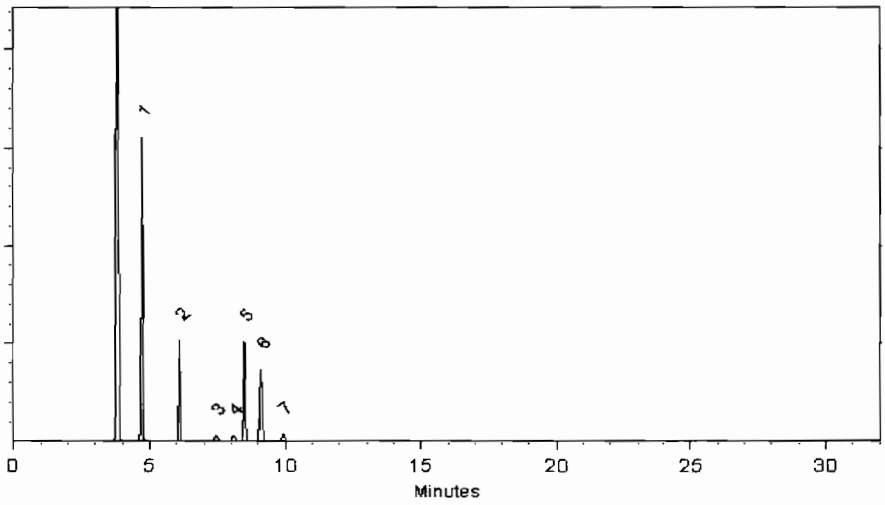
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 12-Oct-2015 **Balance:** B251644995

Jennifer L. Pollino

Jennifer L. Pollino - QC Analyst

Date Passed: 14-Oct-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Pu-238_00010

Standard ID Number: Pu-238_00007
True Value = 59.716 Dpm/mL
Date Analyzed: 7/13/2016

Radionuclide: Pu-238

	Replicates	
#1	59.62	Dpm/mL
#2	61.94	Dpm/mL
#3	57.01	Dpm/mL

Mean = 59.5233333

1 sigma = 2.46642116 1.96 sigma = 4.834185

True Value minus 5% = 56.7302 (True Value - 5%)
True Value plus 5% = 62.7018 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DoD/DOE Consolidated QSM and LANL Statements of Work

1st Reviewed By/Date: Amanda Leigh Dick 07/14/16 ALD 7/14

2nd Reviewed By/Date: RM 7-15-16

Decay Calculations

Raw Sample/Standard Information

Initial Date/Time (t_0):	11/15/1999 0:00		
Decayto Date/Time (t):	7/13/16 0:00		
Initial Activity (A_0):	68.12 dpm		
Initial Aliquot:	1 mL		
Initial Conc:	68.1206 dpm/mL		
***Soln. Density:**	1 g/mL		
Nuclide:	Pu-238		
Half-Life (days):	32032.425	decay days	fraction
****Decay Factor:**	0.8766	6085.00	0.18996
Decay Corr Activity:	5.9716E+01 dpm		
Decay Corr Conc:	5.9716E+01 dpm/mL		

Conversion/Calculations

Final Activity Unit:	dpm
Activity Unit Factor:	1.00000
Final Volume Unit:	mL
Volume Unit Factor:	1.000
Final Concentration:	5.9716E+01 dpm/mL
Aliquot Volume:	1.0000E+00 mL
Final Activity (A):	5.9716E+01 dpm

** Uses basic decay equation: $A = A_0 * \exp(-\ln(2)*(t-t_0)/(\text{half-life})$

* Soln. Density to be used when converting from liquid expressed in mass (g) units to liquid units (mL), and is only applied in that case.

St. Louis Radiological Standard Verification

Printed: 7/14/2016 3:15 PM

Standard ID Number: Pu-239_00023
True Value = 73.28 Dpm/mL
Date Analyzed: 7/13/2016

Radionuclide: Pu-239

	Replicates	
#1	75.29	Dpm/mL
#2	78.07	Dpm/mL
#3	74.64	Dpm/mL

Mean = 76

1 sigma = 1.82189462

1.96 sigma = 3.570913

True Value minus 5% = 69.616 (True Value - 5%)
True Value plus 5% = 76.944 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DoD/DOE Consolidated QSM and LANL Statements of Work

1st Reviewed By/Date: Amanda Leigh Dick 07/14/16 ALD 7/14

2nd Reviewed By/Date: RM 7·13·16

Decay Calculations

Raw Sample/Standard Information

Initial Date/Time (t_0):	12/13/1990 0:00		
Decayto Date/Time (t):	7/13/16 0:00		
Initial Activity (A_0):	73.34 dpm		
Initial Aliquot:	1 mL		
Initial Conc:	73.3436 dpm/mL		
***Soln. Density:**	1 g/mL		
Nuclide:	Pu-239		
Half-Life (days):	8806177.5	decay days	fraction
****Decay Factor:**	0.9993	9344.00	0.00106
Decay Corr Activity:	7.3290E+01 dpm		
Decay Corr Conc:	7.3290E+01 dpm/mL		

Conversion/Calculations

Final Activity Unit:	dpm
Activity Unit Factor:	1.00000
Final Volume Unit:	mL
Volume Unit Factor:	1.000
Final Concentration:	7.3290E+01 dpm/mL
Aliquot Volume:	1.0000E+00 mL
Final Activity (A):	7.3290E+01 dpm

** Uses basic decay equation: $A = A_0 * \exp(-\ln(2)*(t-t_0)/(\text{half-life})$

* Soln. Density to be used when converting from liquid expressed in mass (g) units to liquid units (mL), and is only applied in that case.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:28:15AM 7/14/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1

Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Pu-238_00007/Pu-239_00009
AnalysisResultsID: 171237
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

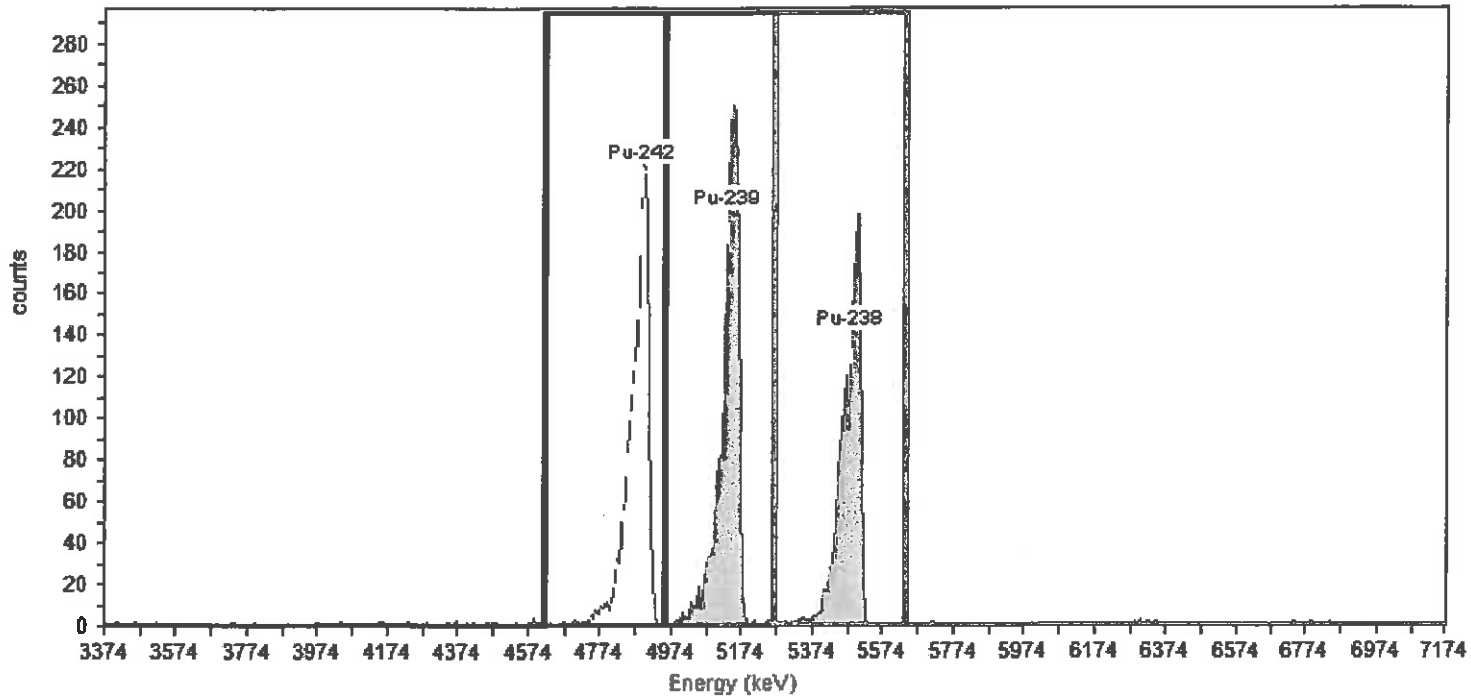
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.10 mL = 7.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 103.93%

Acquisition

Detector: AV233 SN: 51-005Q7
Acquisition Start Date: 7/13/2016 11:13:31AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Background Date: 6/24/2016 4:15:28PM
Bkgd Info: Sample: ICB;AV233; Det: AV233; Spectrum #1; 6/24/2016 4:15:28 PM

Energy Calibration: IC-8875;AV233-20151018a
Efficiency Calibration:IC-8875;AV233-20151018a
Calibration Date: 10/19/2015 .4:12:25PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 23.60% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:7/13/2016 11:11:34AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4955.4	63.1	100.0	1653	5.0000	1648.00	7.274E+001	DPM/mL
Pu-239	5134.4	5,155.4	-21.0	4955.4	5268.6	51.2	99.9	1771	0.0000	1771.00	7.529E+001	DPM/mL
Pu-238	5484.9	5,499.2	-14.3	5268.6	5641.5	63.6	100.0	1414	10.0000	1404.00	5.962E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:40AM 7/14/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Pu-238_00007/Pu-239_00009
AnalysisResultsID: 171236
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

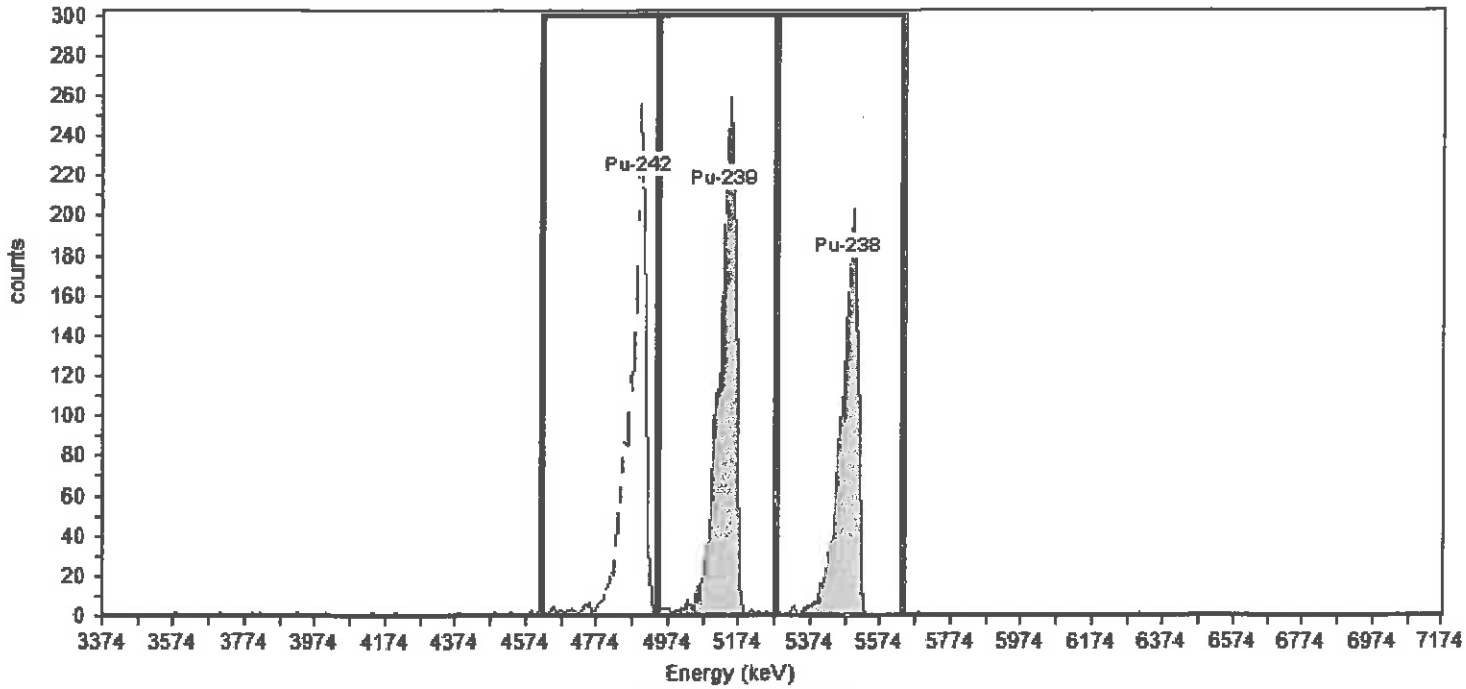
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.10 mL = 7.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 102.50%

Acquisition

Detector: AV234 SN: 51-005P2
Acquisition Start Date: 7/13/2016 11:13:31AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 6/24/2016 4:15:29PM
Bkgd Info: Sample: ICB;AV234; Det: AV234; Spectrum #1; 6/24/2016 4:15:29 PM

Energy Calibration: IC-8876;AV234-20151018
Efficiency Calibration:IC-8876;AV234-20151018
Calibration Date: 10/19/2015 4:11:35PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.51% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:7/13/2016 11:11:34AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	45.8	100.0	1693	5.0000	1688.00	7.174E+001	DPM/mL
Pu-239	5134.4	5,155.4	-21.0	4948.0	5276.1	56.0	99.9	1881	0.0000	1881.00	7.807E+001	DPM/mL
Pu-238	5484.9	5,499.2	-14.3	5276.1	5641.5	57.4	100.0	1498	4.0000	1494.00	6.194E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:01AM 7/14/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Pu-238_00007/Pu-239_00009
AnalysisResultsID: 171235
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

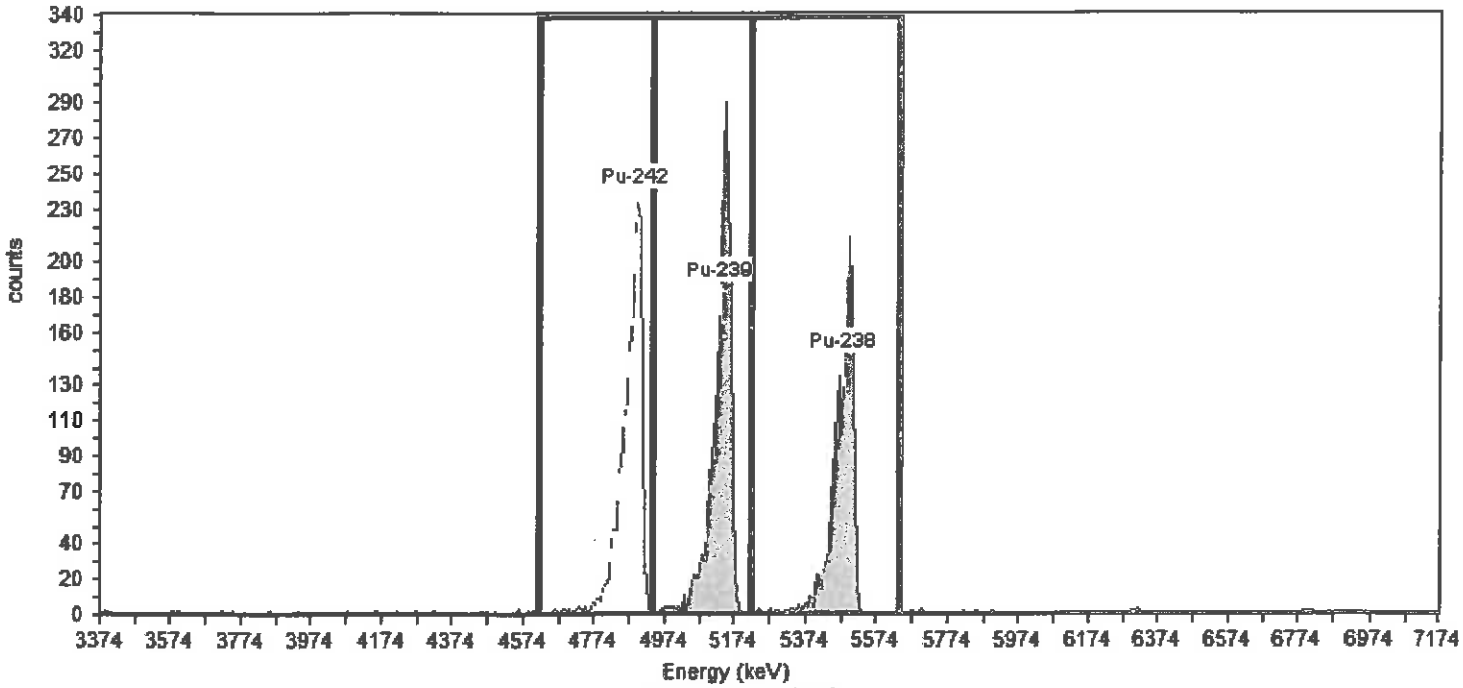
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.10 mL = 7.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 102.34%

Acquisition

Detector: AV235 SN: 51-005Q5
Acquisition Start Date: 7/13/2016 11:13:31AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 6/24/2016 4:15:28PM
Bkgd Info: Sample: ICB;AV235; Det: AV235; Spectrum #1; 6/24/2016 4:15:28 PM

Energy Calibration: IC-8877;AV235-20151018
Efficiency Calibration:IC-8877;AV235-20151018
Calibration Date: 10/19/2015 4:11:39PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.57% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:7/13/2016 11:11:34AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4940.5	31.0	100.0	1759	1.0000	1758.00	7.163E+001	DPM/mL
Pu-239	5134.4	5,155.4	-21.0	4940.5	5223.9	53.0	99.9	1873	0.0000	1873.00	7.464E+001	DPM/mL
Pu-238	5484.9	5,499.2	-14.3	5223.9	5641.5	60.2	100.0	1442	10.0000	1432.00	5.701E+001	DPM/mL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Pu-238/239 ver. by Col. (re-cert exp 8/17)

Actinide Prep

Batch No. : _____

Balance ID : _____

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	ver. 1	0.1	233	
2	2	1	234	
3	3	1	235	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Tracer ☐ N/A

Initials / Date

Isotope : Pu-242

Std Sol'n No. : Pu-242-00023

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 69.9879

Act Ref Date : 01-01-10

Samples Spiked and Traced By: SLB 7/11/16 (Initials / Date)

Verification Signature & Date: CMC 7/11/16 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope : Pu-238/239

Std Sol'n ID. : Pu-238-00007 / Pu-239-001009

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 238- 68.1206 239- 73.3434

Act Ref Date : 238- 11-15-99 239- 12-13-90

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.		
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.		
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.		
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.		
☐	ST-RC-0021 Rev.	☑	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.		
				☐	ST-RC-0241 Rev.		
				☑	ST-RC-0242 Rev.		
				☐	ST-RC-5016 Rev.		
				☐			
				☐			

Isotope(s)

αβ ☐	Iso Pu ☑	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☑	Soil ☐
Short Count ☐	H_2O ☐

Prepared By : SLB

Date : 7/11/16

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Pu-238_00007

Reagent ID: Pu-238_00007

		Expiration Date:	08/17/2016
Description:	Pu-238 Spike	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Solvent:	3M HNO3
Reagent Volume:	200.000 mL	Solvent Lot:	n/a
Creation Date:	08/28/2013		
Open Date:			
Container(s):	728204		
Comment:	Re-certified from Pu-238_00006		

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Pu-238	Pu-238 Parent_00001	08/28/2014	2491.20000	dpm/mL	68.12062	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Pu-238 Parent_00001	Pu-238 Parent		08/28/14				5.46890	g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Pu-239_00009

Reagent ID: Pu-239_00009

Description:	Pu-239 Spike
No. of Bottles:	1
Storage Location:	RAD Actinide STDs
Reagent Volume:	200.000 mL
Creation Date:	08/28/2013
Open Date:	
Container(s):	728205
Comment:	Re-certified from Pu-239_00008

Expiration Date:	08/17/2016
Laboratory:	TestAmerica St. Louis
Prepared By:	Bernsen, Sarah C
Solvent:	3M HNO3
Solvent Lot:	n/a

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Pu-239	Pu-239_00003	08/17/2016	1466.87300	dpm/mL	73.34363	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Pu-239_00003	Pu-239 Parent		08/17/16				10.00000	mL

Sequential Thorium, Plutonium and Uranium via TEVA/UTEVA ST-RC-0242

Batch:_____

All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

*only necessary when analyzing for *Pu*

TEVA lot:_____

UTEVA lot:_____

11.5.2 Stack TEVA on top of UTEVA cartridge

11.5.3 5mL 3M HNO_3 — COMPLETED ☐

*11.5.4 To samples, add 1mL ascorbic acid solution Place in hot water bath for 5 minutes — COMPLETED ☐

*11.5.5 To samples, add 1mL $NaNO_2$ solution Place in hot water bath for 5 minutes — COMPLETED ☐

*11.5.6 Cold water bath until samples reach room temperature

Pu-238/239 ver.

11.5.7 Load sample

11.5.8 20mL 3M HNO_3 — COMPLETED ☐

11.59 Split cartridges TEVA UTEVA

11.5.10-11.5.11 Elute *Th* into clean tube using 20mL 9M HCl — COMPLETED ☐

11.5.12 5mL 6M HCl into *Th* tube — COMPLETED ☐

11.5.16 Elute *Pu* into clean tube with 20mL 1M HCl + 0.250 mL $TiCl_3$ — COMPLETED ☐ COMPLETED ☐

11.5.19 5mL 3M HNO_3 — COMPLETED ☐

11.5.20 5mL 9M HCl — COMPLETED ☐

11.5.21 20mL 5M HCl / 0.05M oxalic — COMPLETED ☐

11.5.22-11.5.23 Elute *U* into clean tube with 15mL 1M HCl — COMPLETED ☐

Sequential Thorium, Plutonium and Uranium via TEVA/UTEVA ST-RC-0242

Batch:_____

All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

*only necessary when analyzing for *Pu*

TEVA lot: TESR16A

UTEVA lot:_____

11.5.2 Stack TEVA on top of UTEVA cartridge

11.5.3 5mL 3M HNO_3 — COMPLETED ☐

*11.5.4 To samples, add 1mL ascorbic acid solution Place in hot water bath for 5 minutes — COMPLETED ☐

*11.5.5 To samples, add 1mL $NaNO_2$ solution Place in hot water bath for 5 minutes — COMPLETED ☐

*11.5.6 Cold water bath until samples reach room temperature

Pu-238/239 - P

11.5.7 Load sample

11.5.8 20mL 3M HNO_3 — COMPLETED ☐

11.59 Split cartridges TEVA UTEVA

11.5.10-11.5.11 Elute *Th* into clean tube using 20mL 9M HCl — COMPLETED ☐

11.5.12 5mL 6M HCl into *Th* tube — COMPLETED ☐

11.5.16 Elute *Pu* into clean tube with 20mL 1M HCl + 0.250 mL $TiCl_3$ — COMPLETED ☐ COMPLETED ☐

11.5.19 5mL 3M HNO_3 — COMPLETED ☐

11.5.20 5mL 9M HCl — COMPLETED ☐

11.5.21 20mL 5M HCl / 0.05M oxalic — COMPLETED ☐

11.5.22-11.5.23 Elute U into clean tube with 15mL 1M HCl — COMPLETED ☐

Form: RAD-0063, Revised 09/18/13

Reagent

Pu-239_00001

U.S. Environmental Protection Agency
Environmental Monitoring Systems Laboratory-Las Vegas
Nuclear Radiation Assessment Division

Calibration Certificate

Description

Principal radionuclide: PLUTONIUM-239 Half-life: 2.4×10^4 years

Nominal activity: 59 nano curies

Nominal volume: 5 ml in ampoule/bottle number: 2510-1

Measurement Activity of principal radionuclide

Activity per gram of this solution

11.8 nano curies of Plutonium-239

at 0400 hours PST on December 13, 1990

Activity of daughter radionuclide

The principal activity was accompanied at the quoted time by

curies Per gram

of the daughter nuclide

Total mass of this solution

APPROX. 5.0 grams

Method of measurement

The activity of the primary solution was measured by an internal gas flow proportional counter.

The activity of the dilution was measured by liquid scintillation counting.

Useful Life

This radionuclide has decayed through half lives since it was obtained by EMSL-LV

We recommend that this solution should not be used after

Purity

The manufacturer states that activities other than that of the principal nuclide and of its daughter nuclides, if any, were estimated/known to be:

(1) see remarks	less than equal to	%	of the principal activity
(2)	less than equal to	%	of the principal activity
(3)	less than equal to	%	of the principal activity

The activity of impurity (1) is not (2) is not (3) is not included in the quoted figures of the principal activity.

Random Errors

The precision of this standard was such that the certified value of the radioactive concentration of the principal activity had a standard error (sm) not greater than ± 0.13 % (The 99.7% confidence limits are given by t(sm) where t is obtained from the student t factor for the degree of freedom (n-1)).

The maximum uncertainty due to the assessable systematic errors (dilution, counting, and known uncertainty of the standard) is obtained by the separate arithmetic summation of the positive and negative systematic error ($+\delta - \delta'$). These have been estimated not to exceed + 2.7 % or - 2.7 %

the overall uncertainty (often called accuracy) is an estimate of the possible divergence of the quoted result from the true value. It is a combination of random error [t(sm)] at the 99.7% confidence limits and the worst case estimate of the systematic errors ($+\delta, -\delta'$) The overall uncertainty is therefore calculated on the basis of + [t(sm) $+\delta$], - [t(sm) $+\delta'$] and is + 3.1 %, - 3.1 % of the quoted radioactive concentration.

Decay Schemes

This standardization is based on the following assumptions of the principle nuclide, its daughter nuclides and impurities (no allowance for error in these assumptions or the assumption of quoted half-life have been included in the statement of accuracy above).

Plutonium-239 and impurities were assumed to decay 100 percent by alpha emission.

Chemical Composition of Solution

Carrier content per gram of solution:

Other components:

4M Nitric acid

Preservative:

Remarks

	Pu-238	0.033%	of the total activity
	Pu-240	4.6×10^{-5}%	of the total activity
IMPURITIES:	Pu-241	1.5×10^{-3}%	of the total activity
	Pu-242	8.8×10^{-6}%	of the total activity
	Pu-244	6.2×10^{-9}%	of the total activity

Date Certificate Prepared December 13, 1990

Approval Signature Paul B. Hahn

Revised 1/84

Reagent

Pu-239_00010

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

St. Louis Radiological Standard Verification

Printed: 7/14/2016 3:17 PM

Standard ID Number: Pu-238_00007
True Value = 59.716 Dpm/mL
Date Analyzed: 7/13/2016

Radionuclide: Pu-238

	Replicates	
#1	59.62	Dpm/mL
#2	61.94	Dpm/mL
#3	57.01	Dpm/mL

Mean = 59.5233333

1 sigma = 2.46642116 1.96 sigma = 4.834185

True Value minus 5% = 56.7302 (True Value - 5%)
True Value plus 5% = 62.7018 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DoD/DOE Consolidated QSM and LANL Statements of Work

1st Reviewed By/Date: Amanda Leigh Dick 07/14/16 ALD 7/14

2nd Reviewed By/Date: RM 7-15-16

Decay Calculations

Raw Sample/Standard Information

Initial Date/Time (t_0):	11/15/1999 0:00		
Decayto Date/Time (t):	7/13/16 0:00		
Initial Activity (A_0):	68.12 dpm		
Initial Aliquot:	1 mL		
Initial Conc:	68.1206 dpm/mL		
***Soln. Density:**	1 g/mL		
Nuclide:	Pu-238		
Half-Life (days):	32032.425	decay days	fraction
****Decay Factor:**	0.8766	6085.00	0.18996
Decay Corr Activity:	5.9716E+01 dpm		
Decay Corr Conc:	5.9716E+01 dpm/mL		

Conversion/Calculations

Final Activity Unit:	dpm
Activity Unit Factor:	1.00000
Final Volume Unit:	mL
Volume Unit Factor:	1.000
Final Concentration:	5.9716E+01 dpm/mL
Aliquot Volume:	1.0000E+00 mL
Final Activity (A):	5.9716E+01 dpm

** Uses basic decay equation: $A = A_0 * \exp(-\ln(2)*(t-t_0)/(\text{half-life})$

* Soln. Density to be used when converting from liquid expressed in mass (g) units to liquid units (mL), and is only applied in that case.

St. Louis Radiological Standard Verification

Printed: 7/14/2016 3:15 PM

Standard ID Number: Pu-239_00023
True Value = 73.28 Dpm/mL
Date Analyzed: 7/13/2016

Radionuclide: Pu-239

	Replicates	
#1	75.29	Dpm/mL
#2	78.07	Dpm/mL
#3	74.64	Dpm/mL

Mean = 76

1 sigma = 1.82189462

1.96 sigma = 3.570913

True Value minus 5% = 69.616 (True Value - 5%)
True Value plus 5% = 76.944 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DoD/DOE Consolidated QSM and LANL Statements of Work

1st Reviewed By/Date: Amanda Leigh Dick 07/14/16 ALD 7/14

2nd Reviewed By/Date: RM 7·13·16

Decay Calculations

Raw Sample/Standard Information			
Initial Date/Time (t_0):	12/13/1990 0:00		
Decayto Date/Time (t):	7/13/16 0:00		
Initial Activity (A_0):	73.34 dpm		
Initial Aliquot:	1 mL		
Initial Conc:	73.3436 dpm/mL		
***Soln. Density:**	1 g/mL		
Nuclide:	Pu-239		
Half-Life (days):	8806177.5	decay days	fraction
****Decay Factor:**	0.9993	9344.00	0.00106
Decay Corr Activity:	7.3290E+01 dpm		
Decay Corr Conc:	7.3290E+01 dpm/mL		

Conversion/Calculations	
Final Activity Unit:	dpm
Activity Unit Factor:	1.00000
Final Volume Unit:	mL
Volume Unit Factor:	1.000
Final Concentration:	7.3290E+01 dpm/mL
Aliquot Volume:	1.0000E+00 mL
Final Activity (A):	7.3290E+01 dpm

** Uses basic decay equation: $A = A_0 * \exp(-\ln(2)*(t-t_0)/(\text{half-life})$

* Soln. Density to be used when converting from liquid expressed in mass (g) units to liquid units (mL), and is only applied in that case.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:28:15AM 7/14/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1

Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Pu-238_00007/Pu-239_00009
AnalysisResultsID: 171237
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

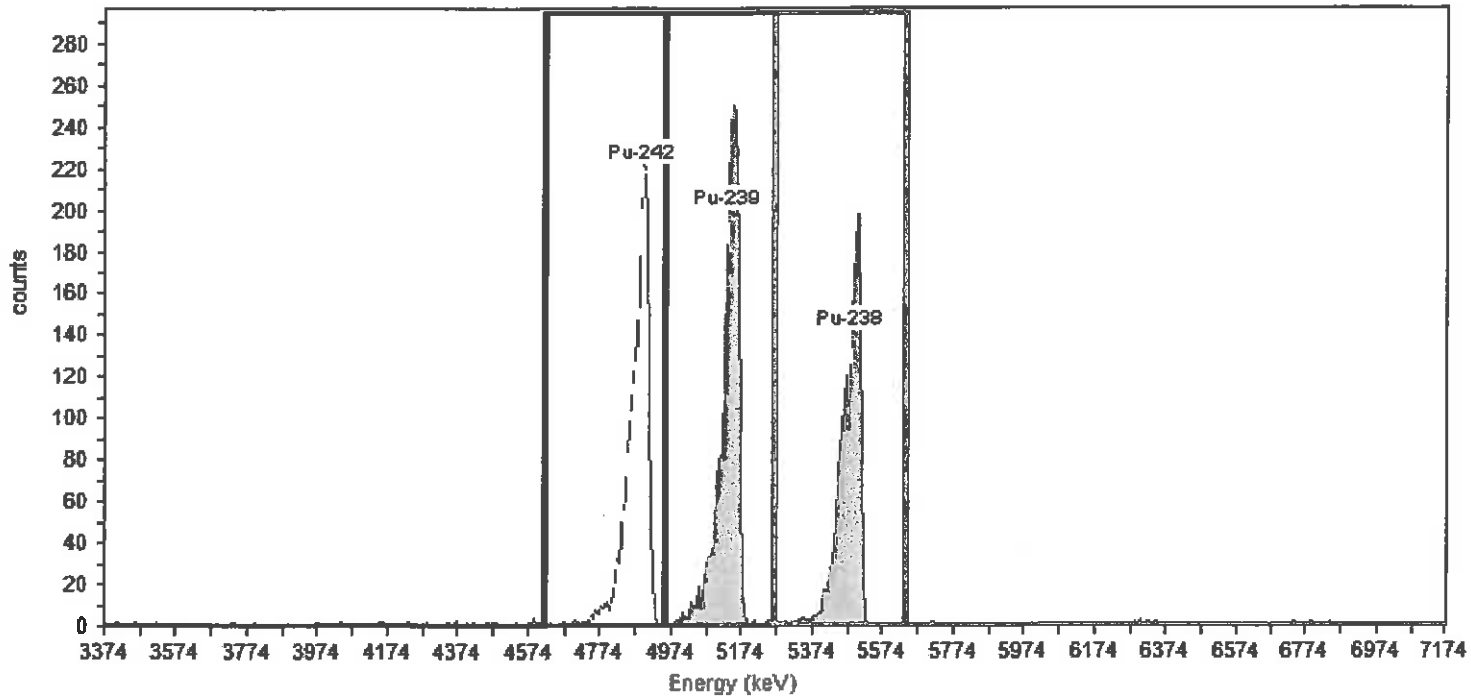
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.10 mL = 7.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 103.93%

Acquisition

Detector: AV233 SN: 51-005Q7
Acquisition Start Date: 7/13/2016 11:13:31AM
Live Time: 960.00 min.
Real Time: 960.03 min.
Background Date: 6/24/2016 4:15:28PM
Bkgd Info: Sample: ICB;AV233; Det: AV233; Spectrum #1; 6/24/2016 4:15:28 PM

Energy Calibration: IC-8875;AV233-20151018a
Efficiency Calibration:IC-8875;AV233-20151018a
Calibration Date: 10/19/2015 .4:12:25PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 23.60% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:7/13/2016 11:11:34AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4955.4	63.1	100.0	1653	5.0000	1648.00	7.274E+001	DPM/mL
Pu-239	5134.4	5,155.4	-21.0	4955.4	5268.6	51.2	99.9	1771	0.0000	1771.00	7.529E+001	DPM/mL
Pu-238	5484.9	5,499.2	-14.3	5268.6	5641.5	63.6	100.0	1414	10.0000	1404.00	5.962E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:40AM 7/14/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Pu-238_00007/Pu-239_00009
AnalysisResultsID: 171236
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

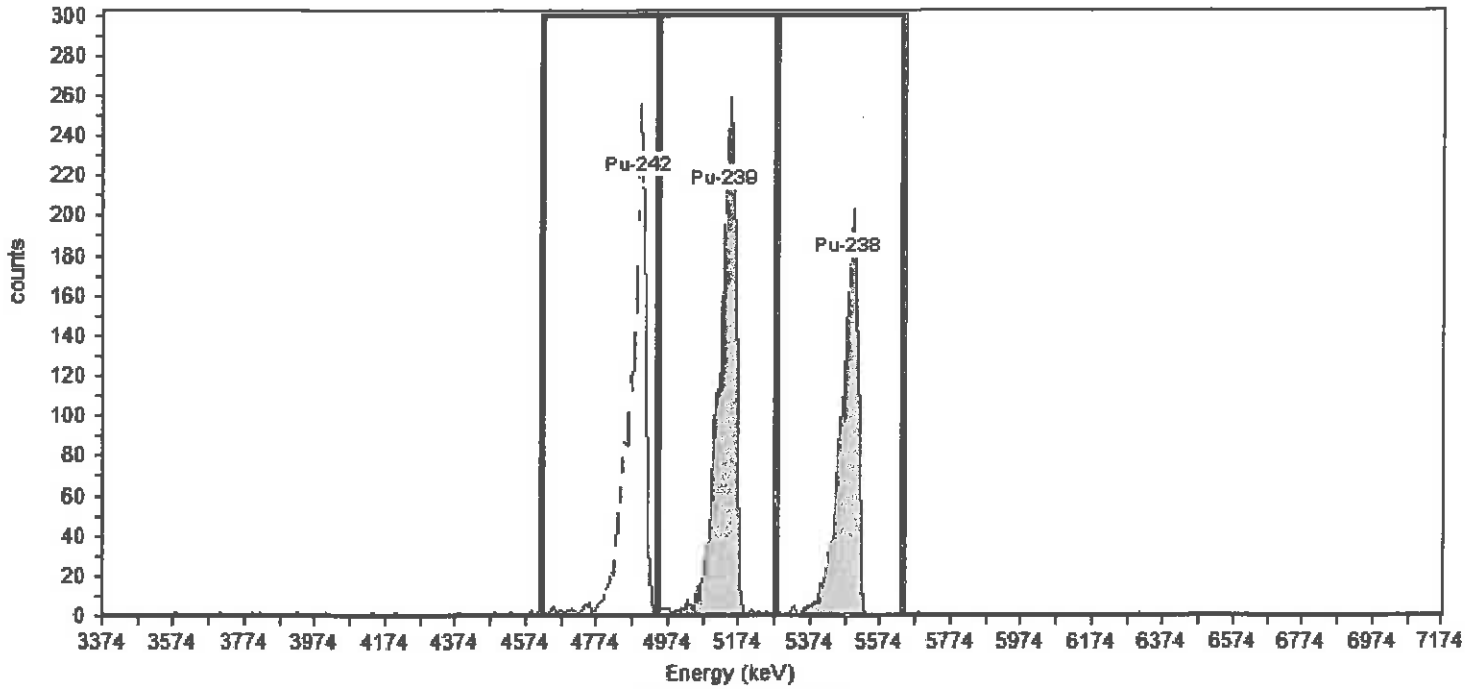
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.10 mL = 7.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 102.50%

Acquisition

Detector: AV234 SN: 51-005P2
Acquisition Start Date: 7/13/2016 11:13:31AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 6/24/2016 4:15:29PM
Bkgd Info: Sample: ICB;AV234; Det: AV234; Spectrum #1; 6/24/2016 4:15:29 PM

Energy Calibration: IC-8876;AV234-20151018
Efficiency Calibration:IC-8876;AV234-20151018
Calibration Date: 10/19/2015 4:11:35PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.51% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:7/13/2016 11:11:34AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	45.8	100.0	1693	5.0000	1688.00	7.174E+001	DPM/mL
Pu-239	5134.4	5,155.4	-21.0	4948.0	5276.1	56.0	99.9	1881	0.0000	1881.00	7.807E+001	DPM/mL
Pu-238	5484.9	5,499.2	-14.3	5276.1	5641.5	57.4	100.0	1498	4.0000	1494.00	6.194E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:01AM 7/14/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Pu-238_00007/Pu-239_00009
AnalysisResultsID: 171235
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

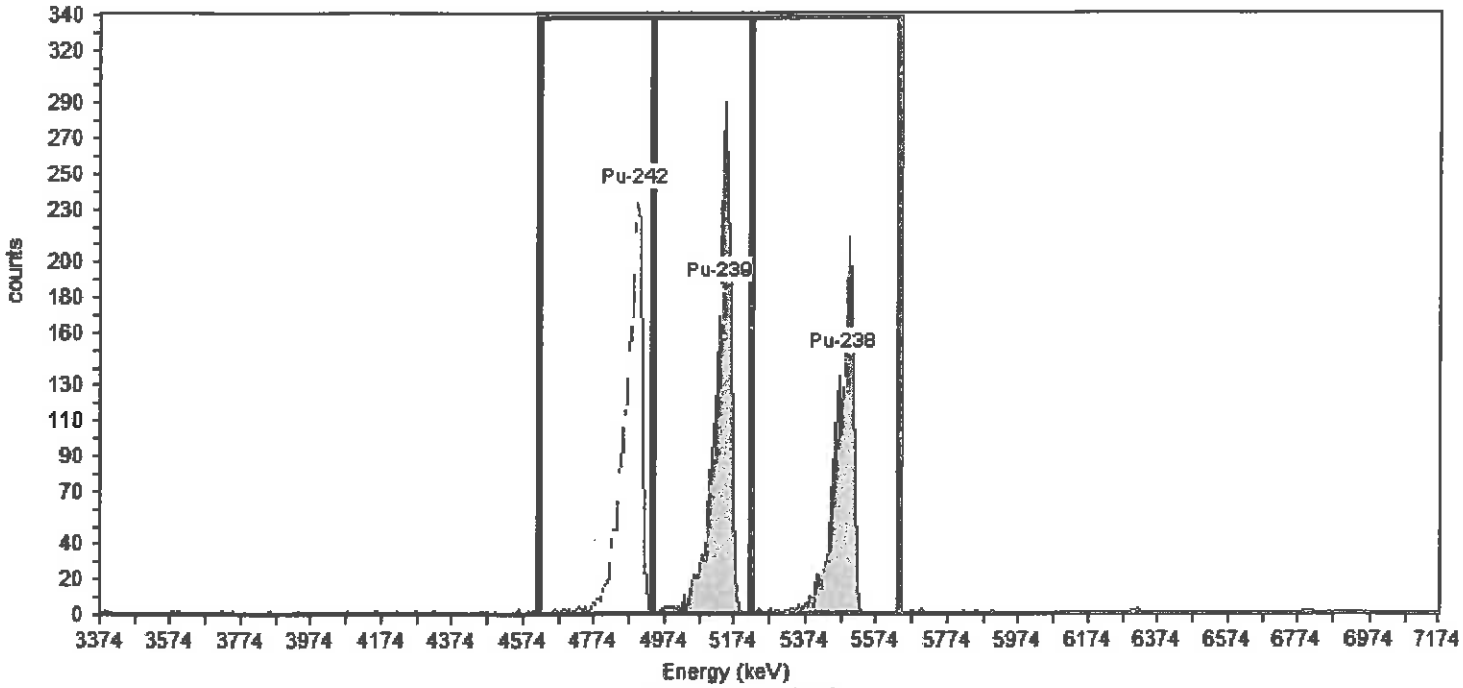
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.10 mL = 7.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 102.34%

Acquisition

Detector: AV235 SN: 51-005Q5
Acquisition Start Date: 7/13/2016 11:13:31AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 6/24/2016 4:15:28PM
Bkgd Info: Sample: ICB;AV235; Det: AV235; Spectrum #1; 6/24/2016 4:15:28 PM

Energy Calibration: IC-8877;AV235-20151018
Efficiency Calibration:IC-8877;AV235-20151018
Calibration Date: 10/19/2015 4:11:39PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.57% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:7/13/2016 11:11:34AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4940.5	31.0	100.0	1759	1.0000	1758.00	7.163E+001	DPM/mL
Pu-239	5134.4	5,155.4	-21.0	4940.5	5223.9	53.0	99.9	1873	0.0000	1873.00	7.464E+001	DPM/mL
Pu-238	5484.9	5,499.2	-14.3	5223.9	5641.5	60.2	100.0	1442	10.0000	1432.00	5.701E+001	DPM/mL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Pu-238/239 ver. by Col. (re-cert exp 8/17)

Actinide Prep

Batch No. : _____

Balance ID : _____

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	ver. 1	0.1	233	
2	2	1	234	
3	3	1	235	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Tracer ☐ N/A

Initials / Date

Isotope : Pu-242

Std Sol'n No. : Pu-242-00023

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 69.9879

Act Ref Date : 01-01-10

Samples Spiked and Traced By: SLB 7/11/16 (Initials / Date)

Verification Signature & Date: CMC 7/11/16 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope : Pu-238/239

Std Sol'n ID. : Pu-238-00007 / Pu-239-001009

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 238- 68.1206 239- 73.3434

Act Ref Date : 238- 11-15-99 239- 12-13-90

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.
☐	ST-RC-0021 Rev.	☑	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.
				☐	ST-RC-0241 Rev.
				☑	ST-RC-0242 Rev.
				☐	ST-RC-5016 Rev.
				☐	
				☐	

Isotope(s)

αβ ☐	Iso Pu ☑	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☑	Soil ☐
Short Count ☐	H_2O ☐

Prepared By : SLB

Date : 7/11/16

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Pu-238_00007

Reagent ID: Pu-238_00007

		Expiration Date:	08/17/2016
Description:	Pu-238 Spike	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Solvent:	3M HNO3
Reagent Volume:	200.000 mL	Solvent Lot:	n/a
Creation Date:	08/28/2013		
Open Date:			
Container(s):	728204		
Comment:	Re-certified from Pu-238_00006		

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Pu-238	Pu-238 Parent_00001	08/28/2014	2491.20000	dpm/mL	68.12062	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Pu-238 Parent_00001	Pu-238 Parent		08/28/14				5.46890	g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Pu-239_00009

Reagent ID: Pu-239_00009

Description:	Pu-239 Spike	Expiration Date:	08/17/2016
No. of Bottles:	1	Laboratory:	TestAmerica St. Louis
Storage Location:	RAD Actinide STDs	Prepared By:	Bernsen, Sarah C
Reagent Volume:	200.000 mL	Solvent:	3M HNO3
Creation Date:	08/28/2013	Solvent Lot:	n/a
Open Date:			
Container(s):	728205		
Comment:	Re-certified from Pu-239_00008		

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Pu-239	Pu-239_00003	08/17/2016	1466.87300	dpm/mL	73.34363	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Pu-239_00003	Pu-239 Parent		08/17/16				10.00000	mL

Sequential Thorium, Plutonium and Uranium via TEVA/UTEVA ST-RC-0242

Batch:_____

All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

*only necessary when analyzing for *Pu*

TEVA lot:_____

UTEVA lot:_____

11.5.2 Stack TEVA on top of UTEVA cartridge

11.5.3 5mL 3M HNO_3 — COMPLETED ☐

*11.5.4 To samples, add 1mL ascorbic acid solution Place in hot water bath for 5 minutes — COMPLETED ☐

*11.5.5 To samples, add 1mL $NaNO_2$ solution Place in hot water bath for 5 minutes — COMPLETED ☐

*11.5.6 Cold water bath until samples reach room temperature

Pu-238/239 ver.

11.5.7 Load sample

11.5.8 20mL 3M HNO_3 — COMPLETED ☐

11.59 Split cartridges TEVA UTEVA

11.5.10-11.5.11 Elute *Th* into clean tube using 20mL 9M HCl — COMPLETED ☐

11.5.12 5mL 6M HCl into *Th* tube — COMPLETED ☐

11.5.16 Elute *Pu* into clean tube with 20mL 1M HCl + 0.250 mL $TiCl_3$ — COMPLETED ☐ COMPLETED ☐

11.5.19 5mL 3M HNO_3 — COMPLETED ☐

11.5.20 5mL 9M HCl — COMPLETED ☐

11.5.21 20mL 5M HCl / 0.05M oxalic — COMPLETED ☐

11.5.22-11.5.23 Elute *U* into clean tube with 15mL 1M HCl — COMPLETED ☐

Sequential Thorium, Plutonium and Uranium via TEVA/UTEVA ST-RC-0242

Batch:_____

All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

*only necessary when analyzing for *Pu*

TEVA lot: TESR1GA

UTEVA lot:_____

11.5.2 Stack TEVA on top of UTEVA cartridge

11.5.3 5mL 3M HNO_3 — COMPLETED ☐

*11.5.4 To samples, add 1mL ascorbic acid solution Place in hot water bath for 5 minutes — COMPLETED ☐

*11.5.5 To samples, add 1mL $NaNO_2$ solution Place in hot water bath for 5 minutes — COMPLETED ☐

*11.5.6 Cold water bath until samples reach room temperature

Pu-238/239 -P

11.5.7 Load sample

11.5.8 20mL 3M HNO_3 — COMPLETED ☐

11.59 Split cartridges TEVA UTEVA

11.5.10-11.5.11 Elute *Th* into clean tube using 20mL 9M HCl — COMPLETED ☐

11.5.12 5mL 6M HCl into *Th* tube — COMPLETED ☐

11.5.16 Elute *Pu* into clean tube with 20mL 1M HCl + 0.250 mL $TiCl_3$ — COMPLETED ☐ COMPLETED ☐

11.5.19 5mL 3M HNO_3 — COMPLETED ☐

11.5.20 5mL 9M HCl — COMPLETED ☐

11.5.21 20mL 5M HCl / 0.05M oxalic — COMPLETED ☐

11.5.22-11.5.23 Elute U into clean tube with 15mL 1M HCl — COMPLETED ☐

Form: RAD-0063, Revised 09/18/13

Reagent

Pu-242_00020

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Pu-242_00020

550237
ID: Pu-242_00020
Exp:01/01/60 Prpd:SCB Opn:01/28/15
Pu-242 Ampoule

550238
ID: Pu-242_00020
Exp:01/01/60 Prpd:SCB Opn:01/28/15
Pu-242 Ampoule

Reagent ID: Pu-242_00020

Type:	ASTD	Expiration Date:	01/01/2060
Description:	Pu-242 Ampoule	Laboratory:	TestAmerica St. Louis
No. of Bottles:	2	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Vendor:	NIST
Reagent Volume:	5.000 mL	Vendor Lot #:	4334I
Creation Date:	12/10/2014	Vendor Cat #:	
Open Date:	01/28/2015		
Container(s):	550237, 550238		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Pu-242					26.77000	Bq/g
Pu-242 (T)					26.77000	Bq/g

National Institute of Standards & Technology

Certificate

Standard Reference Material® 4334I

Plutonium-242 Radioactivity Standard

This Standard Reference Material (SRM) consists of a solution of a standardized and certified quantity of radioactive plutonium-242 in a suitably stable and homogeneous matrix. It is intended primarily for the calibration of instruments that are used to measure radioactivity and for the monitoring of radiochemical procedures. A unit consists of a solution, whose composition is specified in Table 1, contained in a flame-sealed 5 mL borosilicate-glass ampoule (see Note 1)*.

The certified **Plutonium-242** massic activity value, at a **Reference Time of 1200 EST, 01 January 2010**, is:

$$(26.77 \pm 0.18)\ \mathrm{Bq \cdot g^{-1}}.$$

Additional physical, chemical, and radiological properties for this SRM, as well as details on the standardization method, are given in Table 1. Uncertainties for the certified quantities are expanded ($k = 2$). The uncertainties are calculated according to the ISO Guide (see Note 2). Table 2 contains a specification of the components that comprise the uncertainty analyses.

Expiration of Certification: The certification of **SRM 4334I** is valid indefinitely provided the SRM is handled and stored properly and that no evaporation or change in composition has occurred. The solution matrix, in an unopened ampoule, is homogeneous and stable within its half-life-dependent useful lifetime provided the SRM is handled in accordance with instructions given in this certificate (see "Instructions for Storage and Handling"). The certification is nullified if the SRM is damaged, contaminated, or otherwise modified.

Maintenance of Certification: NIST will monitor this SRM over the period of its certification. If substantive technical changes occur that affect the certification before the expiration of this certificate, NIST will notify the purchaser. Registration (see attached sheet) will facilitate notification.

This SRM may represent a radiological hazard and a chemical hazard. Consult the Material Safety Data Sheet (MSDS), enclosed with the SRM shipment, for details.

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, M.P. Unterweger, Group Leader. The overall technical direction and physical measurement leading to certification were provided by L. Lucas of the NIST Radioactivity Group.

Support aspects involved in the issuance of this SRM were coordinated through the NIST Measurement Services Division.

INSTRUCTIONS FOR STORAGE AND HANDLING

Storage: SRM 4334I should be stored and used at a temperature between 5 °C and 65 °C. The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material.

Handling: If the ampoule is transported, it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) because of both the radioactivity and the strong acid. The ampoule should be opened only by persons qualified to handle both radioactive material and alkaline and/or acidic solutions. Appropriate shielding and/or distance should be used to minimize personnel exposure. Refer to MSDS for further information.

Lisa R. Karam, Chief
Ionizing Radiation Division

Gaithersburg, MD 20899
Certificate Issue Date: 30 June 2010

Robert L. Watters, Jr., Chief
Measurement Services Division

* Notes and references may be found on pages 4 and 5.

Table 2. Uncertainty evaluation for the massic activity of SRM 4334I

	Uncertainty component	Assessment Type †	Relative standard uncertainty contribution on massic activity of ^{242}Pu (%)
1	Massic alpha-particle emission rate, corrected for background and decay. Standard deviation of the mean for 180 $4\pi\alpha$ liquid-scintillation measurements.	A	0.06
2	Half life of ^{242}Pu; standard uncertainty of the half life	B	3×10^{-6}
3	Decay-scheme data; standard uncertainty of the probability of decay by alpha-particle emission	B	0.001
4	Extrapolation of the alpha-particle-count-rate-versus-energy to zero energy	B	0.25
5	Gravimetric measurements	B	0.10
6	Live time	B	0.10
7	Alpha-particle detection efficiency of scintillators	B	0.10
8	^{241}Pu detection efficiency of scintillators	B	0.04
9	Alpha-particle emitting impurities; limit of detection	B	0.10
10	^{241}Pu impurity	B	0.02
11	Photon emitting impurities; limit of detection	B	0.10
Relative combined standard uncertainty			**0.34**
Relative expanded uncertainty (k = 2)			**0.68**

† = (A) denotes evaluation by statistical methods; (B) denotes evaluation by other methods.

REFERENCES

[1] Evaluated Nuclear Structure Data File (ENSDF), online database, National Nuclear Center, Brookhaven National Laboratory (Upton, NY), accessed November 2009. Refer to http://www.nndc.bnl.gov/nudat2/ (accessed Jun 2010).

[2] JCGM 100:2008; *Evaluation of Measurement Data — Guide to the Expression of Uncertainty in Measurement* (ISO GUM 1995 with Minor Corrections); Joint Committee for Guides in Metrology (2008); available at http://www.bipm.org/utils/common/documents/jcgm/JCGM_100_2008_E.pdf (accessed May 2010); see also Taylor, B.N.; Kuyatt, C.E.; *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*; NIST Technical Note 1297; U.S. Government Printing Office: Washington, DC (1994); available at http://www.nist.gov/physlab/pubs/index.cfm (accessed Jun 2010).

[3] Thompson, A.; Taylor, B.N.; *Guide for the Use of the International System of Units (SI)*; NIST Special Publication 811; U.S. Government Printing Office: Washington, DC (2008); available at: http://ts.nist.gov/WeightsAndMeasures/Metric/mpo_pubs.cfm (accessed Jun 2010).

Users of this SRM should ensure that the Certificate in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 926-4751; e-mail srminfo@nist.gov; or via the Internet at http://www.nist.gov/srm.

National Institute of Standards & Technology

Certificate

Standard Reference Material® 4334I

Plutonium-242 Radioactivity Standard

This Standard Reference Material (SRM) consists of a solution of a standardized and certified quantity of radioactive plutonium-242 in a suitably stable and homogeneous matrix. It is intended primarily for the calibration of instruments that are used to measure radioactivity and for the monitoring of radiochemical procedures. A unit consists of a solution, whose composition is specified in Table 1, contained in a flame-sealed 5 mL borosilicate-glass ampoule (see Note 1)*.

The certified **Plutonium-242** massic activity value, at a **Reference Time of 1200 EST, 01 January 2010**, is:

$$(26.77 \pm 0.18)\ \mathrm{Bq \cdot g^{-1}}.$$

Additional physical, chemical, and radiological properties for this SRM, as well as details on the standardization method, are given in Table 1. Uncertainties for the certified quantities are expanded ($k = 2$). The uncertainties are calculated according to the ISO Guide (see Note 2). Table 2 contains a specification of the components that comprise the uncertainty analyses.

Expiration of Certification: The certification of **SRM 4334I** is valid indefinitely provided the SRM is handled and stored properly and that no evaporation or change in composition has occurred. The solution matrix, in an unopened ampoule, is homogeneous and stable within its half-life-dependent useful lifetime provided the SRM is handled in accordance with instructions given in this certificate (see "Instructions for Storage and Handling"). The certification is nullified if the SRM is damaged, contaminated, or otherwise modified.

Maintenance of Certification: NIST will monitor this SRM over the period of its certification. If substantive technical changes occur that affect the certification before the expiration of this certificate, NIST will notify the purchaser. Registration (see attached sheet) will facilitate notification.

This SRM may represent a radiological hazard and a chemical hazard. Consult the Material Safety Data Sheet (MSDS), enclosed with the SRM shipment, for details.

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, M.P. Unterweger, Group Leader. The overall technical direction and physical measurement leading to certification were provided by L. Lucas of the NIST Radioactivity Group.

Support aspects involved in the issuance of this SRM were coordinated through the NIST Measurement Services Division.

INSTRUCTIONS FOR STORAGE AND HANDLING

Storage: SRM 4334I should be stored and used at a temperature between 5 °C and 65 °C. The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material.

Handling: If the ampoule is transported, it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) because of both the radioactivity and the strong acid. The ampoule should be opened only by persons qualified to handle both radioactive material and alkaline and/or acidic solutions. Appropriate shielding and/or distance should be used to minimize personnel exposure. Refer to MSDS for further information.

Lisa R. Karam, Chief
Ionizing Radiation Division

Gaithersburg, MD 20899
Certificate Issue Date: 30 June 2010

Robert L. Watters, Jr., Chief
Measurement Services Division

* Notes and references may be found on pages 4 and 5.

Table 2. Uncertainty evaluation for the massic activity of SRM 4334I

	Uncertainty component	Assessment Type †	Relative standard uncertainty contribution on massic activity of ^{242}Pu (%)
1	Massic alpha-particle emission rate, corrected for background and decay. Standard deviation of the mean for 180 $4\pi\alpha$ liquid-scintillation measurements.	A	0.06
2	Half life of ^{242}Pu; standard uncertainty of the half life	B	3×10^{-6}
3	Decay-scheme data; standard uncertainty of the probability of decay by alpha-particle emission	B	0.001
4	Extrapolation of the alpha-particle-count-rate-versus-energy to zero energy	B	0.25
5	Gravimetric measurements	B	0.10
6	Live time	B	0.10
7	Alpha-particle detection efficiency of scintillators	B	0.10
8	^{241}Pu detection efficiency of scintillators	B	0.04
9	Alpha-particle emitting impurities; limit of detection	B	0.10
10	^{241}Pu impurity	B	0.02
11	Photon emitting impurities; limit of detection	B	0.10
Relative combined standard uncertainty			**0.34**
Relative expanded uncertainty (k = 2)			**0.68**

† = (A) denotes evaluation by statistical methods; (B) denotes evaluation by other methods.

REFERENCES

[1] Evaluated Nuclear Structure Data File (ENSDF), online database, National Nuclear Center, Brookhaven National Laboratory (Upton, NY), accessed November 2009. Refer to http://www.nndc.bnl.gov/nudat2/ (accessed Jun 2010).

[2] JCGM 100:2008; *Evaluation of Measurement Data — Guide to the Expression of Uncertainty in Measurement* (ISO GUM 1995 with Minor Corrections); Joint Committee for Guides in Metrology (2008); available at http://www.bipm.org/utils/common/documents/jcgm/JCGM_100_2008_E.pdf (accessed May 2010); see also Taylor, B.N.; Kuyatt, C.E.; *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*; NIST Technical Note 1297; U.S. Government Printing Office: Washington, DC (1994); available at http://www.nist.gov/physlab/pubs/index.cfm (accessed Jun 2010).

[3] Thompson, A.; Taylor, B.N.; *Guide for the Use of the International System of Units (SI)*; NIST Special Publication 811; U.S. Government Printing Office: Washington, DC (2008); available at: http://ts.nist.gov/WeightsAndMeasures/Metric/mpo_pubs.cfm (accessed Jun 2010).

Users of this SRM should ensure that the Certificate in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 926-4751; e-mail srminfo@nist.gov; or via the Internet at http://www.nist.gov/srm.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Pu-242_00020

550237
ID: Pu-242_00020
Exp:01/01/60 Prpd:SCB Opn:01/28/15
Pu-242 Ampoule

550238
ID: Pu-242_00020
Exp:01/01/60 Prpd:SCB Opn:01/28/15
Pu-242 Ampoule

Reagent ID: Pu-242_00020

Type:	ASTD	Expiration Date:	01/01/2060
Description:	Pu-242 Ampoule	Laboratory:	TestAmerica St. Louis
No. of Bottles:	2	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Vendor:	NIST
Reagent Volume:	5.000 mL	Vendor Lot #:	4334I
Creation Date:	12/10/2014	Vendor Cat #:	
Open Date:	01/28/2015		
Container(s):	550237, 550238		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Pu-242					26.77000	Bq/g
Pu-242 (T)					26.77000	Bq/g

Table 1. Properties of SRM 4334I

Certified values

Radionuclide	**Plutonium-242**
Reference time	**1200 EST, 1 January 2010 (See Note 3) ***
Massic activity of the solution	**26.77 Bq•g^{-1}**
Relative expanded uncertainty (k = 2)	**0.68 %** (see Note 2)

Uncertified information

Source description	Liquid in a flame-sealed 5 mL borosilicate-glass ampoule (see Note 1)
Solution composition	3.2 mol•L^{-1} HNO_3
Solution density	(1.105 ± 0.002) g•mL^{-1} at 22 °C (see Note 4)
Solution mass	Approximately 5.5 g
Alpha-particle- emitting impurities	^{241}Am : (0.0016 ± 0.0003) Bq•g^{-1} (See Note 3, 5 and 6)
Beta-particle- emitting impurities	^{241}Pu : (0.044 ± 0.009) Bq•g^{-1} (see Note 4)
Photon-emitting impurities	None detected (see Note 7)
Half-lifes used	^{242}Pu : (373 500 ± 1100) a (see Note 8) [1] ^{241}Pu : (14.290 ± 0.006) a ^{240}Pu: (6 561 ± 7) a ^{239}Pu: (24 110 ± 30) a ^{238}Pu: (87.7 ± 0.1) a ^{241}Am : (432.6 ± 0.6) a
Calibration methods (and instruments)	The certified massic activity for ^{242}Pu was obtained by 4$\pi\alpha$ liquid scintillation (LS) spectrometry using four commercial LS counters, a calibrated germanium detector system, and a silicon surface-barrier detector.

* Notes and references may be found on pages 4 and 5.

Note 1. Refer to http://physics.nist.gov/Divisions/Div846/srm.html (accessed Jun 2010) for assistance and instructions on how to properly open an ampoule. Information on additional storage and handling requirements is also included on the website. This SRM is contained in a generic borosilicate-glass ampoule and not in the standard NIST ampoule.

Note 2. The uncertainties on certified values are expanded uncertainties, $U = ku_c$. The quantity u_c is the combined standard uncertainty calculated according to the ISO Guides [2-3]. The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ and was chosen to obtain an approximate 95 % level of confidence.

Note 3. The ^{242}Pu was chemically purified 07 June 1994 at the Lawrence Livermore National Laboratory (LLNL). Americium-241, the daughter of ^{241}Pu, was removed but has been growing in since that time.

Note 4. The stated uncertainty is two times the standard uncertainty. See reference 3.

Note 5. The estimated limits of detection for alpha-particle-emitting impurities, expressed as massic alpha-particle emission rates (number of alpha-particles emission rates per second per gram), are:

$0.003\ s^{-1}\bullet g^{-1}$ for energies less than 3.1 MeV,
$0.03\ s^{-1}\bullet g^{-1}$ for energies between 3.1 MeV and 4.4 keV, and
$0.003\ s^{-1}\bullet g^{-1}$ for energies greater than 5.0 MeV

Note 6. The ^{242}Pu was chemically purified 07 June 1994. The relative massic activities of radionuclidic impurities after purification follow;

Radionuclide	Relative Activity As Determined By	
	LLNL	NIST
^{242}Pu	1	1
^{241}Pu	--	$(3.5 \pm 0.4) \times 10^{-3}$ (a)
^{240}Pu + ^{239}Pu	$< 10^{-6}$ (b)	$(2.0 \pm 2.1) \times 10^{-5}$ (c)
^{238}Pu + ^{241}Am	$< 1.6 \times 10^{-5}$ (b)	$(9 \pm 16) \times 10^{-6}$ (c)
^{241}Am	--	assumed 0 (a)

(a) The stated uncertainty is the standard uncertainty. The ^{241}Pu activity was calculated from a gamma-ray measurement of the ^{241}Am ingrowth as of 25 November 1998, assuming that ^{241}Am was completely removed at the time of chemical purification.
(b) Using alpha-particle spectrometry. The value shown is an estimated upper limit based upon background and counting statistics. Measurements were made at the Lawrence Livermore National Laboratory (LLNL) in July of 1994.
(c) Using alpha-particle spectrometry. The stated uncertainty is the standard uncertainty. Measurements were made at the National Institute of Standards and Technology (NIST) in June and July 1999.

Note 7. The estimated limits of detection for photon-emitting impurities, expressed as massic photon emission rates (numbers of photons per second per gram), are:

$5 \times 10^{-5}\ s^{-1}\bullet g^{-1}$ for energies between 19 keV and 39 keV,
$7 \times 10^{-5}\ s^{-1}\bullet g^{-1}$ for energies between 49 keV and 92 keV,
$2 \times 10^{-5}\ s^{-1}\bullet g^{-1}$ for energies between 106 keV and 507 keV,
$1 \times 10^{-5}\ s^{-1}\bullet g^{-1}$ for energies between 515 keV and 1456 keV, and
$5 \times 10^{-6}\ s^{-1}\bullet g^{-1}$ for energies between 1465 keV and 2750 keV.

provided that the photons are separated in energy by 4 keV or more from photons emitted in the decay of ^{242}Pu, ^{241}Pu, or ^{241}Am.

Note 8. The stated uncertainty is the standard uncertainty. See reference 2.

Table 1. Properties of SRM 4334I

Certified values

Radionuclide	**Plutonium-242**
Reference time	**1200 EST, 1 January 2010 (See Note 3) ***
Massic activity of the solution	**26.77 Bq•g^{-1}**
Relative expanded uncertainty (k = 2)	**0.68 %** (see Note 2)

Uncertified information

Source description	Liquid in a flame-sealed 5 mL borosilicate-glass ampoule (see Note 1)
Solution composition	3.2 mol•L^{-1} HNO_3
Solution density	(1.105 ± 0.002) g•mL^{-1} at 22 °C (see Note 4)
Solution mass	Approximately 5.5 g
Alpha-particle- emitting impurities	^{241}Am : (0.0016 ± 0.0003) Bq•g^{-1} (See Note 3, 5 and 6)
Beta-particle- emitting impurities	^{241}Pu : (0.044 ± 0.009) Bq•g^{-1} (see Note 4)
Photon-emitting impurities	None detected (see Note 7)
Half-lifes used	^{242}Pu : (373 500 ± 1100) a (see Note 8) [1] ^{241}Pu : (14.290 ± 0.006) a ^{240}Pu: (6 561 ± 7) a ^{239}Pu: (24 110 ± 30) a ^{238}Pu: (87.7 ± 0.1) a ^{241}Am : (432.6 ± 0.6) a
Calibration methods (and instruments)	The certified massic activity for ^{242}Pu was obtained by 4πα liquid scintillation (LS) spectrometry using four commercial LS counters, a calibrated germanium detector system, and a silicon surface-barrier detector.

* Notes and references may be found on pages 4 and 5.

Note 1. Refer to http://physics.nist.gov/Divisions/Div846/srm.html (accessed Jun 2010) for assistance and instructions on how to properly open an ampoule. Information on additional storage and handling requirements is also included on the website. This SRM is contained in a generic borosilicate-glass ampoule and not in the standard NIST ampoule.

Note 2. The uncertainties on certified values are expanded uncertainties, $U = ku_c$. The quantity u_c is the combined standard uncertainty calculated according to the ISO Guides [2-3]. The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ and was chosen to obtain an approximate 95 % level of confidence.

Note 3. The ^{242}Pu was chemically purified 07 June 1994 at the Lawrence Livermore National Laboratory (LLNL). Americium-241, the daughter of ^{241}Pu, was removed but has been growing in since that time.

Note 4. The stated uncertainty is two times the standard uncertainty. See reference 3.

Note 5. The estimated limits of detection for alpha-particle-emitting impurities, expressed as massic alpha-particle emission rates (number of alpha-particles emission rates per second per gram), are:

$0.003\ s^{-1}\bullet g^{-1}$ for energies less than 3.1 MeV,
$0.03\ s^{-1}\bullet g^{-1}$ for energies between 3.1 MeV and 4.4 keV, and
$0.003\ s^{-1}\bullet g^{-1}$ for energies greater than 5.0 MeV

Note 6. The ^{242}Pu was chemically purified 07 June 1994. The relative massic activities of radionuclidic impurities after purification follow;

Radionuclide	Relative Activity As Determined By	
	LLNL	NIST
^{242}Pu	1	1
^{241}Pu	--	$(3.5 \pm 0.4) \times 10^{-3}$ (a)
^{240}Pu + ^{239}Pu	$< 10^{-6}$ (b)	$(2.0 \pm 2.1) \times 10^{-5}$ (c)
^{238}Pu + ^{241}Am	$< 1.6 \times 10^{-5}$ (b)	$(9 \pm 16) \times 10^{-6}$ (c)
^{241}Am	--	assumed 0 (a)

(a) The stated uncertainty is the standard uncertainty. The ^{241}Pu activity was calculated from a gamma-ray measurement of the ^{241}Am ingrowth as of 25 November 1998, assuming that ^{241}Am was completely removed at the time of chemical purification.
(b) Using alpha-particle spectrometry. The value shown is an estimated upper limit based upon background and counting statistics. Measurements were made at the Lawrence Livermore National Laboratory (LLNL) in July of 1994.
(c) Using alpha-particle spectrometry. The stated uncertainty is the standard uncertainty. Measurements were made at the National Institute of Standards and Technology (NIST) in June and July 1999.

Note 7. The estimated limits of detection for photon-emitting impurities, expressed as massic photon emission rates (numbers of photons per second per gram), are:

$5 \times 10^{-5}\ s^{-1}\bullet g^{-1}$ for energies between 19 keV and 39 keV,
$7 \times 10^{-5}\ s^{-1}\bullet g^{-1}$ for energies between 49 keV and 92 keV,
$2 \times 10^{-5}\ s^{-1}\bullet g^{-1}$ for energies between 106 keV and 507 keV,
$1 \times 10^{-5}\ s^{-1}\bullet g^{-1}$ for energies between 515 keV and 1456 keV, and
$5 \times 10^{-6}\ s^{-1}\bullet g^{-1}$ for energies between 1465 keV and 2750 keV.

provided that the photons are separated in energy by 4 keV or more from photons emitted in the decay of ^{242}Pu, ^{241}Pu, or ^{241}Am.

Note 8. The stated uncertainty is the standard uncertainty. See reference 2.

Reagent

Pu-242_00023

St. Louis Radiological Standard Reverification Form

Standard ID Number: Pu-242_00021
True Value = 69.9879 DPM/L or g
Date Analyzed: 1/8/2016

Radionuclide: Pu-242

	Replicates	
#1	65.65	DPM/L or g
#2	67.07	DPM/L or g
#3	70.9	DPM/L or g

Mean = 67.87333

1 sigma = 2.715628 1.96 sigma = 5.32263

True Value minus 5% = 66.48851 (True Value - 5%)
True Value plus 5% = 73.4873 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: RTM 1/17/2016

SOP Reference: STL-QA-0002, Current Revision

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Pu-242 Tracer Ver. by Coppt

Aliquot Only

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	Ver. 1	0.2	227	
2	2	1	228	
3	3		229	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : Pu-239
Std Sol'n No. : Pu-239-00009
Vol (mL) : 0.1
Ref Activity (dpm/mL) : 73.34363
Act Ref Date : 12-13-90

Samples Spiked and Traced By: SUB 1/7/16
Initials / Date

Verification Signature & Date: SEK 1/7/16
Initials / Date

LCS Standard ☐ N/A

Initials / Date

Isotope : Pu-242
Std Sol'n ID. : Pu-242-00021
Vol (mL) : 0.2
Ref Activity (dpm/mL) : 69.9879
Act Ref Date : 01-01-10

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.		
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.		
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.		
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.		
☐	ST-RC-0021 Rev.	☐	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.		
				☐	ST-RC-0241 Rev.		
				☐	ST-RC-0242 Rev.		
				☐	ST-RC-5016 Rev.		
				☐			
				☐			

Isotope(s)

αβ ☐	Iso Pu ☑	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☐	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time		Matrix	
Long Count	☑	Soil	☐
Short Count	☐	H_2O	☐

Prepared By : SUB
Date : 1/7/16

Reviewed by: _____
Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Pu-242_00021

Reagent ID: Pu-242_00021

		Expiration Date:	02/02/2016
Description:	Pu-242 Tracer	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Solvent:	3M HNO3
Reagent Volume:	250.000 mL	Solvent Lot:	n/a
Creation Date:	01/28/2015		
Open Date:			
Container(s):	550239		
Comment:	standard is made directly from the ampoule. This standard has a 50 year expiration date. Since it is a working standard, it will be verified annually. Standard is made from 2 ampoules with container ID's: #550237, #550238		

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Pu-242	Pu-242_00020	01/01/2060	26.77000	Bq/g	69.98792	dpm/mL
Pu-242 (T)	Pu-242_00020	01/01/2060	26.77000	Bq/g	69.98792	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Pu-242_00020	Pu-242 Ampoule	ASTD	01/01/60	NIST	4334I		10.89340	g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:47:13PM 1/17/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.20 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Pu-242_00021
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

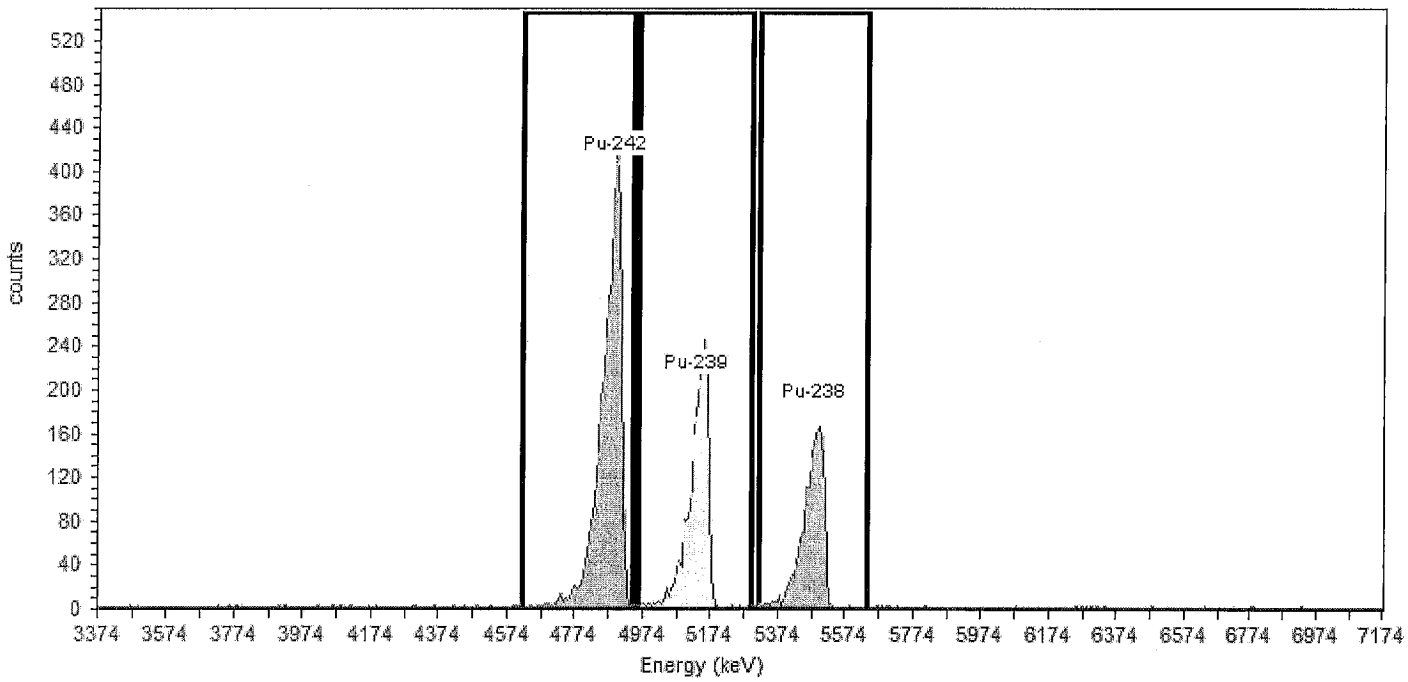
Tracer Name: Pu-239_00008
Tracer Activity: 73.34 DPM / mL x (Vol.) 0.10 mL = 7.33 DPM
Tracer Ref. Date: 12/13/1990 6:44:10PM

Tracer Nuclide: Pu-239
Tracer Recovery: 108.53%

Acquisition

Detector: AV227 SN: 50-120DD5
Acquisition Start Date: 1/8/2016 2:30:26PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Background Date: 12/13/2015 6:06:31PM
Bkgd Info: Sample: ICB;AV227; Det: AV227; Spectrum #1; 12/13/2015 6:06:31 PM

Energy Calibration: IC-9817;AV227-20151018
Efficiency Calibration:IC-9817;AV227-20151018
Calibration Date: 10/18/2015 9:20:24PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.29% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = PuROI_Pu239Tracer
Decay Correction:1/8/2016 2:27:22PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	53.8	100.0	3462	3.0000	3459.00	6.565E+001	DPM/mL
Pu-239	5134.4	5,155.4	-21.0	4962.9	5298.5	56.7	99.9	1933	4.0000	1929.00	3.980E+001	DPM/mL
Pu-238	5484.9	5,499.2	-14.3	5320.8	5641.5	63.5	100.0	1531	12.0000	1519.00	2.883E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:47:23PM 1/17/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.20 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Pu-242_00021
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

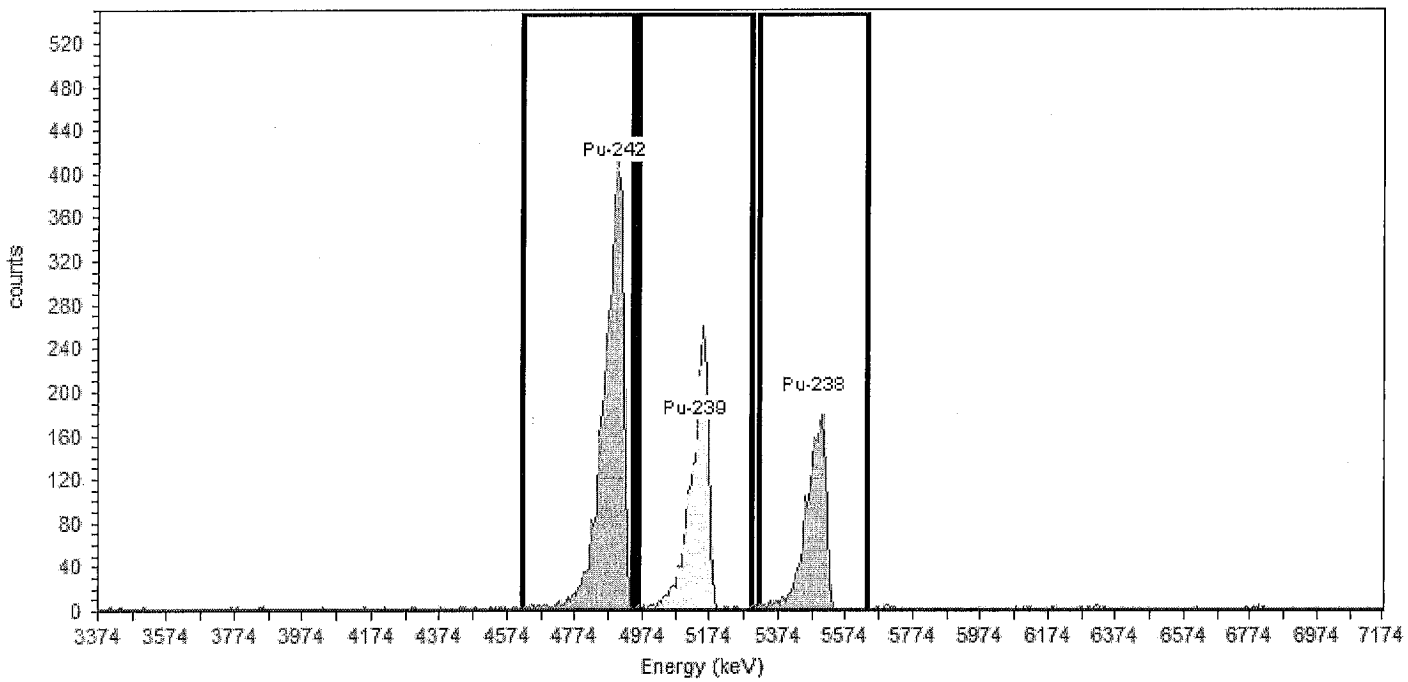
Tracer Name: Pu-239_00008
Tracer Activity: 73.34 DPM / mL x (Vol.) 0.10 mL = 7.33 DPM
Tracer Ref. Date: 12/13/1990 6:44:10PM

Tracer Nuclide: Pu-239
Tracer Recovery: 112.03%

Acquisition

Detector: AV228 SN: 51-005Q6
Acquisition Start Date: 1/8/2016 2:30:26PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 12/13/2015 6:06:31PM
Bkgd Info: Sample: ICB;AV228; Det: AV228; Spectrum #1; 12/13/2015 6:06:31 PM

Energy Calibration: IC-9884;AV228-20151018
Efficiency Calibration:IC-9884;AV228-20151018
Calibration Date: 10/18/2015 9:20:29PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.26% +/- 0.36% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = PuROI_Pu239Tracer
Decay Correction:1/8/2016 2:27:22PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	38.1	100.0	3645	1.0000	3644.00	6.707E+001	DPM/mL
Pu-239	5134.4	5,155.4	-21.0	4962.9	5298.5	58.3	99.9	1992	3.0000	1989.00	4.108E+001	DPM/mL
Pu-238	5484.9	5,499.2	-14.3	5320.8	5641.5	67.6	100.0	1604	12.0000	1592.00	2.930E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:47:34PM 1/17/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.20 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Pu-242_00021
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

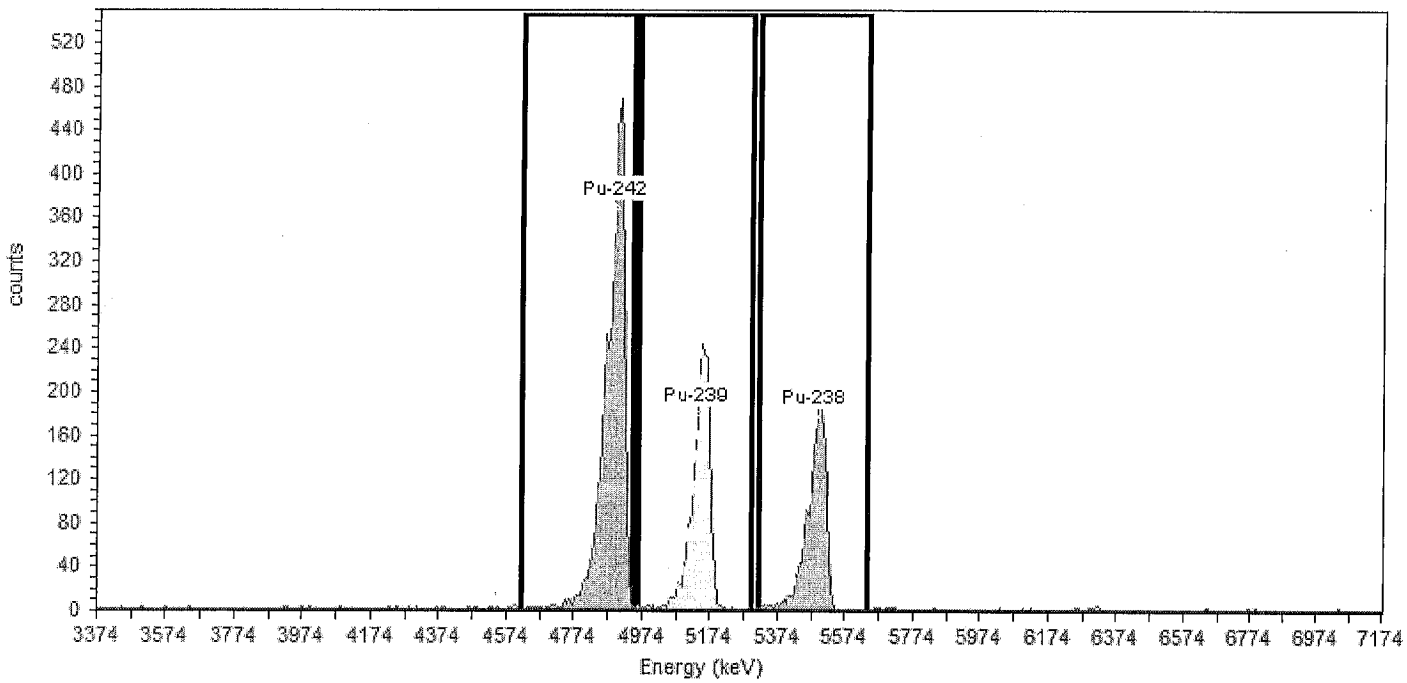
Tracer Name: Pu-239_00008
Tracer Activity: 73.34 DPM / mL x (Vol.) 0.10 mL = 7.33 DPM
Tracer Ref. Date: 12/13/1990 6:44:10PM

Tracer Nuclide: Pu-239
Tracer Recovery: 101.08%

Acquisition

Detector: AV229 SN: 51-005EE4
Acquisition Start Date: 1/8/2016 2:30:26PM
Live Time: 960.00 min.
Real Time: 960.07 min.
Background Date: 12/13/2015 6:06:32PM
Bkgd Info: Sample: ICB;AV229; Det: AV229; Spectrum #1; 12/13/2015 6:06:32 PM

Energy Calibration: IC-9885;AV229-20151018
Efficiency Calibration:IC-9885;AV229-20151018
Calibration Date: 10/18/2015 9:20:33PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.18% +/- 0.38% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = PuROI_Pu239Tracer
Decay Correction:1/8/2016 2:27:22PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	33.0	100.0	3607	5.0000	3602.00	7.090E+001	DPM/mL
Pu-239	5134.4	5,155.4	-21.0	4962.9	5298.5	55.3	99.9	1860	0.0000	1860.00	3.707E+001	DPM/mL
Pu-238	5484.9	5,499.2	-14.3	5320.8	5641.5	59.6	100.0	1551	12.0000	1539.00	3.029E+001	DPM/mL

Reagent

Pu238 Ampoule_00001

National Institute of Standards & Technology

Certificate

Standard Reference Material 4323B
Plutonium-238 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive plutonium-238 nitrate and nitric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of alpha-particle counting instruments and for the monitoring of radiochemical procedures.

Radiological Hazard: The SRM ampoule contains plutonium-238 with a total activity of approximately 250 Bq. Plutonium-238 decays by alpha-particle emission. None of the alpha particles escape from the SRM ampoule. During the decay process X-rays and gamma rays with energies from 10 keV to 1 MeV are also emitted. Most of these photons escape from the SRM ampoule but their intensities are so small that they do not represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]*. The SRM should be used only by persons qualified to handle radioactive material.

Chemical Hazard: The SRM ampoule contains nitric acid (HNO_3) with a concentration of 3 moles per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

Storage and Handling: The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least February 2009.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

Preparation: This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, L.R. Karam, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by J.W.L. Thomas.

Bert M. Coursey, Chief
Ionizing Radiation Division

Gaithersburg, Maryland 20899
March 2000

Thomas E. Gills, Director
Office of Measurement Services

*Notes and references are on pages 5 and 6.

PROPERTIES OF SRM 4323B

Certified values

Radionuclide	**Plutonium-238**
Reference time	**1200 EST, 15 November 1999**
Massic activity of the solution [b]*	**41.52 Bq•g^{-1}**
Relative expanded uncertainty (k=2)	**0.68%** [c] [d]
Solution density	**(1.101 ± 0.002) g•mL^{-1} at 21.4 °C** [e]

Uncertified values

Physical Properties:			
Source description	Liquid in flame-sealed NIST borosilicate-glass ampoule		
Ampoule specifications	Body outside diameter Wall thickness Barium content Lead-oxide content Other heavy elements	(16.5 ± 0.5) mm (0.60 ± 0.04) mm Less than 2.5% Less than 0.02% Trace quantities	
Solution mass	Approximately 5.5 grams		
Chemical Properties:			
Solution composition	Chemical Formula	Concentration (mol•L^{-1})	Mass Fraction (g•g^{-1})
	H_2O	50	0.82
	HNO_3	3.1	0.18
	HCl	0.008	0.0003
	$^{238}Pu(NO_3)_6$	3×10^{-10}	2×10^{-10}
Radiological Properties:			
Alpha-particle-emitting impurities	None detected [f]		
Photon-emitting impurities	None detected [g]		
Half lives used	Plutonium-238: (87.7 ± 0.1) a [h] [5]		
Calibration method and measuring instrument(s)	Two 4πα liquid-scintillation counting systems		

*Notes and references are on pages 5 and 6.

Reagent

Source A_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

79670-334

5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2303925, Item 1
Calibration Date: 01-Apr-2009 12:00 EST **Grams of Master Source:** 0.028371

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	157860	———	3.390E+03	0.1	0.9	1.8	4π LS
Cd-109	88.0	462.60	1.691E+05	4.798E+03	0.4	1.7	3.5	HPGe
Co-57	122.1	271.79	8.904E+04	2.526E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	137.6	1.256E+05	3.563E+03	0.4	1.1	2.3	HPGe
Hg-203	279.2	46.61	2.788E+05	7.910E+03	0.3	1.1	2.3	HPGe
Sn-113	391.7	115.1	1.725E+05	4.894E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	10983	1.120E+05	3.178E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	106.6	4.205E+05	1.193E+04	0.8	1.1	2.7	HPGe
Co-60	1173.2	1925.4	2.184E+05	6.196E+03	0.7	1.1	2.6	HPGe
Co-60	1332.5	1925.4	2.185E+05	6.199E+03	0.7	1.1	2.6	HPGe
Y-88	1836.1	106.6	4.444E+05	1.261E+04	0.7	1.1	2.6	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
5.31740 grams 4M HCl solution with approximately 30 microg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the calibration date.

Source Prepared by: [signature] for
W. Mao, Radiochemist

QA Approved: [signature] Date: 5-13-09
D. M. Montgomery, QA Manager

End of Certificate

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

Source C_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

79670-334

5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2303925, Item 1
Calibration Date: 01-Apr-2009 12:00 EST **Grams of Master Source:** 0.028371

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	157860	———	3.390E+03	0.1	0.9	1.8	4π LS
Cd-109	88.0	462.60	1.691E+05	4.798E+03	0.4	1.7	3.5	HPGe
Co-57	122.1	271.79	8.904E+04	2.526E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	137.6	1.256E+05	3.563E+03	0.4	1.1	2.3	HPGe
Hg-203	279.2	46.61	2.788E+05	7.910E+03	0.3	1.1	2.3	HPGe
Sn-113	391.7	115.1	1.725E+05	4.894E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	10983	1.120E+05	3.178E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	106.6	4.205E+05	1.193E+04	0.8	1.1	2.7	HPGe
Co-60	1173.2	1925.4	2.184E+05	6.196E+03	0.7	1.1	2.6	HPGe
Co-60	1332.5	1925.4	2.185E+05	6.199E+03	0.7	1.1	2.6	HPGe
Y-88	1836.1	106.6	4.444E+05	1.261E+04	0.7	1.1	2.6	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
5.31740 grams 4M HCl solution with approximately 30 microg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the calibration date.

Source Prepared by: [signature] for
W. Mao, Radiochemist

QA Approved: [signature] Date: 5-13-09
D. M. Montgomery, QA Manager

End of Certificate

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

Source D_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

79670-334

5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2303925, Item 1
Calibration Date: 01-Apr-2009 12:00 EST **Grams of Master Source:** 0.028371

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	157860	———	3.390E+03	0.1	0.9	1.8	4π LS
Cd-109	88.0	462.60	1.691E+05	4.798E+03	0.4	1.7	3.5	HPGe
Co-57	122.1	271.79	8.904E+04	2.526E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	137.6	1.256E+05	3.563E+03	0.4	1.1	2.3	HPGe
Hg-203	279.2	46.61	2.788E+05	7.910E+03	0.3	1.1	2.3	HPGe
Sn-113	391.7	115.1	1.725E+05	4.894E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	10983	1.120E+05	3.178E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	106.6	4.205E+05	1.193E+04	0.8	1.1	2.7	HPGe
Co-60	1173.2	1925.4	2.184E+05	6.196E+03	0.7	1.1	2.6	HPGe
Co-60	1332.5	1925.4	2.185E+05	6.199E+03	0.7	1.1	2.6	HPGe
Y-88	1836.1	106.6	4.444E+05	1.261E+04	0.7	1.1	2.6	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
5.31740 grams 4M HCl solution with approximately 30 microg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the calibration date.

Source Prepared by: [signature] for
W. Mao, Radiochemist

QA Approved: [signature] Date: 5-13-09
D. M. Montgomery, QA Manager

End of Certificate

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

Sr-90_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

80573-334

5 mL Liquid in Flame Sealed Vial

Customer: Test America St. Louis
P.O. No.: 2324797, Item 1

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by liquid scintillation counting. Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and assay date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Sr-90	10515.5	3.782E+04	0.1	0.9	1.8	09/17/2009

*Uncertainty: U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: γ-impurities <0.1%. 5.04317 grams 0.1M HCl solution with approximately 30 microg/g each of Sr and Y carriers. NOTE: This source also contains Y-90 in secular equilibrium with Sr-90. The Y-90 activity is equal to the Sr-90 activity. Since Sr-90 and Y-90 both decay 100% by beta emission, the total beta emission rate for the source is twice the certified Sr-90 activity. The half-life for Y-90 is 64.08 hours.

Source Prepared by: _____
W. Mao, Radiochemist

QA Approved: _____ Date: 9-22-09
D. M. Montgomery, QA Manager

ACCREDITED SOURCE CALIBRATION LABORATORY
HEALTH PHYSICS SOCIETY
FOUNDED 1958

Corporate Office
24937 Avenue Tibbitts, Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd., Atlanta, Georgia 30318

Reagent

Sr-90_00011

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

80573-334

5 mL Liquid in Flame Sealed Vial

Customer: Test America St. Louis
P.O. No.: 2324797, Item 1

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by liquid scintillation counting. Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and assay date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Sr-90	10515.5	3.782E+04	0.1	0.9	1.8	09/17/2009

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: γ-impurities <0.1%. 5.04317 grams 0.1M HCl solution with approximately 30 microg/g each of Sr and Y carriers. NOTE: This source also contains Y-90 in secular equilibrium with Sr-90. The Y-90 activity is equal to the Sr-90 activity. Since Sr-90 and Y-90 both decay 100% by beta emission, the total beta emission rate for the source is twice the certified Sr-90 activity. The half-life for Y-90 is 64.08 hours.

Source Prepared by: _____
W. Mao, Radiochemist

QA Approved: _____ Date: 9-22-09
D. M. Montgomery, QA Manager

ACCREDITED SOURCE CALIBRATION LABORATORY
HEALTH PHYSICS SOCIETY
FOUNDED 1958

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia 30318

Reagent

Sr-90_00017

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

92352

Sr-90 5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2502682, Item 1 Product Code: 8090-5FSA-37kBq

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by Eckert & Ziegler Analytics. The master solution was calibrated by liquid scintillation counting. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Sr-90	1.052E+04	3.749E+04	0.1	0.9	1.8	11/29/2012

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: γ-impurities<0.1%.
5.02357 g 0.1M HCl solution with approximately 30 μg/g each Sr and Y carriers.

NOTE: This source also contains Y-90 in secular equilibrium with Sr-90. The Y-90 activity is equal to the Sr-90 activity. Since Sr-90 and Y-90 both decay 100% by beta emission, the total activity for the source is twice the certified Sr-90 activity. The half-life for Y-90 is 64.08 hours.

Source Prepared by: _____
Z. Dimitrova, Radiochemist

QA Approved: _____ Date: 26 NOV 12
J.D. McCorvey, Counting Room Manager

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

RAD12-0042
Sr-90
hursts
None
Prep/Opened: 11/28/2012
Exp(1): 11/29/2062
Exp(2): 11/29/2062

51511
ID Sr-90_00017
Sr-90 Ampoule

Single Isotope Certificate Rev 3, 23 August 2012

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

Sr-90_00018

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sr-90_00018

Reagent ID: Sr-90_00018

		Expiration Date:	11/29/2062
Description:	Sr-90 Calibration STD	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Hurst, Sarah
Storage Location:	RAD Separations Reagents - 1	Solvent:	0.1M HCL
Reagent Volume:	100.000 mL	Solvent Lot:	0
Creation Date:	11/28/2012		
Container(s):	51512		
Comment:	Rad12-0043		

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Gross Beta	Sr-90_00017	11/29/2062	14925.64000	Bq/g	44774.23338	dpm/mL
Sr-90	Sr-90_00017	11/29/2062	7462.82000	Bq/g	22387.11669	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Sr-90_00017	Sr-90 Ampoule	ASTD	11/29/62	Analytics	92352		4.99970	g

St. Louis Radiological Standard Reverification Form

Standard ID Number: Sr-90_00018 (51512)
True Value = 1976.75 pCi/sample or g
Date Analyzed: 2/10/2014

Radionuclide: Sr-90 (Low mass)

	Replicates	
#1	1935	pCi/sample or g
#2	1941	pCi/sample or g
#3	1924	pCi/sample or g

Mean = 1933.333

1 sigma = 8.621678 1.96 sigma = 16.89849

True Value minus 5% = 1877.913 (True Value - 5%)
True Value plus 5% = 2075.588 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Jody Watson 2/10/14

SOP Reference: STL-QA-0002, Current Revision

St. Louis Radiological Standard Reverification Form

Standard ID Number: Sr-90_00018 (51512)
True Value = 1948.75 pCi/sample or g
Date Analyzed: 2/10/2014

Radionuclide: Sr-90 (Medium mass)

	Replicates	
#1	1911	pCi/sample or g
#2	1945	pCi/sample or g
#3	1893	pCi/sample or g

Mean = 1916.333

1 sigma = 26.40707 1.96 sigma = 51.75786

True Value minus 5% = 1851.313 (True Value - 5%)
True Value plus 5% = 2046.188 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Jody Watson 2/10/14

SOP Reference: STL-QA-0002, Current Revision

St. Louis Radiological Standard Reverification Form

Standard ID Number: Sr-90_00018 (51512)
True Value = 1992 pCi/sample or g
Date Analyzed: 2/10/2014

Radionuclide: Sr-90 (High mass)

	Replicates	
#1	1907	pCi/sample or g
#2	1930	pCi/sample or g
#3	1937	pCi/sample or g

Mean = 1924.667

1 sigma = 15.69501 1.96 sigma = 30.76222

True Value minus 5% = 1892.4 (True Value - 5%)
True Value plus 5% = 2091.6 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Jody Watson 2/10/14

SOP Reference: STL-QA-0002, Current Revision

Protean Beta ICV-ACV recoveries from March 2013			
Protean Detector	**Low** pCi/sample	**Medium** pCi/sample	**High** pCi/sample
0	1962	1945	1971
1	2003	1947	1995
2	1960	1965	1998
3	1988	1942	1995
4	1977	1940	1997
5	1969	1949	2013
6	1986	1938	1986
7	1969	1964	1981
Average pCi/sample	1976.75	1948.75	1992

Protean Beta ICV-ACV recoveries from February 2014			
Protean Detector	**Low** pCi/sample	**Medium** pCi/sample	**High** pCi/sample
4	1935	1911	1907
5	1941	1945	1930
6	1924	1893	1937
Average pCi/sample	1933.33	1916.33	1924.67

Standard ID
Strontium 90
Sr-90_00018 #51512
Cert# 92352 Ref. date 11/29/12

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gross Alpha/Beta

Batch: M122640 **Operator:** 63903

Sample ID	WRKNO	Aliquot		Mass	Instr ID	CountTime		Ts	Tb	Dilution	Sigma	
	Analyte	Cs	Cb	XT	CPMs	CPMb	Eff	Activity	UncTot	UncCnt	MDA	DLC
ICVABT-51512;B1	NA	1.000E+000	sample	0.0513 g	Protean4	2/10/14 22:54		5.00	1000.00	1.00	2.00	
	Gross Alpha	0	49	0.00	0.000E+000	4.900E-002	0.1157	**-1.908E-001** pCi/sample	5.869E-002	5.452E-002	3.382E+000	8.968E-001
	Gross Beta	9072	417	0.00	1.814E+003	4.170E-001	0.4224	**1.935E+003** pCi/sample	1.977E+002	4.063E+001	1.594E+000	7.165E-001
ICVABT-51512;B2	NA	1.000E+000	sample	0.1114 g	Protean4	2/10/14 23:19		5.00	1000.00	1.00	2.00	
	Gross Alpha	1	49	0.00	2.000E-001	4.900E-002	0.0830	**8.194E-001** pCi/sample	2.174E+000	2.172E+000	4.713E+000	1.250E+000
	Gross Beta	8432	417	0.00	1.686E+003	4.170E-001	0.3973	**1.911E+003** pCi/sample	1.956E+002	4.164E+001	1.694E+000	7.616E-001
ICVABT-51512;B3	NA	1.000E+000	sample	0.1813 g	Protean4	2/10/14 23:04		5.00	1000.00	1.00	2.00	
	Gross Alpha	1	49	0.00	2.000E-001	4.900E-002	0.0540	**1.260E+000** pCi/sample	3.343E+000	3.340E+000	7.248E+000	1.922E+000
	Gross Beta	8054	417	0.00	1.611E+003	4.170E-001	0.3804	**1.907E+003** pCi/sample	1.954E+002	4.251E+001	1.770E+000	7.956E-001

Laboratory Control Sample Information

SampID	WRKNO	Analyte	Activity	StdAdded	Recovery %	LCL	UCL	ZFactor

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Sample Activity	Dup Activity	RPD	RER	DER	ZFactor

Matrix Spike Information

SampID	SampMSID	Analyte	Sample Activity	MS Activity	StdAdded	MSRecovery %	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gross Alpha/Beta

Batch: M122640 **Operator:** 63903

Sample ID	WRKNO / Analyte	Aliquot Cs	Aliquot Cb	Mass XT	Instr ID CPMs	CountTime CPMb	CountTime Eff	Activity	Ts	Tb UncTot	Dilution UncCnt	Sigma MDA	DLC
ICVABT-51512;B1	NA	1.000E+000	sample	0.0513 g	Protean5	2/10/14 23:04			5.00	1000.00	1.00	2.00	
	Gross Alpha	0	43	0.00	0.000E+000	4.300E-002	0.1145	**-1.692E-001**pCi/sample		5.510E-002	5.161E-002	3.337E+000	8.490E-001
	Gross Beta	9111	398	0.00	1.822E+003	3.980E-001	0.4228	**1.941E+003**pCi/sample		1.983E+002	4.068E+001	1.569E+000	6.992E-001
ICVABT-51512;B2	NA	1.000E+000	sample	0.1114 g	Protean5	2/10/14 22:54			5.00	1000.00	1.00	2.00	
	Gross Alpha	0	43	0.00	0.000E+000	4.300E-002	0.0823	**-2.353E-001**pCi/sample		7.661E-002	7.176E-002	4.639E+000	1.180E+000
	Gross Beta	8552	398	0.00	1.710E+003	3.980E-001	0.3960	**1.945E+003**pCi/sample		1.990E+002	4.207E+001	1.675E+000	7.465E-001
ICVABT-51512;B3	NA	1.000E+000	sample	0.1813 g	Protean5	2/10/14 23:19			5.00	1000.00	1.00	2.00	
	Gross Alpha	2	43	0.00	4.000E-001	4.300E-002	0.0532	**3.022E+000**pCi/sample		4.802E+000	4.790E+000	7.178E+000	1.826E+000
	Gross Beta	8046	398	0.00	1.609E+003	3.980E-001	0.3755	**1.930E+003**pCi/sample		1.977E+002	4.304E+001	1.766E+000	7.873E-001

Laboratory Control Sample Information

SampID	WRKNO	Analyte	Activity	StdAdded	Recovery %	LCL	UCL	ZFactor

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Sample Activity	Dup Activity	RPD	RER	DER	ZFactor

Matrix Spike Information

SampID	SampMSID	Analyte	Sample Activity	MS Activity	StdAdded	MSRecovery %	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gross Alpha/Beta

Batch: M122640 **Operator:** 63903

Sample ID	WRKNO / Analyte	Aliquot Cs	Aliquot Cb	Mass XT	Instr ID CPMs	CountTime CPMb	CountTime Eff	Activity	Ts	Tb UncTot	Dilution UncCnt	Sigma MDA	DLC
ICVABT-51512;B1	NA	1.000E+000	sample	0.0513 g	Protean6	2/10/14 23:19			5.00	1000.00	1.00	2.00	
	Gross Alpha	0	87	0.00	0.000E+000	8.700E-002	0.1165	**-3.362E-001**pCi/sample		8.166E-002	7.210E-002	3.776E+000	1.186E+000
	Gross Beta	8992	520	0.00	1.798E+003	5.200E-001	0.4209	**1.924E+003**pCi/sample		1.966E+002	4.059E+001	1.718E+000	8.029E-001
ICVABT-51512;B2	NA	1.000E+000	sample	0.1114 g	Protean6	2/10/14 23:04			5.00	1000.00	1.00	2.00	
	Gross Alpha	0	87	0.00	0.000E+000	8.700E-002	0.0842	**-4.657E-001**pCi/sample		1.131E-001	9.985E-002	5.230E+000	1.642E+000
	Gross Beta	8356	520	0.00	1.671E+003	5.200E-001	0.3976	**1.893E+003**pCi/sample		1.937E+002	4.142E+001	1.819E+000	8.499E-001
ICVABT-51512;B3	NA	1.000E+000	sample	0.1813 g	Protean6	2/10/14 22:54			5.00	1000.00	1.00	2.00	
	Gross Alpha	0	87	0.00	0.000E+000	8.700E-002	0.0559	**-7.014E-001**pCi/sample		1.703E-001	1.504E-001	7.877E+000	2.474E+000
	Gross Beta	8127	520	0.00	1.625E+003	5.200E-001	0.3778	**1.937E+003**pCi/sample		1.985E+002	4.300E+001	1.914E+000	8.945E-001

Laboratory Control Sample Information

SampID	WRKNO	Analyte	Activity	StdAdded	Recovery %	LCL	UCL	ZFactor

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Sample Activity	Dup Activity	RPD	RER	DER	ZFactor

Matrix Spike Information

SampID	SampMSID	Analyte	Sample Activity	MS Activity	StdAdded	MSRecovery %	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor

TestAmerica St. Louis

Standards Preparation Logbook Record

Nov-28-2012

Logbook: \\Qstlmo01\Stdslog\RAD_STD.std

RAD12-0042, Sr-90 Sr-90-00017 #51511 Analyst: hursts

Vendor: Analytics Lot No.: 92352
Solvent: None
Date Prep./Opened: 11-28-2012
Date Expires(1): 11-29-2062 (50 Years)
Date Expires(2): 11-29-2062 (50 Years)
Cert: 92352 Activity: 37490Bq Mass: 5.02357 Ref. Date: 11/29/12

Component	Initial Conc (dpm/g)	Final Conc (dpm/g)
Sr-90	447,769	447,769

RAD12-0043, Sr-90 Calibration STD Sr-90-00018 #51512 Analyst: hursts

Solvent: None Volume (ml): 100.00
Date Prep./Opened: 11-28-2012
Date Expires(1): 11-29-2062 (50 Years)
Date Expires(2): 11-29-2062 (50 Years)

Parent Std No.: RAD12-0042, Sr-90 Aliquot Amount (g): 4.9997
Parent Date Expires(1): 11-29-2062 Parent Date Expires(2): 11-29-2062

Component	Initial Conc (dpm/g)	Final Conc (dpm/mL)
Sr-90	447,769	22,387

Reviewed By: SB

Page 1 of 1

St. Louis Radiological Standard Reverification Form

Standard ID Number: Rad12-0043
True Value = 2016.7 pCi/L or g
Date Analyzed: 11/30/2012

Radionuclide: Sr90

	Replicates	
#1	1964	pCi/L or g
#2	1958	pCi/L or g
#3	2015	pCi/L or g

Mean = 1979

1 sigma = 31.32092 1.96 sigma = 61.389

True Value minus 5% = 1915.865 (True Value - 5%)
True Value plus 5% = 2117.535 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: 11/30/12

SOP Reference: STL-QA-0002, Current Revision

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gross Alpha/Beta

Batch: M122629 **Operator:** 63903

Sample ID	WRKNO / Analyte	Aliquot / Cs	Cb	Mass / XT		Instr ID / CPMs	CountTime / CPMb	Eff	Ts / Activity	Tb / UncTot	Dilution / UncCnt	Sigma / MDA	DLC
verification-1b	NA	1.000E+000	sample	0.0536	g	Purple16	11/30/12 10:42		8.00	1000.00	1.00	1.00	
	Gross Alpha	123	175	0.00		1.538E+001	1.750E-001	0.4314	**1.587E+001**pCi/sample	1.707E+000	1.448E+000	8.638E-001	3.593E-001
	Gross Beta	14954	485	0.00		1.869E+003	4.850E-001	0.4285	**1.964E+003**pCi/sample	9.953E+001	1.607E+001	1.211E+000	6.021E-001
verification-2b	NA	1.000E+000	sample	0.0529	g	Purple17	11/30/12 10:43		8.00	1000.00	1.00	1.00	
	Gross Alpha	53	87	0.00		6.625E+000	8.700E-002	0.1306	**2.254E+001**pCi/sample	3.391E+000	3.138E+000	2.356E+000	8.365E-001
	Gross Beta	15152	362	0.00		1.894E+003	3.620E-001	0.4356	**1.958E+003**pCi/sample	9.919E+001	1.591E+001	1.077E+000	5.117E-001
verification-3b	NA	1.000E+000	sample	0.0528	g	Purple18	11/30/12 10:43		8.00	1000.00	1.00	1.00	
	Gross Alpha	85	62	0.00		1.063E+001	6.200E-002	0.1313	**3.624E+001**pCi/sample	4.462E+000	3.954E+000	2.160E+000	7.027E-001
	Gross Beta	15378	395	0.00		1.922E+003	3.950E-001	0.4296	**2.015E+003**pCi/sample	1.020E+002	1.625E+001	1.125E+000	5.420E-001

Laboratory Control Sample Information

SampID	WRKNO	Analyte	Activity	StdAdded	Recovery %	LCL	UCL	ZFactor

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Sample Activity	Dup Activity	RPD	RER	DER	ZFactor

Matrix Spike Information

SampID	SampMSID	Analyte	Sample Activity	MS Activity	StdAdded	MSRecovery %	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Prep Report for Gross Alpha/Beta

Batch: M122629 **Prep Analyst:** 250

SampID	WRKNO	Aliquot		Gross	Tare	Mass	Dilution
verification-1b	NA	1.000E+000	sample	8.7067 g	8.6531 g	0.0536 g	1.00
verification-2b	NA	1.000E+000	sample	8.6615 g	8.6086 g	0.0529 g	1.00
verification-3b	NA	1.000E+000	sample	8.6935 g	8.6407 g	0.0528 g	1.00

purple 16

17

18

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
	Rad12-0043	SR-90	22.387 dpm/mL	0.1 mL	11-29-12	

MS — Spiked By

LM — Spike Verified By

11-28-12 — Spike Date

Standard Operating Procedures

SOPNumber	Title	Revision

Reviewed By — 11/30/12 Review Date

MS — Analyst/Relenquished By — 11/28/12 Release Date

Received By — 11/28/12 Receipt Date

MS 11-30-12 ~~112~~ 1123433897/MS/11-28-12

Balance ID / Initials / Date

Reagent

Sr-90_00031

St. Louis Radiological Standard Reverification Form

Standard ID Number: Sr-90_00031
True Value = 8.682 pCi/L or g
Date Analyzed: 3/8/2016

Radionuclide: Sr-90

	Replicates	
#1	8.73	pCi/L or g
#2	8.6	pCi/L or g
#3	8.41	pCi/L or g

Mean = 8.58

1 sigma = 0.160935 1.96 sigma = 0.315432

True Value minus 5% = 8.2479 (True Value - 5%)
True Value plus 5% = 9.1161 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: RTM 3/9/2016

SOP Reference: STL-QA-0002, Current Revision

Strontium 90						
Initial Activity:	22.56	dpm				
Reference Date:	9/17/2009					
Current Date:	3/8/2016		(or date at which you wish to determine activity)			
Elapsed Time:	2364.000	days				
Half Life:	10409.625	days				
Exponential Term:	0.85435199					
Corrected Activity:	19.27418089	dpm	8.682063462	pCi	0.321236	Bq
Activity (Sr/Y-90)	38.54836177	dpm	17.36412692	pCi	0.642473	Bq

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sr-90_00031

Reagent ID: Sr-90_00031

		Expiration Date:	05/20/2016
Description:	Sr-90 Spike	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Separations Reagents - 131	Solvent:	0.1M HCL
Reagent Volume:	500.000 mL	Solvent Lot:	n/a
Creation Date:	02/17/2016		
Open Date:			
Container(s):	849718		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Gross Beta	Sr-90_00012	05/20/2016	45120.55100	dpm/mL	45.12055	dpm/mL
Sr-90	Sr-90_00012	05/20/2016	22560.29800	dpm/mL	22.56030	dpm/mL
Total Beta Strontium	Sr-90_00012	05/20/2016	22560.29800	dpm/mL	22.56030	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Sr-90_00012	Sr-90 Parent		05/20/16				0.50000	mL

ExtChrom_Sr Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 160-239423

Analyst: Curtright, Chelsea M

Batch Open: 3/7/2016 4:30:30PM

Batch End: 3/7/2016 4:32:00PM

Preparation, Extraction Chromatography Resin, Strontium

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	160-16137-A-1 (GFPC_TSR)	N/A (160-16137-1)	Water	1000 mL	8.73 pCi/L	2/29/16	8_Days	2	Protean 0	160-16137-A-1-A
2	160-16137-A-2 (GFPC_TSR)	N/A (160-16137-1)	Water	1000 mL	8.60	2/29/16	8_Days	2	1	160-16137-A-2-A
3	160-16137-A-3 (GFPC_TSR)	N/A (160-16137-1)	Water	1000 mL	8.41	2/29/16	8_Days	2	2	160-16137-A-3-A
4	N/A	N/A				N/A	N/A	N/A	3 MS 3-8-16	

ExtChrom_Sr Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 160-239423

Analyst: Curtright, Chelsea M

Batch Open: 3/7/2016 4:30:30PM

Batch End: 3/7/2016 4:32:00PM

Batch Notes

Strontium Carrier ID	Sr (T)
Yttrium Carrier ID	
Balance ID	N/A
Analyst ID - Reagent Drop Witness	BME per CMC
Analyst ID - Reagent Drop	CMC
Pipette ID	RAD066
SOP Number	ST-RC-0050
Batch Comment	

Comments

ExtChrom_Sr Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 160-239423

Analyst: Curtright, Chelsea M

Batch Open: 3/7/2016 4:30:30PM

Batch End: 3/7/2016 4:32:00PM

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
160-16137-A-1	Sr-90_00031	1 mL			
160-16137-A-2	Sr-90_00031	1 mL			
160-16137-A-3	Sr-90_00031	1 mL			

Other Reagents:

Reagent	Amount/Units	Lot#:

Rad Worksheet

Batch Number: 160-239423
Method: ExtChrom
Analyst: Curtright, Chelsea M

Date Open: Mar 07 2016 4:30PM
Batch End: Mar 07 2016 4:32PM

Lab ID	Client ID	Method Chain	Basis	Initial weight/volume of sample	Tare Weight of Strontium Planchette	Gross Weight of Strontium Planchette	Sr-90_00031
160-16137-A-1	Verification 1	ExtChrom_Sr, GFPC_TSR	T	1000 mL	8.6391 g	8.6410 g	1 mL
160-16137-A-2	Verification 2	ExtChrom_Sr, GFPC_TSR	T	1000 mL	8.6431 g	8.6444 g	1 mL
160-16137-A-3	Verification 3	ExtChrom_Sr, GFPC_TSR	T	1000 mL	8.6657 g	8.6666 g	1 mL

Strontium Carrier ID:	Sr (T)
Balance ID:	N/A
Analyst ID - Reagent Drop Witness:	BME per CMC
Analyst ID - Reagent Drop:	CMC
Pipette ID:	RAD066
SOP Number:	ST-RC-0050

Reagent

Tc-99_00002

National Institute of Standards & Technology
Certificate

Standard Reference Material 4288A
Technetium-99 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive technetium-99, as potassium pertechnetate, and potassium hydroxide dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of beta-particle counting instruments and for the monitoring of radiochemical procedures.

Radiological Hazard

The SRM ampoule contains technetium-99 with a total activity of approximately 160 kBq. Technetium-99 decays by beta-particle emission. None of the beta particles escape from the SRM ampoule. During the decay process no photons are emitted. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]*. There is no detectable external radiation. The SRM should be used only by persons qualified to handle radioactive material.

Chemical Hazard

The SRM ampoule contains potassium hydroxide (KOH) with a concentration of 0.001 moles per liter of water. The solution is mildly corrosive and could represent a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2.

Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least September 2006.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) because of the radioactivity.

Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899
October 1996

Thomas E. Gills, Chief
Standard Reference Materials Program

*Notes and references are on pages 5 and 6.

Recommended Procedure for Opening the SRM Ampoule

1) If the SRM solution is to be diluted, it is recommended that the diluting solution have a composition comparable to that of the SRM solution.

2) Wear eye protection, gloves, and protective clothing and work over a tray with absorbent paper in it.

3) Shake the ampoule to wet all of the inside surface of the ampoule. Return the ampoule to the upright position.

4) Check that all of the liquid has drained out of the neck of the ampoule. If necessary, gently tap the neck to speed the process.

5) Holding the ampoule upright, score the narrowest part of the neck with a scribe or diamond pencil.

6) Lightly wet the scored line. This reduces the crack propagation velocity and makes for a cleaner break.

7) Hold the ampoule upright with a paper towel, a wiper, or a support jig. Position the scored line away from you. Using a paper towel or wiper to avoid contamination, snap off the top of the ampoule by pressing the narrowest part of the neck away from you while pulling the tip of the ampoule towards you.

8) Transfer the solution from the ampoule using a pycnometer or a pipet with dispenser handle. NEVER PIPETTE BY MOUTH.

9) Seal any unused SRM solution in a flame-sealed glass ampoule, if possible, to minimize the evaporation loss. See also reference [4]*.

*Notes and references are on pages 5 and 6.

PROPERTIES OF SRM 4288A
(Certified values are shown in bold type)

Source identification number	NIST SRM 4288A		
Physical Properties:			
Source description	Liquid in flame-sealed NIST borosilicate-glass ampoule		
Ampoule specifications	Body outside diameter Wall Thickness Barium content Lead-oxide content Other heavy elements	(16.5 ± 0.5) mm (0.60 ± 0.04) mm Less than 2.5% Less than 0.02% Trace quantities	
Solution density	**(0.998 ± 0.002) g•mL^{-1} at 21 °C [b]***		
Solution mass	**(4.998 ± 0.002) g [b]**		
Chemical Properties:			
Solution composition	Chemical Formula	Concentration (mol•L^{-1})	Mass Fraction (g•g^{-1})
	H_2O	55	1.00
	KOH	0.001	0.00006
	$K^{99}TeO_4$	0.0005	0.0001
Radiological Properties:			
Radionuclide	**Technetium-99**		
Reference time	**1200 EST, 1 September 1996**		
Massic activity of the solution [c]	**32.61 kBq•g^{-1}**		
Relative expanded uncertainty (k=2)	**1.14% [d] [e]**		
Photon-emitting impurities	None detected [f]		
Half lives used in the decay corrections	Cobalt-60: (5.2714 ± 0.0005) a [g] Technetium-99: (2.111 ± 0.012) × 10^5 a [g]		
Measuring instrument	NIST 4πβ(LS)-γ-anticoincidence counting system using cobalt-60 as the efficiency-tracing radionuclide. The efficiency was varied electronically from 50 to 93 percent.		

*Notes and references are on pages 5 and 6.

EVALUATION OF THE UNCERTAINTY OF THE MASSIC ACTIVITY [d]*

Input Quantity x_i, the source of uncertainty (and individual uncertainty components where appropriate)	Method Used To Evaluate $u(x_i)$, the standard uncertainty of x_i (A) denotes evaluation by statistical methods (B) denotes evaluation by other methods	Relative Uncertainty Of Input Quantity, $u(x_i)/x_i$, (%) [h]	Relative Sensitivity Factor, $\lvert\partial y/\partial x_i\rvert \cdot (x_i/y)$ [i]	Relative Uncertainty Of Output Quantity, $u_i(y)/y$, (%) [j]
Extrapolated massic liquid-scintillation count rate of the Tc-99 solution, corrected for background, cobalt-60 tracer count rate, and decay.	Standard deviation of the mean for 4 sets of repeated measurements on each of 3 samples (A)	0.10	1.0	0.10
Decay corrections for cobalt-60 for technetium-99	Standard uncertainty of the half life (A) Standard uncertainty of the half life (A)	[k] 0.01 0.6	[m] 0.01 0.000005	0.0001 0.000003
Decay scheme data	Standard uncertainty of the probability of decay by beta-particle emission (A)	0.01	1.0	0.01
Extrapolation of the beta-particle-count-rate versus anticoincidence-gamma-ray-count-rate to zero anticoincidence-gamma-ray-count-rate	Estimated (B)	0.40	1.0	0.40
Calibration of the cobalt-60 tracer solution using the $4\pi\beta(LS)$-γ-anticoincidence counting system	Standard uncertainty of the extrapolated massic count rate (B)	0.25	1.0	0.25
Gravimetric measurements	Estimated (B)	0.20	1.0	0.20
Live-time measurements [n]	Estimated (B)	0.10	1.0	0.10
Variability between ampoules	Estimated (B)	0.20	1.0	0.20
Photon-emitting impurities	Limit of detection (B) [p]	100.	0.00004	0.004
Relative Combined Standard Uncertainty of the Output Quantity, $u_c(y)/y$, (%)				0.57
Coverage Factor, k				x 2
Relative Expanded Uncertainty of the Output Quantity, U/y, (%)				1.14

*Notes and references are on pages 5 and 6.

NOTES

[a] The Sievert is the SI unit for dose equivalent. See reference [1]. One μSv is equal to 0.1 mrem.

Distance from Ampoule (cm):	1	30	100
Approximate Dose Rate (μSv/h):	<0.1 (Not detectable)		

[b] The stated uncertainty is two times the standard uncertainty.

[c] Massic activity is the preferred name for the quantity activity divided by the total mass of the sample. See reference [1].

[d] The reported value, y, of massic activity (activity per unit mass) at the reference time was not measured directly but was derived from measurements and calculations of other quantities. This can be expressed as $y = f(x_1, x_2, x_3, \ldots x_n)$, where f is a mathematical function derived from the assumed model of the measurement process.

The value, x_i, used for each input quantity i has a standard uncertainty, $u(x_i)$, that generates a corresponding uncertainty in y, $u_i(y) = |\partial y/\partial x_i| \cdot u(x_i)$, called a component of combined standard uncertainty of y.

The combined standard uncertainty of y, $u_c(y)$, is the positive square root of the sum of the squares of the components of combined standard uncertainty.

The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ to obtain U, the expanded uncertainty of y.

Since it can be assumed that the possible estimated values of the massic activity are approximately normally distributed with approximate standard deviation $u_c(y)$, the unknown value of the massic activity is believed to lie in the interval $y \pm U$ with a level of confidence of approximately 95 percent.

For further information on the expression of uncertainties, see references [2] and [3].

[e] The value of each standard uncertainty component, and hence the value of the expanded uncertainty itself, is a best estimate based upon all available information, but is only approximately known. That is to say, the "uncertainty of the uncertainty" is large and not well known. This is true for uncertainties evaluated by statistical methods (e.g., the relative standard deviation of the standard deviation of the mean for the liquid-scintillation counting is approximately 50%) and for uncertainties evaluated by other methods (which could easily be over estimated or under estimated by substantial amounts). The unknown value of the expanded uncertainty is believed to lie in the interval $U/2$ to $2U$ (i.e., within a factor of 2 of the estimated value).

[f] Estimated limits of detection for photon-emitting impurities are:
2×10^{-4} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 20 and 85 keV,
2×10^{-5} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 93 and 503 keV,
1×10^{-5} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 519 and 1457 keV, and
5×10^{-6} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 1465 and 3250 keV.

[g] The stated uncertainty is the standard uncertainty. See reference [5].

[h] Relative standard uncertainty of the input quantity x_i.

[i] The relative change in the output quantity y divided by the relative change in the input quantity x_i. If $|\partial y/\partial x_i| \cdot (x_i/y) = 1.0$, then a 1% change in x_i results in a 1% change in y. If $|\partial y/\partial x_i| \cdot (x_i/y) = 0.05$, then a 1% change in x_i results in a 0.05% change in y.

[j] Relative component of combined standard uncertainty of output quantity y, rounded to two significant figures or less. The relative component of combined standard uncertainty of y is given by $u_i(y)/y = |\partial y/\partial x_i| \cdot u(x_i)/y = |\partial y/\partial x_i| \cdot (x_i/y) \cdot u(x_i)/x_i$. The numerical values of $u(x_i)/x_i$, $|\partial y/\partial x_i| \cdot (x_i/y)$, and $u_i(y)/y$, all dimensionless quantities, are listed in columns 3, 4, and 5, respectively. Thus, the value in column 5 is equal to the value in column 4 multiplied by the value in column 3. The input quantities are independent, or very nearly so. Hence the covariances are zero or negligible.

[k] The relative standard uncertainty of $\lambda \cdot t$ is determined by the relative standard uncertainty of λ (i.e., of the half life). The relative standard uncertainty of t is negligible.

[m] $|\partial y/\partial x_i| \cdot (x_i/y) = |\lambda \cdot t|$, multiplied by other sensitivity factors where appropriate.

[n] The live time is determined by counting the pulses from a gated crystal-controlled oscillator.

[p] The standard uncertainty for each undetected impurity that might reasonably be expected to be present is estimated to be equal to the estimated limit of detection for that impurity, i.e. $u(x_i)/x_i$ = 100%. $|\partial y/\partial x_i| \cdot (x_i/y)$ = {(response per Bq of impurity)/(response per Bq of Tc-99)} • {(Bq of impurity)/(Bq of Tc-99)}. Thus $u_i(y)/y$ is the relative change in y if the impurity were present with a massic activity equal to the estimated limit of detection.

REFERENCES

[1] International Organization for Standardization (ISO), *ISO Standards Handbook - Quantities and Units*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900.

[2] International Organization for Standardization (ISO), *Guide to the Expression of Uncertainty in Measurement*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900. (Listed under ISO miscellaneous publications as "ISO Guide to the Expression 1993".)

[3] B. N. Taylor and C. E. Kuyatt, *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*, NIST Technical Note 1297, 1994. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, U.S.A.

[4] National Council on Radiation Protection and Measurements Report No. 58, *A Handbook of Radioactivity Measurements Procedures*, Second Edition, 1985. Available from the National Council on Radiation Protection and Measurements, 7910 Woodmont Avenue, Bethesda, MD 20814 U.S.A.

[5] Evaluated Nuclear Structure Data File (ENSDF), September 1996.

Reagent

Tc-99_00003

NIST TRACEABLE CERTIFICATE
BETA STANDARD SOLUTION

Radionuclide:	Tc-99	**Customer:**	SEVERN TRENT LABORATORIES
Half-life:	(2.13 ± 0.05)E+05 years	**P.O. No.:**	NJ14830
Catalog No.:	7099	**Reference Date:**	1-Jan-00 12:00 PST
Source No.:	681-78-1	**Contained Radioactivity:**	1.009 µCi, 37.33 kBq

Physical description:

A. Mass of solution:	5.00077 g in 5 mL flame-sealed ampoule
B. Chemical form:	NH_4TcO_4 in H_2O
C. Carrier content:	None
D. Density:	0.9982 g/mL @ 20°C

Radioimpurities: None detected

Radionuclide concentration: 0.2018 µCi/g, 7.467 kBq/g

Method of Calibration:
This source was prepared from a weighed aliquot of solution whose activity in µCi/g was determined using a liquid scintillation counter.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 1.3 %
B. Type B (systematic) uncertainty:	± 1.5 %
C. Uncertainty in aliquot weighing:	± 0.0 %
D. Total uncertainty at the 99% confidence level:	± 2.0 %

Notes:

- See reverse side for leak tests performed on this source.
- IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.

Daniel James Van Dalsem
Quality Control

10-Dec-99
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 N. KEYSTONE STREET
BURBANK, CALIFORNIA 91504
818·843·7000 FAX 818·843·6168

IPL Reference Number: 681-78

Reagent

Tc-99_00004

National Institute of Standards & Technology

Certificate

Standard Reference Material 4288A
Technetium-99 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive technetium-99, as potassium pertechnetate, and potassium hydroxide dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of beta-particle counting instruments and for the monitoring of radiochemical procedures.

Radiological Hazard

The SRM ampoule contains technetium-99 with a total activity of approximately 160 kBq. Technetium-99 decays by beta-particle emission. None of the beta particles escape from the SRM ampoule. During the decay process no photons are emitted. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]*. There is no detectable external radiation. The SRM should be used only by persons qualified to handle radioactive material.

Chemical Hazard

The SRM ampoule contains potassium hydroxide (KOH) with a concentration of 0.001 moles per liter of water. The solution is mildly corrosive and could represent a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2.

Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least September 2006.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) because of the radioactivity.

Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899
October 1996

Thomas E. Gills, Chief
Standard Reference Materials Program

*Notes and references are on pages 5 and 6.

Recommended Procedure for Opening the SRM Ampoule

1) If the SRM solution is to be diluted, it is recommended that the diluting solution have a composition comparable to that of the SRM solution.

2) Wear eye protection, gloves, and protective clothing and work over a tray with absorbent paper in it.

3) Shake the ampoule to wet all of the inside surface of the ampoule. Return the ampoule to the upright position.

4) Check that all of the liquid has drained out of the neck of the ampoule. If necessary, gently tap the neck to speed the process.

5) Holding the ampoule upright, score the narrowest part of the neck with a scribe or diamond pencil.

6) Lightly wet the scored line. This reduces the crack propagation velocity and makes for a cleaner break.

7) Hold the ampoule upright with a paper towel, a wiper, or a support jig. Position the scored line away from you. Using a paper towel or wiper to avoid contamination, snap off the top of the ampoule by pressing the narrowest part of the neck away from you while pulling the tip of the ampoule towards you.

8) Transfer the solution from the ampoule using a pycnometer or a pipet with dispenser handle. NEVER PIPETTE BY MOUTH.

9) Seal any unused SRM solution in a flame-sealed glass ampoule, if possible, to minimize the evaporation loss. See also reference [4]*.

*Notes and references are on pages 5 and 6.

PROPERTIES OF SRM 4288A
(Certified values are shown in bold type)

Source identification number	NIST SRM 4288A		
Physical Properties:			
Source description	Liquid in flame-sealed NIST borosilicate-glass ampoule		
Ampoule specifications	Body outside diameter Wall Thickness Barium content Lead-oxide content Other heavy elements	(16.5 ± 0.5) mm (0.60 ± 0.04) mm Less than 2.5% Less than 0.02% Trace quantities	
Solution density	(0.998 ± 0.002) $g \cdot mL^{-1}$ at 21 °C [b]*		
Solution mass	(4.998 ± 0.002) g [b]		
Chemical Properties:			
Solution composition	Chemical Formula	Concentration ($mol \cdot L^{-1}$)	Mass Fraction ($g \cdot g^{-1}$)
	H_2O KOH $K^{99}TcO_4$	55 0.001 0.0005	1.00 0.00006 0.0001
Radiological Properties:			
Radionuclide	Technetium-99		
Reference time	1200 EST, 1 September 1996		
Massic activity of the solution [c]	32.61 $kBq \cdot g^{-1}$		
Relative expanded uncertainty (k=2)	1.14% [d] [e]		
Photon-emitting impurities	None detected [f]		
Half lives used in the decay corrections	Cobalt-60: (5.2714 ± 0.0005) a [g] Technetium-99: (2.111 ± 0.012) × 10^5 a [g]		
Measuring instrument	NIST 4πß(LS)-γ-anticoincidence counting system using cobalt-60 as the efficiency-tracing radionuclide. The efficiency was varied electronically from 50 to 93 percent.		

*Notes and references are on pages 5 and 6.

EVALUATION OF THE UNCERTAINTY OF THE MASSIC ACTIVITY [d]*

Input Quantity x_i, the source of uncertainty (and individual uncertainty components where appropriate)	Method Used To Evaluate $u(x_i)$, the standard uncertainty of x_i (A) denotes evaluation by statistical methods (B) denotes evaluation by other methods	Relative Uncertainty Of Input Quantity, $u(x_i)/x_i$, (%) [h]	Relative Sensitivity Factor, $\lvert\partial y/\partial x_i\rvert \cdot (x_i/y)$ [i]	Relative Uncertainty Of Output Quantity, $u_i(y)/y$, (%) [j]
Extrapolated massic liquid-scintillation count rate of the Tc-99 solution, corrected for background, cobalt-60 tracer count rate, and decay.	Standard deviation of the mean for 4 sets of repeated measurements on each of 3 samples (A)	0.10	1.0	0.10
Decay corrections		[k]	[m]	
for cobalt-60	Standard uncertainty of the half life (A)	0.01	0.01	0.0001
for technetium-99	Standard uncertainty of the half life (A)	0.6	0.000005	0.000003
Decay scheme data	Standard uncertainty of the probability of decay by beta-particle emission (A)	0.01	1.0	0.01
Extrapolation of the beta-particle-count-rate versus anticoincidence-gamma-ray-count-rate to zero anticoincidence-gamma-ray-count-rate	Estimated (B)	0.40	1.0	0.40
Calibration of the cobalt-60 tracer solution using the $4\pi\beta(LS)$-γ-anticoincidence counting system	Standard uncertainty of the extrapolated massic count rate (B)	0.25	1.0	0.25
Gravimetric measurements	Estimated (B)	0.20	1.0	0.20
Live-time measurements [n]	Estimated (B)	0.10	1.0	0.10
Variability between ampoules	Estimated (B)	0.20	1.0	0.20
Photon-emitting impurities	Limit of detection (B) [p]	100.	0.00004	0.004
Relative Combined Standard Uncertainty of the Output Quantity, $u_c(y)/y$, (%)				0.57
Coverage Factor, k				x 2
Relative Expanded Uncertainty of the Output Quantity, U/y, (%)				1.14

*Notes and references are on pages 5 and 6.

NOTES

[a] The Sievert is the SI unit for dose equivalent. See reference [1]. One μSv is equal to 0.1 mrem.

Distance from Ampoule (cm):	1	30	100
Approximate Dose Rate (μSv/h):	<0.1 (Not detectable)		

[b] The stated uncertainty is two times the standard uncertainty.

[c] Massic activity is the preferred name for the quantity activity divided by the total mass of the sample. See reference [1].

[d] The reported value, y, of massic activity (activity per unit mass) at the reference time was not measured directly but was derived from measurements and calculations of other quantities. This can be expressed as $y = f(x_1, x_2, x_3, \ldots x_n)$, where f is a mathematical function derived from the assumed model of the measurement process.

The value, x_i, used for each input quantity i has a standard uncertainty, $u(x_i)$, that generates a corresponding uncertainty in y, $u_i(y) = |\partial y/\partial x_i| * u(x_i)$, called a component of combined standard uncertainty of y.

The combined standard uncertainty of y, $u_c(y)$, is the positive square root of the sum of the squares of the components of combined standard uncertainty.

The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ to obtain U, the expanded uncertainty of y.

Since it can be assumed that the possible estimated values of the massic activity are approximately normally distributed with approximate standard deviation $u_c(y)$, the unknown value of the massic activity is believed to lie in the interval $y \pm U$ with a level of confidence of approximately 95 percent.

For further information on the expression of uncertainties, see references [2] and [3].

[e] The value of each standard uncertainty component, and hence the value of the expanded uncertainty itself, is a best estimate based upon all available information, but is only approximately known. That is to say, the "uncertainty of the uncertainty" is large and not well known. This is true for uncertainties evaluated by statistical methods (e.g., the relative standard deviation of the standard deviation of the mean for the liquid-scintillation counting is approximately 50%) and for uncertainties evaluated by other methods (which could easily be over estimated or under estimated by substantial amounts). The unknown value of the expanded uncertainty is believed to lie in the interval $U/2$ to $2U$ (i.e., within a factor of 2 of the estimated value).

[f] Estimated limits of detection for photon-emitting impurities are:
2×10^{-4} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 20 and 85 keV,
2×10^{-5} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 93 and 503 keV,
1×10^{-5} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 519 and 1457 keV, and
5×10^{-6} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 1465 and 3250 keV.

[g] The stated uncertainty is the standard uncertainty. See reference [5].

[h] Relative standard uncertainty of the input quantity x_i.

[i] The relative change in the output quantity y divided by the relative change in the input quantity x_i. If $|\partial y/\partial x_i| \cdot (x_i/y) = 1.0$, then a 1% change in x_i results in a 1% change in y. If $|\partial y/\partial x_i| \cdot (x_i/y) = 0.05$, then a 1% change in x_i results in a 0.05% change in y.

[j] Relative component of combined standard uncertainty of output quantity y, rounded to two significant figures or less. The relative component of combined standard uncertainty of y is given by $u_i(y)/y = |\partial y/\partial x_i| \cdot u(x_i)/y = |\partial y/\partial x_i| \cdot (x_i/y) * u(x_i)/x_i$. The numerical values of $u(x_i)/x_i$, $|\partial y/\partial x_i| \cdot (x_i/y)$, and $u_i(y)/y$, all dimensionless quantities, are listed in columns 3, 4, and 5, respectively. Thus, the value in column 5 is equal to the value in column 4 multiplied by the value in column 3. The input quantities are independent, or very nearly so. Hence the covariances are zero or negligible.

[k] The relative standard uncertainty of $\lambda \cdot t$ is determined by the relative standard uncertainty of λ (i.e., of the half life). The relative standard uncertainty of t is negligible.

[m] $|\partial y/\partial x_i| \cdot (x_i/y) = |\lambda \cdot t|$, multiplied by other sensitivity factors where appropriate.

[n] The live time is determined by counting the pulses from a gated crystal-controlled oscillator.

[p] The standard uncertainty for each undetected impurity that might reasonably be expected to be present is estimated to be equal to the estimated limit of detection for that impurity, i.e. $u(x_i)/x_i$ = 100%. $|\partial y/\partial x_i| \cdot (x_i/y)$ = {(response per Bq of impurity)/(response per Bq of Tc-99)} * {(Bq of impurity)/(Bq of Tc-99)}. Thus $u_i(y)/y$ is the relative change in y if the impurity were present with a massic activity equal to the estimated limit of detection.

REFERENCES

[1] International Organization for Standardization (ISO), *ISO Standards Handbook - Quantities and Units*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900.

[2] International Organization for Standardization (ISO), *Guide to the Expression of Uncertainty in Measurement*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900. (Listed under ISO miscellaneous publications as "ISO Guide to the Expression 1993".)

[3] B. N. Taylor and C. E. Kuyatt, *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*, NIST Technical Note 1297, 1994. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, U.S.A.

[4] National Council on Radiation Protection and Measurements Report No. 58, *A Handbook of Radioactivity Measurements Procedures*, Second Edition, 1985. Available from the National Council on Radiation Protection and Measurements, 7910 Woodmont Avenue, Bethesda, MD 20814 U.S.A.

[5] Evaluated Nuclear Structure Data File (ENSDF), September 1996.

Reagent

Tc-99_00019

St. Louis Radiological Standard Reverification Form

Standard ID Number: Tc-99_00019
True Value = 228.82 DPM/L or g
Date Analyzed: 3/16/2016

Radionuclide: Tc-99

	Replicates	
#1	231.67	DPM/L or g
#2	231.67	DPM/L or g
#3	234.67	DPM/L or g

Mean = 232.67

1 sigma = 1.732051

1.96 sigma = 3.39482

True Value minus 5% = 217.379 (True Value - 5%)
True Value plus 5% = 240.261 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Amanda Leigh Dick 03/16/2016

SOP Reference: STL-QA-0002, Current Revision

Pink
Prot. 19
45 min

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Tc-99 Standard Verification:

Std #: 355913
Activity: 228.82dpm/mL
Reference Date: 9/1/1996

-00016

Vial #	InstaGel (mL)	Teva Column	Tc99_~~00012~~ (mL)	DI Water (mL)
1	10	2	1	4
2	10	2	1	4
3	10	2	1	4

0.25mL of 2M HNO_3 was added to vials to mimic the tracer amount added to counting standards (A, B, C).
BKG was made with 5 mL of DI water, 10 mL of InstaGel, 0.25 mL of 2M HNO3, and a conditioned teva column.
Teva column: conditioned with 5mL 0.01M HNO_3.

Prepared By: ~~Justin Price~~ MPM 3/15/16 Mark Miller 3/15/16
Date: ~~5/8/2014~~ MPM 3/15/16

~~PINK~~ MPM 3/15/16
~~Prot. 17~~ MPM 3/15/16
30mins MPM 3/15/16

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Tc - 99 _ 00016

Reagent ID: Tc-99_00016

Description:	Tc-99 Spike	Expiration Date:	05/12/2015
No. of Bottles:	1	Laboratory:	TestAmerica St. Louis
Storage Location:	RAD Actinide STDs	Prepared By:	Bernsen, Sarah C
Reagent Volume:	500.000 mL	Solvent:	2M HNO3
Creation Date:	04/30/2014	Solvent Lot:	n/a
Open Date:			
Container(s):	582609		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Tc-99	Tc-99_00015	09/01/2046	9534.11100	dpm/mL	228.81866	dpm/mL
Total Activity	Tc-99_00015	09/01/2046	9534.11100	dpm/mL	228.81866	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Tc-99_00015	Tc-99 Secondary Dilution		09/01/46				12.00000	mL

Assay Definition

Assay Description:

Assay Type: DPM (Single)
Report Name: Tc99_Protocol 19
Output Data Path: \Slsvr01\Rad\Upload\PACK_LSC_Pink
Raw Results Path: C:\Packard\Tricarb\Results\Default\Tc99_2015 Protocol 19\20160315_1535\20160315_1535.results
Assay File Name: C:\Packard\TriCarb\Assays\Tc99_2015 Protocol 19.lsa

Additional Data Files Generated with this Protocol:
19Tc99
[Auto] 19Tc99.001

Count Conditions

Nuclide: Tc99_2015
Quench Indicator: tSIE
External Std Terminator (sec): 15 sec
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: Tc99_2015
Count Time (min): 45.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract

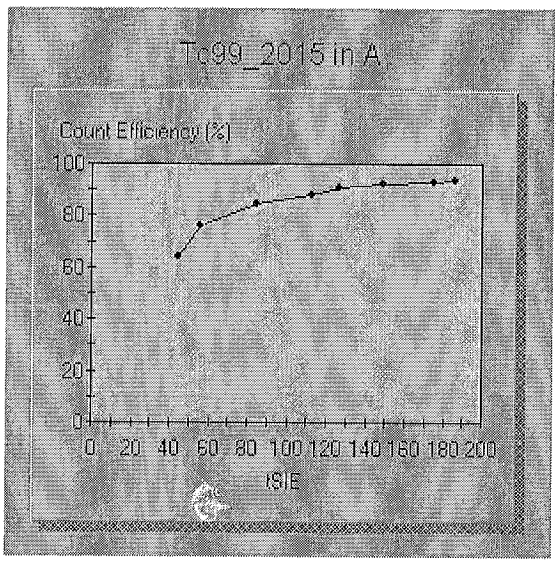
Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	292.0	1.50
B	2.0	292.0	0.00
C	292.1	450.0	0.00

Count Corrections

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Cycle 1 Results
Quench Curve Block Data

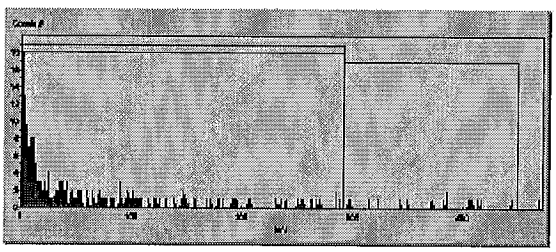


Date Acquired: 08/23/2015
Date Modified:
Tc99_2015 in A

tSIE	Count Efficiency (%)
185.95	93.82
175.23	93.08
148.66	92.15
126.06	91.00
112.84	88.16
84.69	84.43
55.45	76.30
44.33	63.88

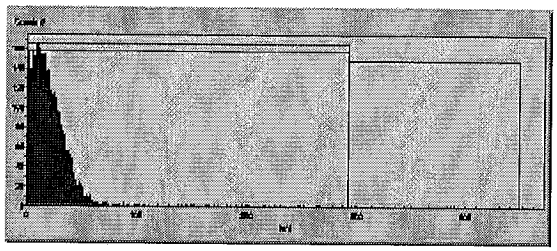
S#	SMPL ID	Count Time	CPMA	DPM1	TIME
DATE EFF tSIE LUM MESSAGES					
1	BKG	45.00	8.73e+000	9.33e+000	3:35:56 PM
3/15/2016 0.936 182.24 100					

SpectraView Block Data



2	Verification 1	45.00	2.10e+002	2.41e+002	4:26:13 PM
3/15/2016 0.872 105.43 100					

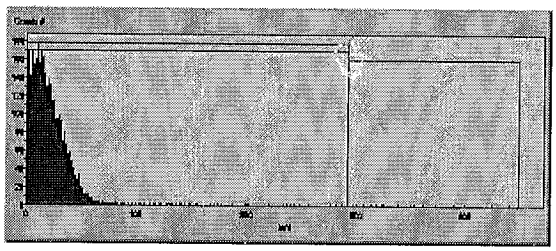
SpectraView Block Data



---

3 Verification 2 45.00 2.11e+002 2.41e+002 5:16:33 PM
3/15/2016 0.875 107.49 100

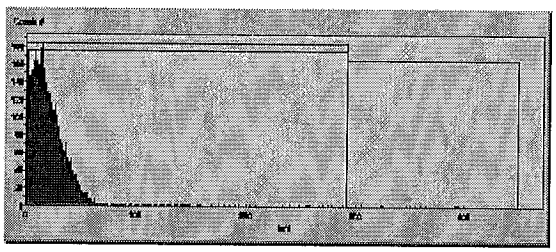
SpectraView Block Data



---

4 Verification 3 45.00 2.14e+002 2.44e+002 6:06:53 PM
3/15/2016 0.878 109.76 100

SpectraView Block Data



3/16/2016 12:01:50 AM: The network path was not found. : '\Slsvr01\Rad\Upload \PACK_LSC_Pink\19Tc99.001' redirected to 'C:\Packard\Tricarb\Results\Default\Tc99_2015 Protocol 19\20160315_1535\19Tc99.001'

Reagent

TCLP Fluid #1_00097

Acetic Acid, Glacial
AR® (ACS)

Material No.: V193-45
Batch No.: 0000130629
Manufactured Date: 2015/11/12
Expiration Date: 2017/11/11

Certificate of Analysis

Meets ACS Reagent Chemical Requirements,

Test	Specification	Result
ACS - Assay (by GC, corrected for water)	>= 99.7 %	100.0
ACS - Acetic Anhydride ($(CH_3CO)_2O$)	<= 0.01 %	0.01
ACS - Chloride (Cl)	<= 0.4 ppm	< 0.4
ACS - Color (APHA)	<= 10	5
Dilution Test	Passes Test	PT
ACS - Heavy Metals (as Pb)	<= 0.00005 %	< 0.00005
ACS - Residue after Evaporation	<= 8 ppm	2
ACS - Substances Reducing Dichromate	Passes Test	PT
ACS - Substances Reducing Permanganate	Passes Test	PT
ACS - Sulfate (SO_4)	<= 0.4 ppm	< 0.4
ACS - Titrable Base (meq/g)	<= 0.0004	0.0002
Trace Impurities - Aluminum (Al)	<= 0.300 ppm	0.002
Trace Impurities - Arsenic (As)	<= 0.050 ppm	< 0.005
Trace Impurities - Boron (B)	<= 0.200 ppm	< 0.001
Trace Impurities - Calcium (Ca)	<= 0.300 ppm	0.008
Trace Impurities - Chromium (Cr)	<= 0.200 ppm	0.002
Trace Impurities - Copper (Cu)	<= 0.100 ppm	<0.05
Trace Impurities - Gold (Au)	<= 0.300 ppm	< 0.001
Trace Impurities - Iron (Fe)	<= 0.2 ppm	< 0.1
Trace Impurities - Lead (Pb)	<= 0.300 ppm	< 0.001
Trace Impurities - Magnesium (Mg)	<= 0.300 ppm	0.001
Trace Impurities - Manganese (Mn)	<= 0.300 ppm	< 0.001
Trace Impurities - Nickel (Ni)	<= 0.100 ppm	< 0.100
Trace Impurities - Potassium (K)	<= 0.300 ppm	< 0.002

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.573.2600
Avantor ™ Performance Materials Inc.
3477 Corporate Parkway. Suite #200. Center Valley, PA 18034. U.S.A. Phone: 610.573.2600 . Fax: 610.573.2610

Material No.: V193-45
Batch No.: 0000130629

Test	Specification	Result
Trace Impurities - Sodium (Na)	<= 0.300 ppm	0.006
Trace Impurities - Tin (Sn)	<= 0.300 ppm	< 0.001
Trace Impurities - Titanium (Ti)	<= 0.300 ppm	< 0.001
Trace Impurities - Zinc (Zn)	<= 0.300 ppm	0.002

For Laboratory, Research or Manufacturing Use
Appearance (clear, colorless liquid)

Storage Conditions:	IMPORTANT: Material will freeze if stored below 17 °C (63°F).
Country of Origin:	US
Packaging Site:	Phillipsburg Mfg Ctr & DC

ISO
Phillipsburg, NJ 9001:2008, 14001:2004, FSSC 22000
Paris, KY 9001:2008
Mexico City, Mexico 9001:2008
Deventer, The Netherlands 9001:2008, 14001:2004, 13485:2003
Gliwice, Poland 9001:2008
Selangor, Malaysia 9001:2008
Dehradun, India, 9001:2008, 14001:2004, 13485:2003
Mumbai, India, 9001:2008, 17025:2005
Panoli, India 9001:2008

Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.573.2600
Avantor ™ Performance Materials Inc.
3477 Corporate Parkway. Suite #200. Center Valley, PA 18034. U.S.A. Phone: 610.573.2600 . Fax: 610.573.2610

RICCA CHEMICAL COMPANY®

Arlington, TX 76012
Pocomoke City, MD 21851
Batesville, IN 47006
http://www.riccachemical.com
1-888-GO-RICCA
customerservice@riccachemical.com

Certificate of Analysis

Sodium Hydroxide, 10.0 Normal

Lot Number: 1601863 **Product Number:** 7470

Manufacture Date: JAN 16, 2016
Expiration Date: DEC 2017

Name	CAS#	Grade
Water	7732-18-5	ACS/ASTM/USP/EP
Sodium Hydroxide	1310-73-2	Reagent

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Assay (vs. Sulfuric Acid/Phenolphthalein)	9.95-10.05 N at 20°C	10.03 N at 20°C	723
Heavy Metals (as Pb)	max 10 ppm	< 10 ppm	
Iron (Fe)	max 5 ppm	< 5 ppm	3126

Specification	Reference
Sodium hydroxide Solution (400 g/L)	ASTM (D 3590 A)
Sodium Hydroxide Solution (400 g/L)	ASTM (D 1426 B)
Sodium Hydroxide, 10 N	APHA (4500-NH3 D)
Sodium Hydroxide, 10 N	APHA (4500-CN- L)
Sodium Hydroxide Stock Solution	APHA (4500-NO3- H)
Sodium Hydroxide, 10 N	APHA (7500-Ra D)
ISA Solution (10 M NaOH)	EPA (SW-846) (9213)
Sodium Hydroxide Solution (10 N)	EPA (SW-846) (3510C)
Sodium Hydroxide Solution (10 N)	EPA (SW-846) (3520C)
Sodium Hydroxide (10 N)	EPA (SW-846) (3650B)
Sodium Hydroxide Solution (10 N)	EPA (SW-846) (3535)
Sodium Hydroxide Solution (10 Molar)	EPA (SW-846) (3542)
Sodium Hydroxide, 10 N	EPA (350.3)
Sodium Hydroxide, 10 N	EPA (351.4)
Sodium Hydroxide Stock Solution (10 N)	EPA (353.1)
Sodium Hydroxide, 10 N	EPA (110.1)

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
7470-2.5	10 L Cubitainer®	24 months
7470-4	120 mL natural poly	24 months
7470-32	1 L natural poly	24 months
7470-5HP	20 L Ropak™	24 months
7470-5	20 L Cubitainer®	24 months
7470-220	220 gal tote	24 months
7470-330	330 gal tote	24 months

7470-1	4 L natural poly	24 months
7470-1CT	4 L Cubitainer®	24 months
7470-16	500 mL natural poly	24 months
7470-50	50 gal drum	24 months
7470-55	55 gal drum	24 months

Recommended Storage: 15°C - 30°C (59°F - 86°F)

Katie Schnur
Quality Control Manager

This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

Reagent

Th-229_00016

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

97790

Th-229 5 mL Liquid in Flame Sealed Vial

430569
ID: Th-229_00016
Exp:08/06/64 Prpd:SCB Opn:08/20/14
Th-229 Ampoule

Customer: TestAmerica - St. Louis
P.O. No.: 2573570, Item 1 Product Code: 8229

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by Eckert & Ziegler Analytics. The master solution was calibrated by liquid scintillation counting. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty* , % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Th-229	2.681E+06	3.761E+03	0.5	1.5	3.1	08/06/2014

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: α-impurities: Th-228 2.83E-01 Bq, Th-230 2.33E+01 Bq, Th-232 1.51E0 Bq; γ-impurities (other than decay products)<0.1%.
5.08156 g 0.5M HNO3 solution. Carrier free.

Source Prepared by: _____
Z. Dimitrova, Radiochemist

QC Approved: _____ Date: 06 AUG 14
A. Chen, Spectroscopist

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

ANA Form005 Rev. —

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

U.S. DEPARTMENT OF COMMERCE
National Institute of Standards & Technology
Gaithersburg, MD 20899

Certificate of Participation

Eckert & Ziegler Analytics
Atlanta, Georgia

is a participant for the period January 1, 2014, through December 31, 2014, in a radioactivity measurements assurance program conducted by the National Institute of Standards and Technology, in cooperation with NRMAP Incorporated. Continued participation is evidenced by dated Reports of Traceability issued for particular radionuclides, which indicate the deviation of the participant's reported value from that measured by the National Institute of Standards and Technology. The significance of these Reports is addressed below.*

For the Director,

Michael P. Unterweger, Leader
Radioactivity Group
Physical Measurement Laboratory

*As guidance for the proper use of Reports of Traceability, it should be emphasized that the National Institute of Standards and Technology is concerned only with fostering good measurements capability and consistency with the national measurements system. The assurance of the proper application of that capability to the ultimate consumer products is the responsibility of each manufacturer of these products and of the Federal regulatory agencies.

A continuing traceability program in radioactivity demonstrates, to the degree established by the periodic assays of calibrated radioactivity samples, a continuing competence to maintain the methods and standards necessary for accurate measurement. Such a program cannot, however, endorse each and every measurement nor the final product, any more than a spot check can vouch for every unchecked item. Care should be taken, therefore, not to imply such endorsement. The proper use of this Report is governed by section 200.114 of Title 15 of the Code of Federal Regulations. These regulations may be met if Reports are quoted only in their entirety. Excerpts out of context may be misleading.

1380 Seaboard Industrial Boulevard
Atlanta, Georgia 30318 USA
Phone (404) 352-8677 • Fax (404) 352-2837
Email: analytics@ezag.com (Tax EIN: 58-1406082)

Eckert & Ziegler
Analytics

Recommended Procedure for Opening the Flame Sealed Vial

1) If the solution is to be diluted, it is recommended that the diluting solution have a composition comparable to that of the standard.

2) Wear eye protection, gloves, and protective clothing and work over a tray with absorbent paper in it. Work in a fume hood.

3) Shake the vial to wet the entire inside surface of the vial. Return the vial to the upright position.

4) Check that all of the liquid has drained out of the neck of the vial. If necessary, gently tap the neck to speed the process.

5) The Wheaton vials we use are pre-scored.

6) Lightly wet the scored line. This reduces the crack propagation velocity and makes for a cleaner break.

7) Hold the vial upright and wrap with soft tissue, such as Chem Wipes, around the tip of the vial and secure with tape (see picture). Snap off the top of the vial by pressing the pre-scored part of the neck away towards you while pulling the tip of the vial away from you.

8) Transfer the solution from the vial using a pycnometer or pipet with a dispenser handle. NEVER PIPETTE BY MOUTH.

9) Seal any unused solution in a flame sealed glass vial, if possible, to minimize the evaporation loss.

Reagent

Th-229_00021

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

St. Louis Radiological Standard Verification

Printed: 8/2/2016 10:09 AM

Standard ID Number: Th-229_00021
True Value = 67.217 Dpm/mL
Date Analyzed: 8/1/2016

Radionuclide: Th-229

	Replicates	
#1	65.43	Dpm/mL
#2	62.76	Dpm/mL
#3	66.9	Dpm/mL

Mean = 65.03

1 sigma = 2.09878536

1.96 sigma = 4.113619

True Value minus 5% = 63.85615 (True Value - 5%)
True Value plus 5% = 70.57785 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DoD/DOE Consolidated QSM and LANL Statements of Work

1st Reviewed By/Date: ALD 8/2/16

2nd Reviewed By/Date: RM 8·3·16

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Th - 229 _ 00021

Reagent ID: Th-229_00021

		Expiration Date:	12/01/2016
Description:	Th-229 Tracer	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Solvent:	0.1M HNO3
Reagent Volume:	500.000 mL	Solvent Lot:	n/a
Creation Date:	07/20/2016		
Open Date:			
Container(s):	957642		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
At-217	Th-229_00017	08/05/2016	2240.98600	dpm/mL	67.22958	dpm/mL
Th-229	Th-229_00017	08/05/2016	2240.98600	dpm/mL	67.22958	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Th-229_00017	Th-229 Parent		08/05/16				15.00000	mL

Decay Calculations

Raw Sample/Standard Information

Initial Date/Time (t_0):	8/6/2014 0:00		
Decayto Date/Time (t):	8/1/16 0:00		
Initial Activity (A_0):	67.23 dpm		
Initial Aliquot:	1 mL		
Initial Conc:	67.229 dpm/mL		
***Soln. Density:**	1 g/mL		
Nuclide:	Th-229		
Half-Life (days):	2897163	decay days	fraction
****Decay Factor:**	0.9998	726.00	0.00025
Decay Corr Activity:	6.7217E+01 dpm		
Decay Corr Conc:	6.7217E+01 dpm/mL		

Conversion/Calculations

Final Activity Unit:	dpm
Activity Unit Factor:	1.00000
Final Volume Unit:	mL
Volume Unit Factor:	1.000
Final Concentration:	6.7217E+01 dpm/mL
Aliquot Volume:	1.0000E+00 mL
Final Activity (A):	6.7217E+01 dpm

** Uses basic decay equation: $A = A_0 * \exp(-\ln(2)*(t-t_0)/(\text{half-life})$

* Soln. Density to be used when converting from liquid expressed in mass (g) units to liquid units (mL), and is only applied in that case.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:03:02AM 8/2/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1

Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Th-229_00021
AnalysisResultsID: 172960
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

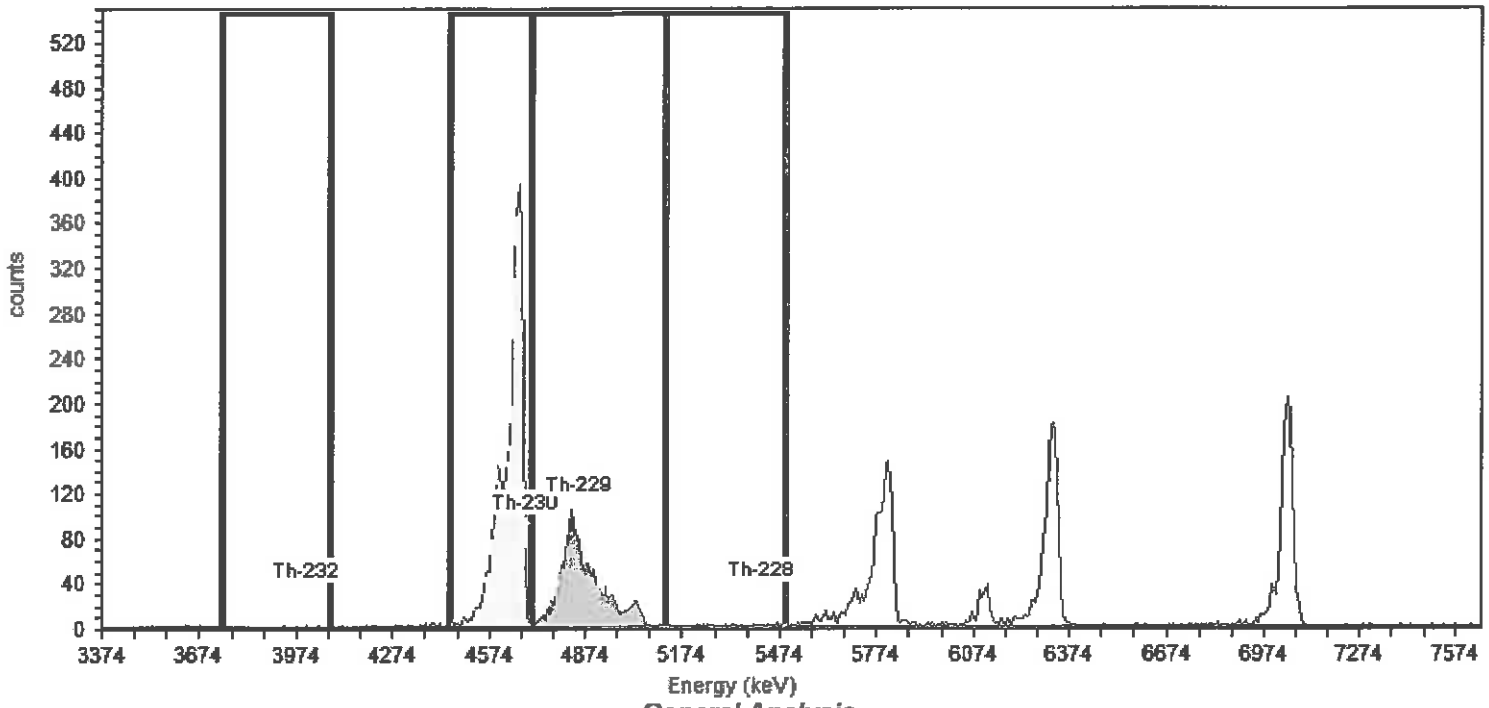
Tracer Name: Th-230_00029
Tracer Activity: 44.56 DPM / mL x (Vol.) 0.30 mL = 13.37 DPM
Tracer Ref. Date: 8/8/2013 11:19:32AM

Tracer Nuclide: Th-230
Tracer Recovery: 97.09%

Acquisition

Detector: AV170 SN: 50-112 G7
Acquisition Start Date: 8/1/2016 2:01:38PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 7/25/2016 1:14:05PM
Bkgd Info: Sample: ICB;AV170; Det: AV170; Spectrum #1; 7/25/2016 1:14:05 PM

Energy Calibration: IC-9795;AV170-20151016
Efficiency Calibration:IC-9795;AV170-20151016
Calibration Date: 10/17/2015 2:36:50PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.95% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:8/1/2016 2:00:42PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	9.9	100.2	4	0.0000	4.00	1.650E-001	DPM/mL
Th-230	4688.0	4,687.5	0.5	4448.3	4701.9	22.4	99.7	3225	1.0000	3224.00	1.298E+002	DPM/mL
Th-229	4848.0	4,845.3	2.7	4701.9	5119.5	98.2	99.6	1580	3.0000	1577.00	6.543E+001	DPM/mL
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	28.8	99.8	30	18.0000	12.00	4.973E-001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:59:33AM 8/2/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Th-229_00021
AnalysisResultsID: 172958
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

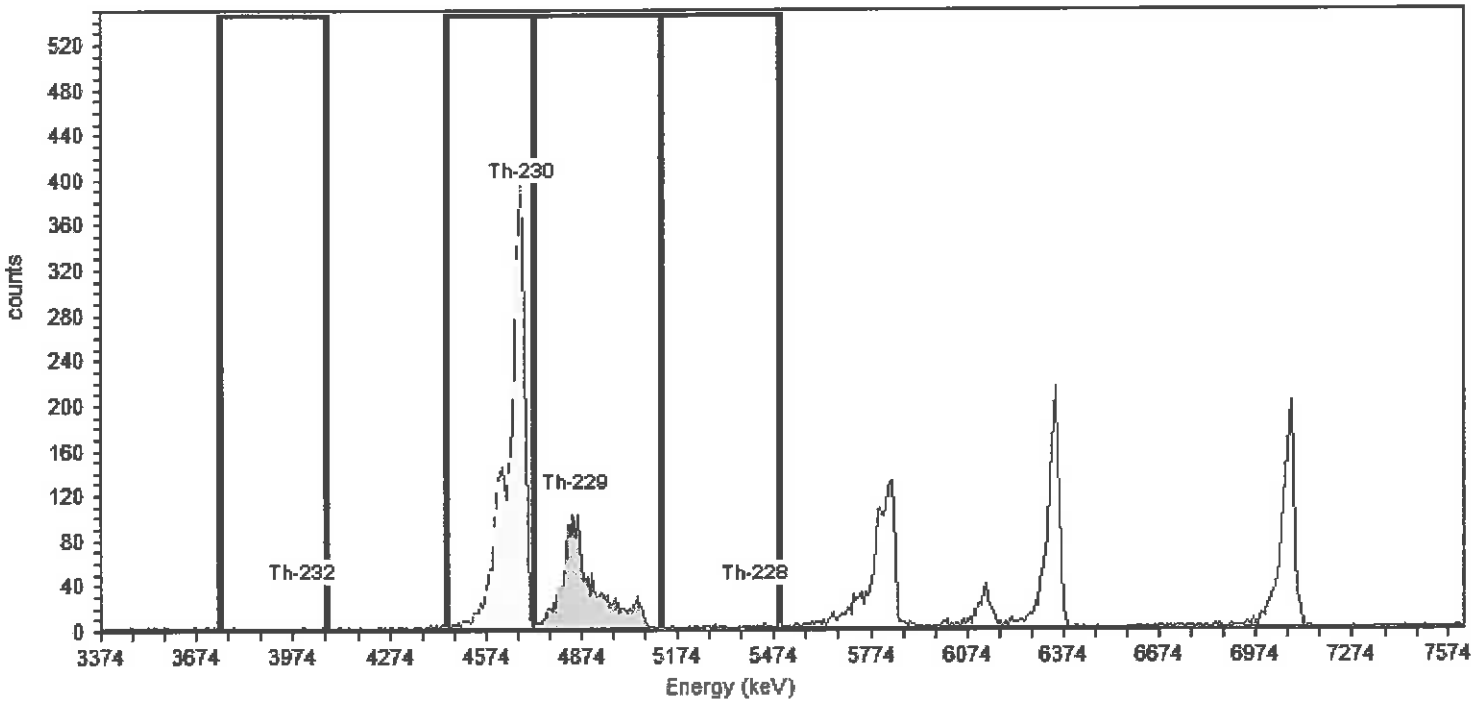
Tracer Name: Th-230_00029
Tracer Activity: 44.56 DPM / mL x (Vol.) 0.30 mL = 13.37 DPM
Tracer Ref. Date: 8/8/2013 11:19:32AM

Tracer Nuclide: Th-230
Tracer Recovery: 105.76%

Acquisition

Detector: AV171 SN: 50-112 Y2
Acquisition Start Date: 8/1/2016 2:01:38PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 7/22/2016 3:43:34PM
Bkgd Info: Sample: ICB;AV171; Det: AV171; Spectrum #1; 7/22/2016 3:43:34 PM

Energy Calibration: IC-9817;AV171-20151016
Efficiency Calibration:IC-9817;AV171-20151016
Calibration Date: 10/17/2015 2:36:53PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.59% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:8/1/2016 2:00:42PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-229	4848.0	4,845.3	2.7	4724.2	5119.5	77.3	99.6	1565	4.0000	1561.00	6.276E+001	DPM/mL
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	16.4	99.8	40	19.0866	20.65	8.294E-001	DPM/mL
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	322.3	100.2	4	2.0000	1.85	7.397E-002	DPM/mL
Th-230	4688.0	4,687.5	0.5	4448.3	4724.2	31.3	99.7	3327	0.0000	3327.00	1.414E+002	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:58:04AM 8/2/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: Th-229_00021
AnalysisResultsID: 172954
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

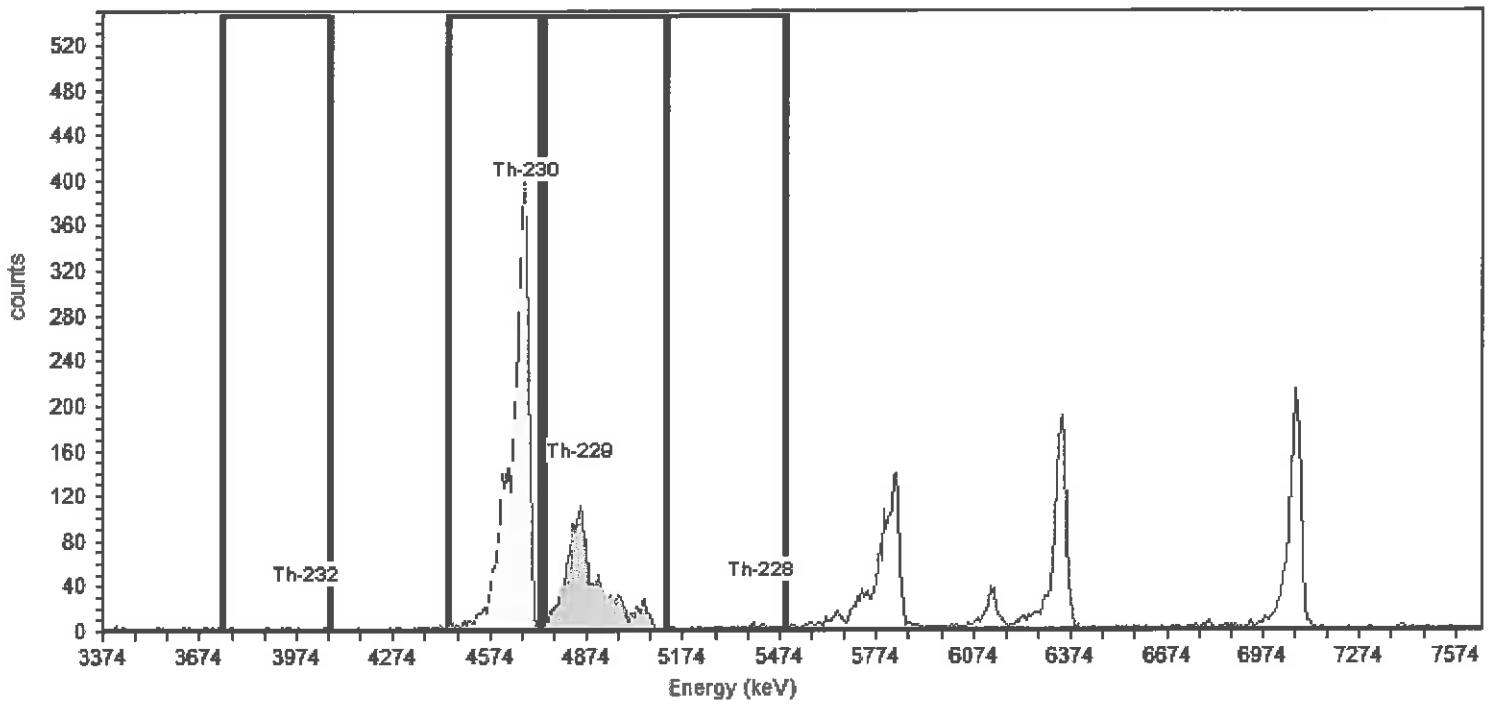
Tracer Name: Th-230_00029
Tracer Activity: 44.56 DPM / mL x (Vol.) 0.30 mL = 13.37 DPM
Tracer Ref. Date: 8/8/2013 11:19:32AM

Tracer Nuclide: Th-230
Tracer Recovery: 101.01%

Acquisition

Detector: AV173 SN: 50-112 Y4
Acquisition Start Date: 8/1/2016 2:01:39PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 7/25/2016 1:14:05PM
Bkgd Info: Sample: ICB;AV173; Det: AV173; Spectrum #1; 7/25/2016 1:14:05 PM

Energy Calibration: IC-9885;AV173-20151016a
Efficiency Calibration:IC-9885;AV173-20151016a
Calibration Date: 10/17/2015 2:37:06PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.59% +/- 0.38% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:8/1/2016 2:00:42PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	10.3	100.2	8	2.0000	5.57	2.243E-001	DPM/mL
Th-230	4688.0	4,687.5	0.5	4440.8	4731.7	47.8	99.7	3309	2.0000	3307.00	1.350E+002	DPM/mL
Th-229	4848.0	4,845.3	2.7	4739.1	5119.5	76.7	99.6	1657	3.0000	1654.00	6.690E+001	DPM/mL
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	105.5	99.8	42	12.9361	28.98	1.171E+000	DPM/mL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Th-229 Tracer (New) by Coppt.

Aliquot Only

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	Ver. 1		170	
2	2		171	
3	3		173	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : Th-230

Std Sol'n No. : Th-230-

Vol (mL) : 0.3

Ref Activity (dpm/mL) :

Act Ref Date :

Samples Spiked and Traced By: SLB 7/25/16 (Initials / Date)

Verification Signature & Date: km 7-25-16 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope : Th-229

Std Sol'n ID. : Th-229-00021

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 67.229

Act Ref Date : 08-06-14

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.		
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.		
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.		
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☐	ST-RC-0238 Rev.		
☐	ST-RC-0021 Rev.	☑	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.		
				☐	ST-RC-0241 Rev.		
				☑	ST-RC-0242 Rev.		
				☐	ST-RC-5016 Rev.		
				☐			
				☐			

Isotope(s)

αβ	☐	Iso Pu	☐	Tc-99	☐	Iso Cm	☐
Iso Am	☐	Ra	☐	Iso Th	☑	Pu-241	☐
KPA	☐	Sr	☐	Iso U	☐	Th-229	☐
Np	☐	TAR	☐	C-14	☐	Cl-36	☐

Count Time		Matrix	
Long Count	☑	Soil	☐
Short Count	☐	H_2O	☐

Prepared By : _____

Date : _____

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

Reagent

Th-230_00015

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

92523

Th-230 5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2502650, Item 2 Product Code: 8230-5FSA-4kBq

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by Eckert & Ziegler Analytics. The master solution was calibrated by liquid scintillation counting. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Th-230	2.753E+07	3.979E+03	0.1	0.9	1.8	11/29/2012

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: α-impurities 1.5915 Bq; γ-impurities (other than decay products)<0.1%.
5.07636 g 0.5M HNO3 solution. Carrier free.

Source Prepared by: MTaskaeva
M. I. Taskaeva, Radiochemist

QA Approved:
J.D. McCorvey, Counting Room Manager

Date: 27 NOV 12

51464
ID Th-230_00015
Th-230 Ampoule

RAD12-0040
Th-230 Ampoule
hursts
None
Prep/Opened: 11/28/2012
Exp(1): 11/28/2062
Exp(2): 11/28/2062

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Single Isotope Certificate Rev 3, 23 August 2012

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

Th-230_00016

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

92523

Th-230 5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2502650, Item 2 Product Code: 8230-5FSA-4kBq

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by Eckert & Ziegler Analytics. The master solution was calibrated by liquid scintillation counting. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Th-230	2.753E+07	3.979E+03	0.1	0.9	1.8	11/29/2012

*Uncertainty: U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: α-impurities 1.5915 Bq; γ-impurities (other than decay products)<0.1%.
5.07636 g 0.5M HNO3 solution. Carrier free.

Source Prepared by: M. I. Taskaeva, Radiochemist

QA Approved: J.D. McCorvey, Counting Room Manager

Date: 27 NOV 12

51464
ID Th-230_00015
Th-230 Ampoule

RAD12-0040
Th-230 Ampoule
hursts
None
Prep/Opened: 11/28/2012
Exp(1): 11/28/2062
Exp(2): 11/28/2062

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Single Isotope Certificate Rev 3, 23 August 2012

TestAmerica St. Louis

Standards Preparation Logbook Record

Nov-28-2012

Logbook: \\Qstlmo01\Stdslog\RAD_STD.std

RAD12-0040, Th-230 Ampoule Th-230_00015 # 51464 Analyst: hursts

Vendor: Analytics Lot No.: 92523
Solvent: None
Date Prep./Opened: 11-28-2012 Date Consumed: 11-28-2012
Date Expires(1): 11-28-2062 (50 Years)
Date Expires(2): 11-28-2062 (50 Years)
Cert: 92523 Activity: 3979Bq Reference Date: 11/29/12 Mass: 5.07636

Component	Initial Conc (dpm/g)	Final Conc (dpm/g)
Th-230	47,030	47,030

RAD12-0041, Th-230 Calibration Standard Th-230_00016 # 51465 Analyst: hursts

Solvent: 0.5M HNO3 Volume (ml): 100.00
Date Prep./Opened: 11-28-2012
Date Expires(1): 11-29-2062 (50 Years)
Date Expires(2): 11-29-2062 (50 Years)

Parent Std No.: RAD12-0040, Th-230 Ampoule Aliquot Amount (g): 5.0489
Parent Date Expires(1): 11-28-2062 Parent Date Expires(2): 11-28-2062

Component	Initial Conc (dpm/g)	Final Conc (dpm/mL)
Th-230	47,030	2,374.5

Reviewed By: SH

Page 1 of 1

St. Louis Radiological Standard Reverification Form

Standard ID Number: Rad12-0041
True Value = 1069.59 pCi/mL
Date Analyzed: 11/30/2012

Radionuclide: Th-230 Gross Alpha

	Replicates	
#1	1071	pCi/mL
#2	1027	pCi/mL
#3	1085	pCi/mL

Mean = 1061

1 sigma = 30.26549 1.96 sigma = 59.32036

True Value minus 5% = 1016.111 (True Value - 5%)
True Value plus 5% = 1123.07 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: JN 11/30/12

SOP Reference: STL-QA-0002, Current Revision

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gross Alpha/Beta

Batch: M122628 **Operator:** 63903

Sample ID	WRKNO / Analyte	Aliquot Cs	Cb	Mass XT	Instr ID CPMs	CountTime CPMb	Eff	Activity	Ts	Tb UncTot	Dilution UncCnt	Sigma MDA	DLC
verification 1a	NA	1.000E+000mL		0.0546 g	Purple16	11/30/12 13:03			8.00	1000.00	1.00	1.00	
	Gross Alpha	2528	175	0.00	3.160E+002	1.750E-001	0.1328	1.071E+006pCi/L		6.469E+004	2.132E+004	2.807E+003	1.167E+003
	Gross Beta	792	485	0.00	9.900E+001	4.850E-001	0.4280	1.037E+005pCi/L		6.370E+003	3.702E+003	1.212E+003	6.028E+002
verification 2a	NA	1.000E+000mL		0.0536 g	Purple17	11/30/12 13:03			8.00	1000.00	1.00	1.00	
	Gross Alpha	2364	87	0.00	2.955E+002	8.700E-002	0.1295	1.027E+006pCi/L		6.225E+004	2.113E+004	2.376E+003	8.436E+002
	Gross Beta	764	362	0.00	9.550E+001	3.620E-001	0.4353	9.846E+004pCi/L		6.084E+003	3.576E+003	1.078E+003	5.121E+002
verification 3a	NA	1.000E+000mL		0.0531 g	Purple18	11/30/12 13:04			8.00	1000.00	1.00	1.00	
	Gross Alpha	2521	62	0.00	3.151E+002	6.200E-002	0.1308	1.085E+006pCi/L		6.551E+004	2.161E+004	2.168E+003	7.052E+002
	Gross Beta	788	395	0.00	9.850E+001	3.950E-001	0.4295	1.029E+005pCi/L		6.325E+003	3.680E+003	1.125E+003	5.421E+002

Laboratory Control Sample Information

SampID	WRKNO	Analyte	Activity	StdAdded	Recovery %	LCL	UCL	ZFactor

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Sample Activity	Dup Activity	RPD	RER	DER	ZFactor

Matrix Spike Information

SampID	SampMSID	Analyte	Sample Activity	MS Activity	StdAdded	MSRecovery %	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Prep Report for Gross Alpha/Beta

Batch: M122628 **Prep Analyst:** 250

SampID	WRKNO	Aliquot	Gross	Tare	Mass	Dilution
verification 1a	NA	6.500E-001 mL	8.6982 g	8.6436 g	0.0546 g	1.00
		orange 5	protean 14		16	
verification 2a	NA	6.500E-001 mL	8.6698 g	8.6162 g	0.0536 g	1.00
		7	15		17	
verification 3a	NA	6.500E-001 mL	8.6466 g	8.5935 g	0.0531 g	1.00
		8			18	

Spike Information

Sample ID	Standard ID	Analyte	Std Conc	Aliquot	Ref Date	StdAdded
	Rad12-0041	Th-230	2374.5 dpm/mL	1.00 mL	11-29-12	

MS — Spiked By

LM per MS — Spike Verified By

11-28-12 — Spike Date

Standard Operating Procedures

SOPNumber	Title	Revision
☐		

Reviewed By — 11/30/12 Review Date

MS — Analyst/Relenquished By

11-28-12 — Release Date

Received By

11/28/12 — Receipt Date

1123433897/MS/11-28-12

Balance ID / Initials / Date

Reagent

Th-230_00019

TestAmerica St. Louis

Standards Preparation Logbook Record

Aug-13-2013

Logbook: \\Qstlmo01\Stdslog\RAD_STD.std

RAD13-0028, Th-230 Ampoule — Analyst: marrss

Vendor: Analytics — Lot No.: 92776
Solvent: None
Date Prep./Opened: 08-13-2013
Date Expires(1): 08-08-2063 (50 Years)
Date Expires(2): 08-08-2063 (50 Years)
Activity: 3.728 E+03 Bq, Ref date: 08/08/2013, Solution mass: 5.09261g, Source ID: 92776

Component	Initial Conc (dpm/g)	Final Conc (dpm/g)
Th-230	43,922	43,922

Th-230-00019
#181198

RAD13-0029, Th-230 Parent — Analyst: marrss

Solvent: ~~None~~ 1M HNO3 SUB 8/13/13 — Volume (ml): 100.00
Date Prep./Opened: 08-13-2013
Date Expires(1): 08-08-2063 (50 Years)
Date Expires(2): 08-08-2063 (50 Years)

Parent Std No.: RAD13-0028, Th-230 Ampoule — Aliquot Amount (g): 5.0731
Parent Date Expires(1): 08-08-2063 — Parent Date Expires(2): 08-08-2063

Component	Initial Conc (dpm/g)	Final Conc (dpm/mL)
Th-230	43,922	2,228.2

Reviewed By: SUB

Th-230 Parent

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Th - 230 _ 00019

Reagent ID: Th-230_00019

		Expiration Date:	08/08/2063
Description:	Th-230 Parent	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Solvent:	1M HNO3
Reagent Volume:	100.000 mL	Solvent Lot:	n/a
Creation Date:	08/13/2013		
Container(s):	181198		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Expiration Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Th-230	Th-230_00018	08/08/2063	43922.46	dpm/g	2228.23072	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Th-230_00018	Th-230 Ampoule	ASTD	08/08/63	Eckert & Ziegler	92776		5.07310	mL

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

92776

Th-230 5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica
P.O. No.: 2532686, Item 1 Product Code: 8230-5FSA-4kBq

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by Eckert & Ziegler Analytics. The master solution was calibrated by liquid scintillation counting. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
Th-230	2.753E+07	3.728E+03	0.1	0.9	1.8	08/08/2013

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: α-impurities 0.04%; γ-impurities (other than decay products)<0.1%.
5.09261 g 0.5M HNO3 solution. Carrier free.

Source Prepared by: R. Ormsby, Radiochemist

QA Approved: J.D. McCorvey, Counting Room Manager

Date: 6 AUG 13

RAD13-0029
Th-230 Parent
marrss
None
Prep/Opened: 8/13/2013
Exp(1): 8/8/2063
Exp(2): 8/8/2063

181198
ID: Th-230_00019
Exp: 08/08/63 Prpd: SH Cfl. 08/13/13
Th-230 Parent

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Single Isotope Certificate Rev 3, 23 August 2012

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

TRM-2_00001

Perry, Doug E

From: Salmi, Douglas R
Sent: March 20, 2000 10:48 AM
To: Perry, Doug E; Puissant, Pamela M
Subject: FW: SRMs for radiochemistry LCSs

Pam, Doug
FYI

-----Original Message-----
From: Minteer@aol.com [mailto:Minteer@aol.com]
Sent: March 20, 2000 10:36 AM
To: drsalmi@sandia.gov
Cc: dbourne@doeal.gov; GLDechant@aol.com; crandallb@quanterra.com
Subject: SRMs for radiochemistry LCSs

Doug:

As we discussed by telephone, please send approximately 500 grams each of PEM-1, TRM-2, and NBHD to STL St. Louis. These are to be used by STL as laboratory control samples. As with our other laboratories, STL will be asked to provide summaries of the data obtained in quarterly progress reports. This is not to assess their proficiency, but rather to help us develop interlaboratory acceptance criteria. The known values (given below) for PEM and TRM are good because the samples are well characterized. The known values for NBHD result from a single analysis and hence should be taken as estimates. All the values below are in pCi/g.

PEM-1:

Parameter	Result	Std. Dev.
Pu-238	8.03	0.37
Pu-239	41.0	3.0
Am-241	32.5	1.1
Cs-137	73.5	0.9
U-234	5.99	0.2
U-235	0.27	0.04
U-238	18.1	0.5

TRM-2

Parameter	Result	Uncertainty
U-238	6.0	+/- 4.0
U-234	6.2	+/- 4.0
Th-230	24.5	+/- 0.6
Ra-226	25.4	+/- 0.9
Pb-210	22.1	+/- 1.2

NBHD

Parameter	Result	Uncertainty
Am-241	1.47	+/- 0.28
Ra-226	67.3	+/- 5.5
U-234	174	none available
U-235	8.7	"
U-238	212	"
Cs-137	52.1	+/- 4.6
Pb-210	78.3	+/- 2.4
Pu-239/40	4.7	+/- 0.63
Pu-238	0.3	+/- 0.11
Th-230	83.4	+/- 6.5

Reagent

Tuna Can LCS_00005

St. Louis Radiological Standard Reverification Form

Standard ID Number: Tuna Can LCS_00005 (776670)
True Value = 30.08 pCi/g
Date Analyzed: 10/25/2015

Radionuclide: Gamma LCS Cs-137

	Replicates	
#1	30	pCi/g
#2	29.42	pCi/g
#3	28.95	pCi/g

Mean = 29.45667

1 sigma = 0.525959

1.96 sigma = 1.030881

True Value minus 5% = 28.576 (True Value - 5%)
True Value plus 5% = 31.584 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Jody Watson 10/29/15

SOP Reference: STL-QA-0002, Current Revision

St. Louis Radiological Standard Reverification Form

Standard ID Number: Tuna Can LCS_00005 (776670)
True Value = 97.23 pCi/g
Date Analyzed: 10/25/2015

Radionuclide: Gamma LCS Am-241

	Replicates	
#1	96.82	pCi/g
#2	97.14	pCi/g
#3	97.26	pCi/g

Mean = 97.07333

1 sigma = 0.22745

1.96 sigma = 0.445801

True Value minus 5% = 92.3685 (True Value - 5%)
True Value plus 5% = 102.0915 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Jody Watson 10/29/15

SOP Reference: STL-QA-0002, Current Revision

St. Louis Radiological Standard Reverification Form

Standard ID Number: Tuna Can LCS_00005 (776670)
True Value = 18.6 pCi/g
Date Analyzed: 10/25/2015

Radionuclide: Gamma LCS Co-60

	Replicates	
#1	17.74	pCi/g
#2	18.7	pCi/g
#3	17.74	pCi/g

Mean = 18.06

1 sigma = 0.554256

1.96 sigma = 1.086342

True Value minus 5% = 17.67 (True Value - 5%)
True Value plus 5% = 19.53 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Jody Watson 10/29/15

SOP Reference: STL-QA-0002, Current Revision

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gamma Spectroscopy

Batch: 217910 **Operator:**

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
LCS 160-217910~2-	LCS	341.90g	1.00	GammaVision	GV01	10 / 25 / 15 16:00	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	11136	6.771E-001pCi/g	2.800E-001	2.778E-001	1.003E+000	4.849E-001	0.68
AG-108M	10982	-6.779E-003pCi/g	1.235E-002	1.235E-002	2.560E-001	1.249E-001	-0.03
AG-110M	10973	8.663E-003pCi/g	1.112E-001	1.112E-001	3.788E-001	1.830E-001	0.02
AM-241	10818	9.682E+001pCi/g	5.076E+000	7.243E-001	1.019E+000	5.045E-001	95.00
BA-133	10469	1.494E-002pCi/g	8.071E-002	8.071E-002	2.729E-001	1.325E-001	0.05
BA-140	10463	1.374E-001pCi/g	2.240E-001	2.238E-001	7.542E-001	3.638E-001	0.18
BE-7	10435	0.000E+000pCi/g	3.925E-001	3.925E-001	2.266E+000	1.104E+000	0.00
BI-207	10195	-2.705E-003pCi/g	5.167E-002	5.167E-002	1.770E-001	8.502E-002	-0.02
BI-210M	10173	8.461E-002pCi/g	9.172E-002	9.158E-002	3.052E-001	1.486E-001	0.28
BI-212	10160	5.691E-002pCi/g	6.570E-001	6.570E-001	2.266E+000	1.080E+000	0.03
BI-214	10154	5.973E-001pCi/g	1.858E-001	1.832E-001	3.511E-001	1.678E-001	1.70
CD-109	9254	9.357E+000pCi/g	3.288E+000	3.246E+000	3.163E+000	1.546E+000	2.96
CD-113M	17462	-1.418E+002pCi/g	7.297E+002	7.296E+002	2.462E+003	1.198E+003	-0.06
CE-139	9241	-3.471E-002pCi/g	4.795E-002	4.783E-002	1.596E-001	7.801E-002	-0.22
CE-141	9235	1.101E-001pCi/g	6.681E-002	6.657E-002	2.193E-001	1.068E-001	0.50
CE-144	9221	-1.962E-001pCi/g	3.271E-001	3.269E-001	1.092E+000	5.343E-001	-0.18
CF-249	9215	-9.471E-002pCi/g	9.312E-002	9.299E-002	3.094E-001	1.508E-001	-0.31
CF-251	13690	9.783E-002pCi/g	2.187E-001	2.185E-001	7.329E-001	3.576E-001	0.13
CO-56	8704	-4.255E-002pCi/g	7.343E-002	7.340E-002	2.477E-001	1.193E-001	-0.17
CO-57	13694	3.299E-002pCi/g	4.336E-002	4.333E-002	1.444E-001	7.069E-002	0.23
CO-58	8698	-4.234E-003pCi/g	6.516E-002	6.516E-002	2.232E-001	1.072E-001	-0.02
CO-60	8692	1.774E+001pCi/g	9.138E-001	2.049E-001	6.716E-002	2.728E-002	264.12
CR-51	8604	3.076E-001pCi/g	4.401E-001	4.398E-001	1.475E+000	7.149E-001	0.21
CS-134	8553	2.831E-002pCi/g	5.517E-002	5.515E-002	1.867E-001	8.973E-002	0.15
CS-136	8546	-1.109E-001pCi/g	7.217E-002	7.189E-002	2.373E-001	1.142E-001	-0.47
CS-137	8539	3.000E+001pCi/g	1.596E+000	3.338E-001	2.346E-001	1.129E-001	127.87
EU-152	7145	2.877E-001pCi/g	2.421E-001	2.417E-001	6.269E-001	3.045E-001	0.46
EU-154	7138	1.536E-001pCi/g	1.711E-001	1.709E-001	2.192E+000	1.058E+000	0.07
EU-155	7131	4.023E-002pCi/g	1.795E-001	1.795E-001	6.019E-001	2.949E-001	0.07
FE-59	7073	5.086E-002pCi/g	8.161E-002	8.157E-002	4.958E-001	2.382E-001	0.10
GA-68	18005	-1.209E+000pCi/g	2.759E+000	2.758E+000	9.368E+000	4.493E+000	-0.13
GD-153	6824	-3.997E-003pCi/g	1.316E-001	1.316E-001	4.420E-001	2.167E-001	-0.01
HF-181	6495	9.445E-002pCi/g	6.542E-002	6.524E-002	2.322E-001	1.124E-001	0.41
HG-203	6466	-3.305E-002pCi/g	5.989E-002	5.986E-002	2.006E-001	9.778E-002	-0.16
I-131	6380	6.854E-002pCi/g	6.647E-002	6.638E-002	2.080E-001	1.010E-001	0.33
IR-192	6303	-3.750E-002pCi/g	5.981E-002	5.977E-002	2.001E-001	9.748E-002	-0.19
K-40	6148	-1.766E-002pCi/g	3.281E-001	3.281E-001	1.273E+000	5.734E-001	-0.01
LA-140	6096	5.379E-002pCi/g	4.255E-002	4.246E-002	1.212E-001	5.304E-002	0.44
MN-54	5382	3.726E-002pCi/g	6.608E-002	6.605E-002	2.235E-001	1.073E-001	0.17
NA-22	5201	2.193E-002pCi/g	3.156E-002	3.154E-002	1.109E-001	4.933E-002	0.20
NB-94	5160	-7.036E-002pCi/g	5.947E-002	5.936E-002	1.977E-001	9.485E-002	-0.36
NB-95	5154	3.994E-002pCi/g	5.496E-002	5.493E-002	1.856E-001	8.861E-002	0.22
ND-147	5083	-4.022E-002pCi/g	4.368E-001	4.368E-001	1.486E+000	7.183E-001	-0.03
NP-237	4757	-4.170E-001pCi/g	3.829E-001	3.821E-001	1.266E+000	6.228E-001	-0.33
NP-239	4751	-3.998E-004pCi/g	1.579E-001	1.579E-001	5.314E-001	2.601E-001	0.00
PA-231	4541	1.362E+000pCi/g	8.851E-001	8.820E-001	4.992E+000	2.420E+000	0.27
PA-233	4535	1.538E-001pCi/g	1.053E-001	1.050E-001	4.596E-001	2.236E-001	0.33
PA-234	4528	-1.000E-001pCi/g	2.035E-001	2.034E-001	6.804E-001	3.330E-001	-0.15
PA-234M	19453	-4.676E-001pCi/g	9.603E+000	9.603E+000	3.283E+001	1.580E+001	-0.01
PB-210	4467	8.549E+002pCi/g	5.089E+001	8.359E+000	1.428E+001	7.079E+000	59.88

PB-212	4454	**3.866E-001**pCi/g	1.254E-001	1.229E-001	3.210E-001	1.563E-001	1.20
PB-214	4448	**3.785E-001**pCi/g	1.361E-001	1.347E-001	4.828E-001	2.350E-001	0.78
PM-144	19585	**4.119E-002**pCi/g	3.554E-002	3.548E-002	1.884E-001	9.023E-002	0.22
PM-146	2464	**3.014E-002**pCi/g	1.161E-001	1.161E-001	5.435E-001	2.596E-001	0.06
RH-106	1882	**-2.180E-001**pCi/g	1.994E-001	1.991E-001	2.012E+000	9.694E-001	-0.11
RU-103	1828	**0.000E+000**pCi/g	5.216E-002	5.216E-002	2.468E-001	1.200E-001	0.00
SB-124	1784	**4.494E-003**pCi/g	5.524E-002	5.524E-002	1.889E-001	9.084E-002	0.02
SB-125	1777	**2.356E-001**pCi/g	2.342E-001	2.338E-001	7.180E-001	3.497E-001	0.33
SC-46	1739	**9.344E-002**pCi/g	5.627E-002	5.606E-002	2.546E-001	1.226E-001	0.37
SN-113	1570	**-5.143E-002**pCi/g	9.312E-002	9.309E-002	3.121E-001	1.520E-001	-0.16
SN-126	17459	**5.835E-002**pCi/g	5.783E-001	5.783E-001	1.938E+000	9.517E-001	0.03
TA-182	1301	**1.840E-003**pCi/g	2.175E-001	2.175E-001	7.482E-001	3.582E-001	0.00
TC-99M	17412	**2.645E-002**pCi/g	4.239E-002	4.236E-002	1.415E-001	6.920E-002	0.19
TH-227	1058	**2.617E+000**pCi/g	1.856E+000	1.850E+000	6.105E+000	3.024E+000	0.43
TH-229	1046	**9.577E-002**pCi/g	1.073E-001	1.070E-001	3.470E+000	1.699E+000	0.03
TH-234	1027	**7.930E-002**pCi/g	7.788E-002	7.777E-002	5.067E+000	2.489E+000	0.02
TL-208	929	**1.848E-001**pCi/g	8.785E-002	8.733E-002	2.310E-001	1.114E-001	0.80
U-235	281	**8.439E-002**pCi/g	1.008E-001	1.007E-001	9.972E-001	4.863E-001	0.08
Y-88	74	**-2.520E-002**pCi/g	8.904E-002	8.903E-002	3.017E-001	1.458E-001	-0.08
ZN-65	31	**-9.888E-002**pCi/g	1.701E-001	1.700E-001	5.742E-001	2.762E-001	-0.17
ZR-95	7	**8.948E-002**pCi/g	8.129E-002	8.116E-002	3.492E-001	1.669E-001	0.26

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity		StdAdded	Recovery	ZFactor
LCS 160-217910~2-A	LCS 160-217910~2-A	CS-137	3.000E+001	pCi/g	3.008E+001	99.72%	-0.0379
		CO-60	1.774E+001	pCi/g	1.860E+001	95.37%	-0.6506
		AM-241	9.682E+001	pCi/g	9.723E+001	99.58%	-0.0565

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Samp Activity	Dup Activity	RPD	RER	DER	Flag	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor
MB 160-217910~1-A	MB	AC-228	4.303E-002	4.671E-002	0.9214
MB 160-217910~1-A	MB	AG-108M	5.251E-003	5.684E-003	0.9238
MB 160-217910~1-A	MB	AG-110M	-1.714E-002	2.621E-002	-0.6542
MB 160-217910~1-A	MB	AM-241	-1.074E-002	2.656E-002	-0.4043
MB 160-217910~1-A	MB	BA-133	8.629E-003	1.742E-002	0.4954
MB 160-217910~1-A	MB	BA-140	1.558E-002	5.153E-002	0.3023
MB 160-217910~1-A	MB	BE-7	2.157E-003	9.785E-002	0.0220
MB 160-217910~1-A	MB	BI-207	1.116E-002	1.404E-002	0.7947
MB 160-217910~1-A	MB	BI-210M	1.161E-002	2.003E-002	0.5795
MB 160-217910~1-A	MB	BI-212	-6.519E-004	1.749E-001	-0.0037
MB 160-217910~1-A	MB	BI-214	-3.620E-002	1.629E-001	-0.2222
MB 160-217910~1-A	MB	CD-109	1.434E-001	1.674E-001	0.8566
MB 160-217910~1-A	MB	CD-113M	0.000E+000	1.045E+002	0.0000
MB 160-217910~1-A	MB	CE-139	1.578E-003	8.340E-003	0.1892
MB 160-217910~1-A	MB	CE-141	1.422E-002	1.284E-002	1.1075
MB 160-217910~1-A	MB	CE-144	4.109E-002	5.187E-002	0.7922
MB 160-217910~1-A	MB	CF-249	-5.027E-003	1.126E-002	-0.4467
MB 160-217910~1-A	MB	CF-251	4.859E-003	5.226E-002	0.0930
MB 160-217910~1-A	MB	CO-56	8.053E-003	1.466E-002	0.5492
MB 160-217910~1-A	MB	CO-57	0.000E+000	3.213E-003	0.0000
MB 160-217910~1-A	MB	CO-58	0.000E+000	1.250E-002	0.0000
MB 160-217910~1-A	MB	CO-60	-1.064E-002	2.053E-002	-0.5180
MB 160-217910~1-A	MB	CR-51	1.172E-001	6.390E-002	1.8350
MB 160-217910~1-A	MB	CS-134	9.570E-003	1.221E-002	0.7837
MB 160-217910~1-A	MB	CS-136	3.486E-003	1.564E-002	0.2228
MB 160-217910~1-A	MB	CS-137	9.350E-003	1.111E-002	0.8412
MB 160-217910~1-A	MB	EU-152	2.175E-002	4.360E-002	0.4989
MB 160-217910~1-A	MB	EU-154	4.973E-002	3.892E-002	1.2779
MB 160-217910~1-A	MB	EU-155	1.249E-002	1.540E-002	0.8106
MB 160-217910~1-A	MB	FE-59	1.620E-002	2.388E-002	0.6781
MB 160-217910~1-A	MB	GA-68	0.000E+000	1.259E-001	0.0000
MB 160-217910~1-A	MB	GD-153	-7.436E-003	2.145E-002	-0.3466
MB 160-217910~1-A	MB	HF-181	3.207E-003	4.689E-003	0.6839
MB 160-217910~1-A	MB	HG-203	-1.192E-003	1.116E-002	-0.1067
MB 160-217910~1-A	MB	I-131	2.131E-002	1.517E-002	1.4047
MB 160-217910~1-A	MB	IR-192	1.091E-003	6.973E-003	0.1565
MB 160-217910~1-A	MB	K-40	-4.508E-001	8.911E+000	-0.0506
MB 160-217910~1-A	MB	LA-140	0.000E+000	5.961E-003	0.0000
MB 160-217910~1-A	MB	MN-54	-1.135E-002	1.784E-002	-0.6362
MB 160-217910~1-A	MB	NA-22	0.000E+000	4.741E-003	0.0000
MB 160-217910~1-A	MB	NB-94	2.773E-004	1.092E-002	0.0254
MB 160-217910~1-A	MB	NB-95	7.816E-004	1.302E-002	0.0600
MB 160-217910~1-A	MB	ND-147	4.997E-002	8.625E-002	0.5794
MB 160-217910~1-A	MB	NP-237	1.411E-002	3.697E-002	0.3816
MB 160-217910~1-A	MB	NP-239	1.903E-002	2.441E-002	0.7798
MB 160-217910~1-A	MB	PA-231	5.945E-002	5.603E-002	1.0610
MB 160-217910~1-A	MB	PA-233	2.561E-002	2.422E-002	1.0574
MB 160-217910~1-A	MB	PA-234	2.390E-002	2.381E-002	1.0038
MB 160-217910~1-A	MB	PA-234M	-1.176E+000	2.117E+000	-0.5557
MB 160-217910~1-A	MB	PB-210	0.000E+000	1.332E-001	0.0000
MB 160-217910~1-A	MB	PB-212	0.000E+000	1.627E-002	0.0000
MB 160-217910~1-A	MB	PB-214	5.054E-002	1.994E-002	2.5345

MB 160-217910~1-A	MB	PM-144	7.657E-003	1.530E-002	0.5006
MB 160-217910~1-A	MB	PM-146	-3.061E-002	4.827E-002	-0.6342
MB 160-217910~1-A	MB	RA-226	-8.578E-002	2.376E-001	-0.3610
MB 160-217910~1-A	MB	RH-106	-3.627E-003	1.343E-001	-0.0270
MB 160-217910~1-A	MB	RU-103	-4.735E-003	1.118E-002	-0.4237
MB 160-217910~1-A	MB	SB-124	4.616E-003	1.522E-002	0.3032
MB 160-217910~1-A	MB	SB-125	1.047E-002	2.186E-002	0.4787
MB 160-217910~1-A	MB	SC-46	0.000E+000	7.139E-003	0.0000
MB 160-217910~1-A	MB	SN-113	6.694E-003	1.727E-002	0.3875
MB 160-217910~1-A	MB	SN-126	9.094E-003	7.322E-002	0.1242
MB 160-217910~1-A	MB	TA-182	9.043E-003	1.445E-002	0.6258
MB 160-217910~1-A	MB	TC-99M	-1.255E-003	8.033E-003	-0.1562
MB 160-217910~1-A	MB	TH-227	5.670E-003	1.499E-001	0.0378
MB 160-217910~1-A	MB	TH-229	-7.369E-002	1.885E-001	-0.3910
MB 160-217910~1-A	MB	TH-234	1.446E-002	1.018E-001	0.1420
MB 160-217910~1-A	MB	TL-208	1.346E-002	1.077E-002	1.2495
MB 160-217910~1-A	MB	U-235	7.507E-002	5.910E-002	1.2704
MB 160-217910~1-A	MB	Y-88	0.000E+000	3.838E-003	0.0000
MB 160-217910~1-A	MB	ZN-65	-1.025E-002	3.666E-002	-0.2797
MB 160-217910~1-A	MB	ZR-95	3.371E-003	1.189E-002	0.2836

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gamma Spectroscopy

Batch: 218441 **Operator:**

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
LCS 160-218441~2-	LCS	341.90g	1.00	GammaVision	GV08	10 / 27 / 15 15:25	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	11136	7.359E-002pCi/g	1.183E-001	1.183E-001	1.351E+000	6.534E-001	0.05
AG-108M	10982	-1.250E-001pCi/g	9.830E-002	9.810E-002	3.249E-001	1.586E-001	-0.38
AG-110M	10973	-2.165E-001pCi/g	1.350E-001	1.346E-001	4.435E-001	2.131E-001	-0.49
AM-241	10818	9.714E+001pCi/g	5.131E+000	9.547E-001	1.461E+000	7.246E-001	66.50
BA-133	10469	-1.434E-001pCi/g	1.166E-001	1.163E-001	3.856E-001	1.880E-001	-0.37
BA-140	10463	3.008E-001pCi/g	3.866E-001	3.863E-001	8.898E-001	4.279E-001	0.34
BE-7	10435	1.764E-001pCi/g	8.364E-001	8.364E-001	2.818E+000	1.373E+000	0.06
BI-207	10195	-3.983E-002pCi/g	7.303E-002	7.300E-002	2.465E-001	1.188E-001	-0.16
BI-210M	10173	4.829E-002pCi/g	6.207E-002	6.201E-002	3.950E-001	1.928E-001	0.12
BI-212	10160	1.191E+000pCi/g	9.269E-001	9.248E-001	3.076E+000	1.467E+000	0.39
BI-214	10154	1.600E-001pCi/g	1.464E-001	1.462E-001	4.902E-001	2.351E-001	0.33
CD-109	9254	2.361E+000pCi/g	4.441E+000	4.439E+000	4.063E+000	1.992E+000	0.58
CD-113M	17462	-3.716E+001pCi/g	9.021E+002	9.021E+002	3.049E+003	1.485E+003	-0.01
CE-139	9241	3.182E-002pCi/g	5.820E-002	5.812E-002	1.942E-001	9.506E-002	0.16
CE-141	9235	4.980E-002pCi/g	8.364E-002	8.361E-002	2.795E-001	1.366E-001	0.18
CE-144	9221	2.569E-002pCi/g	4.004E-001	4.004E-001	1.345E+000	6.591E-001	0.02
CF-249	9215	5.942E-002pCi/g	1.163E-001	1.162E-001	3.177E-001	1.540E-001	0.19
CF-251	13690	3.966E-001pCi/g	2.757E-001	2.735E-001	9.033E-001	4.415E-001	0.44
CO-56	8704	8.557E-002pCi/g	8.063E-002	8.051E-002	2.695E-001	1.287E-001	0.32
CO-57	13694	3.076E-002pCi/g	5.134E-002	5.131E-002	1.712E-001	8.393E-002	0.18
CO-58	8698	1.346E-002pCi/g	8.405E-002	8.405E-002	2.875E-001	1.379E-001	0.05
CO-60	8692	1.870E+001pCi/g	1.007E+000	3.639E-001	1.870E-001	8.459E-002	100.02
CR-51	8604	-4.740E-001pCi/g	6.167E-001	6.162E-001	2.059E+000	1.002E+000	-0.23
CS-134	8553	9.391E-002pCi/g	6.368E-002	6.349E-002	1.526E-001	7.164E-002	0.62
CS-136	8546	3.304E-002pCi/g	3.799E-002	3.794E-002	3.085E-001	1.484E-001	0.11
CS-137	8539	2.942E+001pCi/g	1.582E+000	3.998E-001	3.497E-001	1.691E-001	84.15
EU-152	7145	1.912E-001pCi/g	2.554E-001	2.552E-001	8.302E-001	4.042E-001	0.23
EU-154	7138	6.956E-002pCi/g	1.146E-001	1.146E-001	2.351E+000	1.125E+000	0.03
EU-155	7131	2.888E-002pCi/g	2.199E-001	2.199E-001	7.370E-001	3.618E-001	0.04
FE-59	7073	-1.833E-001pCi/g	1.818E-001	1.815E-001	6.083E-001	2.908E-001	-0.30
GA-68	18005	4.764E+000pCi/g	2.454E+000	2.440E+000	7.914E+000	3.694E+000	0.60
GD-153	6824	7.978E-002pCi/g	1.552E-001	1.551E-001	5.177E-001	2.540E-001	0.15
HF-181	6495	2.335E-002pCi/g	1.043E-001	1.043E-001	3.518E-001	1.712E-001	0.07
HG-203	6466	6.698E-003pCi/g	6.497E-002	6.497E-002	2.197E-001	1.068E-001	0.03
I-131	6380	-1.610E-002pCi/g	8.500E-002	8.500E-002	2.866E-001	1.396E-001	-0.06
IR-192	6303	1.018E-001pCi/g	9.042E-002	9.022E-002	2.283E-001	1.111E-001	0.45
K-40	6148	1.623E-001pCi/g	3.950E-001	3.949E-001	1.502E+000	6.607E-001	0.11
LA-140	6096	6.191E-003pCi/g	4.179E-002	4.179E-002	5.946E-002	1.880E-002	0.10
MN-54	5382	1.822E-002pCi/g	9.095E-002	9.094E-002	3.102E-001	1.491E-001	0.06
NA-22	5201	1.507E-002pCi/g	4.555E-002	4.554E-002	1.637E-001	7.329E-002	0.09
NB-94	5160	6.019E-002pCi/g	3.912E-002	3.899E-002	2.572E-001	1.233E-001	0.23
NB-95	5154	2.541E-002pCi/g	7.560E-002	7.559E-002	2.579E-001	1.234E-001	0.10
ND-147	5083	4.071E-001pCi/g	4.877E-001	4.871E-001	1.636E+000	7.863E-001	0.25
NP-237	4757	0.000E+000pCi/g	4.510E-001	4.510E-001	1.509E+000	7.430E-001	0.00
NP-239	4751	-1.622E-002pCi/g	2.061E-001	2.061E-001	6.910E-001	3.393E-001	-0.02
PA-231	4541	-2.797E-001pCi/g	6.016E-001	6.014E-001	7.388E+000	3.603E+000	-0.04
PA-233	4535	1.354E-001pCi/g	2.200E-001	2.199E-001	5.917E-001	2.884E-001	0.23
PA-234	4528	2.370E-002pCi/g	7.301E-002	7.300E-002	8.496E-001	4.166E-001	0.03
PA-234M	19453	2.685E+000pCi/g	3.731E+000	3.729E+000	3.935E+001	1.884E+001	0.07
PB-210	4467	8.385E+002pCi/g	5.067E+001	1.196E+001	2.132E+001	1.059E+001	39.34

PB-212	4454	**2.569E-001**pCi/g	1.484E-001	1.475E-001	4.865E-001	2.382E-001	0.53
PB-214	4448	**-1.187E-001**pCi/g	2.062E-001	2.061E-001	4.941E-001	2.392E-001	-0.24
PM-144	19585	**-1.104E-002**pCi/g	1.584E-002	1.583E-002	2.412E-001	1.154E-001	-0.05
PM-146	2464	**1.016E-001**pCi/g	1.134E-001	1.133E-001	6.877E-001	3.278E-001	0.15
RH-106	1882	**9.849E-001**pCi/g	7.318E-001	7.301E-001	1.785E+000	8.453E-001	0.55
RU-103	1828	**-7.826E-003**pCi/g	8.182E-002	8.182E-002	2.777E-001	1.346E-001	-0.03
SB-124	1784	**1.264E-001**pCi/g	7.595E-002	7.567E-002	1.582E-001	7.445E-002	0.80
SB-125	1777	**2.237E-001**pCi/g	1.965E-001	1.962E-001	9.608E-001	4.688E-001	0.23
SC-46	1739	**6.651E-002**pCi/g	9.525E-002	9.519E-002	3.209E-001	1.541E-001	0.21
SN-113	1570	**2.166E-002**pCi/g	1.160E-001	1.160E-001	3.912E-001	1.906E-001	0.06
SN-126	17459	**-6.991E+000**pCi/g	1.044E+000	9.772E-001	3.085E+000	1.523E+000	-2.27
TA-182	1301	**2.287E-001**pCi/g	2.419E-001	2.416E-001	9.149E-001	4.354E-001	0.25
TC-99M	17412	**-3.499E-002**pCi/g	5.302E-002	5.298E-002	1.767E-001	8.659E-002	-0.20
TH-227	1058	**-3.701E+001**pCi/g	4.063E+000	3.522E+000	1.124E+001	5.589E+000	-3.29
TH-229	1046	**-1.190E+000**pCi/g	1.295E+000	1.291E+000	4.291E+000	2.104E+000	-0.28
TH-234	1027	**-5.199E+001**pCi/g	5.252E+000	4.493E+000	1.365E+001	6.775E+000	-3.81
TL-208	929	**1.496E-001**pCi/g	8.481E-002	8.445E-002	2.772E-001	1.334E-001	0.54
U-235	281	**-6.184E-002**pCi/g	1.918E+001	1.918E+001	1.442E+000	7.072E-001	-0.04
Y-88	74	**-1.169E-001**pCi/g	1.223E-001	1.221E-001	4.080E-001	1.972E-001	-0.29
ZN-65	31	**-6.060E-002**pCi/g	2.169E-001	2.169E-001	7.398E-001	3.548E-001	-0.08
ZR-95	7	**1.074E-001**pCi/g	1.365E-001	1.364E-001	4.600E-001	2.199E-001	0.23

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity		StdAdded	Recovery	ZFactor
LCS 160-218441~2-A	LCS 160-218441~2-A	CS-137	2.942E+001	pCi/g	3.008E+001	97.82%	-0.2899
		CO-60	1.870E+001	pCi/g	1.859E+001	100.64%	0.0836
		AM-241	9.714E+001	pCi/g	9.723E+001	99.92%	-0.0112

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Samp Activity	Dup Activity	RPD	RER	DER	Flag	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor
MB 160-218441~1-A	MB	AC-228	3.987E-002	4.560E-002	0.8743
MB 160-218441~1-A	MB	AG-108M	5.451E-003	8.527E-003	0.6393
MB 160-218441~1-A	MB	AG-110M	-1.473E-002	2.625E-002	-0.5612
MB 160-218441~1-A	MB	AM-241	-1.477E-002	2.928E-002	-0.5047
MB 160-218441~1-A	MB	BA-133	3.407E-003	1.959E-002	0.1740
MB 160-218441~1-A	MB	BA-140	6.525E-002	6.139E-002	1.0630
MB 160-218441~1-A	MB	BE-7	0.000E+000	6.035E-002	0.0000
MB 160-218441~1-A	MB	BI-207	8.121E-003	1.544E-002	0.5258
MB 160-218441~1-A	MB	BI-210M	1.934E-002	1.581E-002	1.2233
MB 160-218441~1-A	MB	BI-212	0.000E+000	1.856E-001	0.0000
MB 160-218441~1-A	MB	BI-214	-1.133E-002	5.880E-002	-0.1926
MB 160-218441~1-A	MB	CD-109	9.453E-002	2.288E-001	0.4132
MB 160-218441~1-A	MB	CD-113M	-1.366E+002	2.218E+002	-0.6159
MB 160-218441~1-A	MB	CE-139	-3.140E-003	9.986E-003	-0.3145
MB 160-218441~1-A	MB	CE-141	-6.169E-003	1.570E-002	-0.3929
MB 160-218441~1-A	MB	CE-144	4.904E-003	4.662E-002	0.1052
MB 160-218441~1-A	MB	CF-249	8.754E-003	1.572E-002	0.5569
MB 160-218441~1-A	MB	CF-251	-2.594E-002	5.279E-002	-0.4914
MB 160-218441~1-A	MB	CO-56	-6.736E-003	1.135E-002	-0.5936
MB 160-218441~1-A	MB	CO-57	4.406E-003	9.298E-003	0.4738
MB 160-218441~1-A	MB	CO-58	1.276E-002	1.914E-002	0.6662
MB 160-218441~1-A	MB	CO-60	-3.371E-003	2.082E-002	-0.1619
MB 160-218441~1-A	MB	CR-51	6.564E-002	1.182E-001	0.5552
MB 160-218441~1-A	MB	CS-134	-7.518E-004	1.083E-003	-0.6945
MB 160-218441~1-A	MB	CS-136	0.000E+000	5.399E-003	0.0000
MB 160-218441~1-A	MB	CS-137	1.650E-002	1.844E-002	0.8946
MB 160-218441~1-A	MB	EU-152	-8.619E-004	1.441E-003	-0.5979
MB 160-218441~1-A	MB	EU-154	1.149E-001	1.445E-001	0.7954
MB 160-218441~1-A	MB	EU-155	-2.026E-002	3.719E-002	-0.5447
MB 160-218441~1-A	MB	FE-59	9.255E-003	1.826E-002	0.5070
MB 160-218441~1-A	MB	GA-68	0.000E+000	1.430E-001	0.0000
MB 160-218441~1-A	MB	GD-153	-2.088E-002	3.165E-002	-0.6598
MB 160-218441~1-A	MB	HF-181	-1.476E-003	1.865E-003	-0.7914
MB 160-218441~1-A	MB	HG-203	1.656E-002	9.732E-003	1.7013
MB 160-218441~1-A	MB	I-131	6.142E-003	2.344E-002	0.2620
MB 160-218441~1-A	MB	IR-192	3.418E-003	1.317E-002	0.2595
MB 160-218441~1-A	MB	K-40	-6.451E-001	1.290E+001	-0.0500
MB 160-218441~1-A	MB	LA-140	2.528E-003	2.485E-002	0.1017
MB 160-218441~1-A	MB	MN-54	-2.351E-003	1.657E-002	-0.1419
MB 160-218441~1-A	MB	NA-22	0.000E+000	5.287E-003	0.0000
MB 160-218441~1-A	MB	NB-94	1.400E-003	7.442E-003	0.1881
MB 160-218441~1-A	MB	NB-95	-2.221E-003	1.672E-002	-0.1328
MB 160-218441~1-A	MB	ND-147	2.932E-002	2.819E-002	1.0401
MB 160-218441~1-A	MB	NP-237	-1.201E-002	7.433E-002	-0.1615
MB 160-218441~1-A	MB	NP-239	4.366E-002	2.736E-002	1.5962
MB 160-218441~1-A	MB	PA-231	3.079E-001	2.831E-001	1.0876
MB 160-218441~1-A	MB	PA-233	2.077E-002	3.041E-002	0.6831
MB 160-218441~1-A	MB	PA-234	5.537E-002	5.645E-002	0.9808
MB 160-218441~1-A	MB	PA-234M	-7.028E-001	1.816E+000	-0.3870
MB 160-218441~1-A	MB	PB-210	4.463E-001	4.306E-001	1.0364
MB 160-218441~1-A	MB	PB-212	4.711E-003	2.788E-002	0.1690
MB 160-218441~1-A	MB	PB-214	4.377E-002	3.189E-002	1.3727

MB 160-218441~1-A	MB	PM-144	9.554E-004	6.357E-003	0.1503
MB 160-218441~1-A	MB	PM-146	-3.544E-002	4.841E-002	-0.7319
MB 160-218441~1-A	MB	RH-106	4.655E-002	1.634E-001	0.2849
MB 160-218441~1-A	MB	RU-103	6.210E-003	1.531E-002	0.4057
MB 160-218441~1-A	MB	SB-124	-1.006E-002	1.857E-002	-0.5418
MB 160-218441~1-A	MB	SB-125	1.305E-003	4.143E-003	0.3151
MB 160-218441~1-A	MB	SC-46	-1.594E-004	1.758E-002	-0.0091
MB 160-218441~1-A	MB	SN-113	3.684E-002	1.998E-002	1.8437
MB 160-218441~1-A	MB	SN-126	2.933E-001	1.237E-001	2.3710
MB 160-218441~1-A	MB	TA-182	2.383E-002	4.528E-002	0.5262
MB 160-218441~1-A	MB	TC-99M	3.169E-003	8.389E-003	0.3778
MB 160-218441~1-A	MB	TH-227	2.179E-001	1.503E-001	1.4498
MB 160-218441~1-A	MB	TH-229	-9.602E-002	2.482E-001	-0.3868
MB 160-218441~1-A	MB	TH-234	-6.219E-001	8.472E-001	-0.7341
MB 160-218441~1-A	MB	TL-208	1.433E-002	2.289E-002	0.6260
MB 160-218441~1-A	MB	U-235	1.116E-001	8.413E-002	1.3268
MB 160-218441~1-A	MB	Y-88	0.000E+000	6.164E-003	0.0000
MB 160-218441~1-A	MB	ZN-65	0.000E+000	9.463E-003	0.0000
MB 160-218441~1-A	MB	ZR-95	-8.939E-004	1.210E-003	-0.7385

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gamma Spectroscopy

Batch: 218442 **Operator:**

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
LCS 160-218442~2-	LCS	341.90g	1.00	GammaVision	GV09	10 / 27 / 15 14:09	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	11136	5.980E-001pCi/g	2.506E-001	2.488E-001	1.014E+000	4.923E-001	0.59
AG-108M	10982	6.362E-006pCi/g	7.135E-002	7.135E-002	2.404E-001	1.175E-001	0.00
AG-110M	10973	-4.015E-003pCi/g	1.009E-001	1.009E-001	3.435E-001	1.661E-001	-0.01
AM-241	10818	9.726E+001pCi/g	5.101E+000	7.368E-001	1.053E+000	5.222E-001	92.32
BA-133	10469	8.644E-004pCi/g	8.695E-002	8.695E-002	2.932E-001	1.432E-001	0.00
BA-140	10463	2.814E-001pCi/g	2.308E-001	2.303E-001	7.647E-001	3.708E-001	0.37
BE-7	10435	5.425E-001pCi/g	6.400E-001	6.394E-001	2.131E+000	1.041E+000	0.25
BI-207	10195	-2.984E-002pCi/g	5.728E-002	5.726E-002	1.928E-001	9.338E-002	-0.15
BI-210M	10173	2.463E-002pCi/g	9.686E-002	9.684E-002	3.249E-001	1.590E-001	0.08
BI-212	10160	4.340E-001pCi/g	7.169E-001	7.165E-001	2.420E+000	1.163E+000	0.18
BI-214	10154	8.273E-001pCi/g	1.845E-001	1.794E-001	3.533E-001	1.700E-001	2.34
CD-109	9254	5.485E+000pCi/g	3.401E+000	3.387E+000	3.143E+000	1.540E+000	1.75
CD-113M	17462	8.114E+000pCi/g	7.905E+002	7.905E+002	2.661E+003	1.302E+003	0.00
CE-139	9241	-3.089E-002pCi/g	5.178E-002	5.170E-002	1.723E-001	8.460E-002	-0.18
CE-141	9235	-3.579E-003pCi/g	6.317E-002	6.317E-002	2.129E-001	1.040E-001	-0.02
CE-144	9221	1.068E-001pCi/g	3.278E-001	3.277E-001	1.096E+000	5.379E-001	0.10
CF-249	9215	1.007E-001pCi/g	1.004E-001	1.002E-001	2.876E-001	1.404E-001	0.35
CF-251	13690	-2.639E-001pCi/g	2.511E-001	2.500E-001	8.293E-001	4.069E-001	-0.32
CO-56	8704	1.134E-001pCi/g	8.881E-002	8.861E-002	2.341E-001	1.131E-001	0.48
CO-57	13694	5.717E-003pCi/g	4.406E-002	4.406E-002	1.476E-001	7.249E-002	0.04
CO-58	8698	5.129E-002pCi/g	6.155E-002	6.150E-002	2.064E-001	9.935E-002	0.25
CO-60	8692	1.774E+001pCi/g	9.122E-001	1.984E-001	9.851E-002	4.359E-002	180.05
CR-51	8604	-2.572E-002pCi/g	5.332E-001	5.332E-001	1.795E+000	8.779E-001	-0.01
CS-134	8553	5.920E-002pCi/g	4.059E-002	4.047E-002	2.764E-001	1.350E-001	0.21
CS-136	8546	4.051E-002pCi/g	4.705E-002	4.700E-002	1.989E-001	9.561E-002	0.20
CS-137	8539	2.895E+001pCi/g	1.537E+000	3.066E-001	2.184E-001	1.053E-001	132.57
EU-152	7145	1.210E-001pCi/g	1.140E-001	1.138E-001	6.662E-001	3.254E-001	0.18
EU-154	7138	1.536E-001pCi/g	2.903E-001	2.902E-001	2.035E+000	9.844E-001	0.08
EU-155	7131	-2.215E-001pCi/g	1.885E-001	1.881E-001	6.227E-001	3.061E-001	-0.36
FE-59	7073	-2.347E-001pCi/g	1.656E-001	1.651E-001	5.463E-001	2.646E-001	-0.43
GA-68	18005	-1.959E+000pCi/g	2.934E+000	2.932E+000	9.861E+000	4.761E+000	-0.20
GD-153	6824	1.074E-001pCi/g	5.604E-002	5.566E-002	4.253E-001	2.089E-001	0.25
HF-181	6495	7.655E-003pCi/g	2.864E-002	2.863E-002	2.832E-001	1.384E-001	0.03
HG-203	6466	-5.635E-002pCi/g	6.273E-002	6.264E-002	2.084E-001	1.020E-001	-0.27
I-131	6380	7.130E-002pCi/g	8.246E-002	8.238E-002	2.211E-001	1.079E-001	0.32
IR-192	6303	6.154E-002pCi/g	5.067E-002	5.054E-002	2.010E-001	9.829E-002	0.31
K-40	6148	-1.447E-001pCi/g	7.481E-001	7.481E-001	1.284E+000	5.849E-001	-0.11
LA-140	6096	1.563E-002pCi/g	2.812E-002	2.811E-002	1.016E-001	4.393E-002	0.15
MN-54	5382	-2.832E-002pCi/g	6.926E-002	6.925E-002	2.341E-001	1.131E-001	-0.12
NA-22	5201	-2.471E-002pCi/g	3.987E-002	3.985E-002	1.381E-001	6.356E-002	-0.18
NB-94	5160	4.992E-002pCi/g	4.304E-002	4.296E-002	1.435E-001	6.826E-002	0.35
NB-95	5154	-8.541E-002pCi/g	6.319E-002	6.303E-002	2.089E-001	1.008E-001	-0.41
ND-147	5083	-5.970E-002pCi/g	4.393E-001	4.392E-001	1.487E+000	7.219E-001	-0.04
NP-237	4757	-4.152E-001pCi/g	3.778E-001	3.771E-001	1.248E+000	6.152E-001	-0.33
NP-239	4751	1.422E-001pCi/g	1.425E-001	1.422E-001	4.725E-001	2.313E-001	0.30
PA-231	4541	7.897E-001pCi/g	5.588E-001	5.571E-001	6.014E+000	2.942E+000	0.13
PA-233	4535	1.659E-001pCi/g	1.174E-001	1.170E-001	4.817E-001	2.355E-001	0.34
PA-234	4528	7.379E-003pCi/g	1.848E-001	1.848E-001	6.212E-001	3.043E-001	0.01
PA-234M	19453	-3.849E+000pCi/g	1.050E+001	1.050E+001	3.544E+001	1.718E+001	-0.11
PB-210	4467	8.556E+002pCi/g	5.093E+001	8.354E+000	1.399E+001	6.939E+000	61.17

PB-212	4454	**4.747E-001**pCi/g	1.198E-001	1.158E-001	2.884E-001	1.405E-001	1.65
PB-214	4448	**2.527E-001**pCi/g	1.397E-001	1.390E-001	4.865E-001	2.377E-001	0.52
PM-144	19585	**5.467E-002**pCi/g	5.088E-002	5.080E-002	1.697E-001	8.140E-002	0.32
PM-146	2464	**-1.121E-001**pCi/g	1.694E-001	1.693E-001	5.705E-001	2.747E-001	-0.20
RH-106	1882	**2.453E-001**pCi/g	5.500E-001	5.499E-001	1.858E+000	8.973E-001	0.13
RU-103	1828	**3.179E-003**pCi/g	6.795E-002	6.795E-002	2.296E-001	1.119E-001	0.01
SB-124	1784	**6.871E-002**pCi/g	5.491E-002	5.479E-002	1.820E-001	8.786E-002	0.38
SB-125	1777	**7.725E-002**pCi/g	1.204E-001	1.203E-001	7.192E-001	3.515E-001	0.11
SC-46	1739	**6.865E-002**pCi/g	3.773E-002	3.756E-002	2.744E-001	1.331E-001	0.25
SN-113	1570	**-5.988E-002**pCi/g	9.283E-002	9.278E-002	3.100E-001	1.515E-001	-0.19
SN-126	17459	**4.728E-001**pCi/g	6.187E-001	6.182E-001	2.053E+000	1.011E+000	0.23
TA-182	1301	**2.190E-001**pCi/g	1.744E-001	1.740E-001	6.078E-001	2.897E-001	0.36
TC-99M	17412	**4.814E-002**pCi/g	4.538E-002	4.530E-002	1.502E-001	7.375E-002	0.32
TH-227	1058	**5.812E-001**pCi/g	8.496E-001	8.490E-001	7.338E+000	3.643E+000	0.08
TH-229	1046	**3.346E-001**pCi/g	9.867E-001	9.864E-001	3.300E+000	1.619E+000	0.10
TH-234	1027	**-3.012E+001**pCi/g	2.825E+000	2.346E+000	7.161E+000	3.541E+000	-4.21
TL-208	929	**1.402E-001**pCi/g	7.085E-002	7.047E-002	2.180E-001	1.055E-001	0.64
U-235	281	**1.225E-001**pCi/g	2.509E-001	2.508E-001	1.165E+000	5.718E-001	0.11
Y-88	74	**-5.977E-002**pCi/g	8.913E-002	8.908E-002	2.987E-001	1.449E-001	-0.20
ZN-65	31	**1.053E-001**pCi/g	9.011E-002	8.995E-002	3.017E-001	1.411E-001	0.35
ZR-95	7	**3.603E-002**pCi/g	1.120E-001	1.120E-001	3.799E-001	1.833E-001	0.09

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity		StdAdded	Recovery	ZFactor
LCS 160-218442~2-A	LCS 160-218442~2-A	CS-137	2.895E+001	pCi/g	3.008E+001	96.24%	-0.5100
		CO-60	1.774E+001	pCi/g	1.859E+001	95.42%	-0.6439
		AM-241	9.726E+001	pCi/g	9.723E+001	100.04%	0.0052

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Samp Activity	Dup Activity	RPD	RER	DER	Flag	ZFactor

Blanks Information

SamplID	WRKNO	Analyte	Activity	UncTotal	ZFactor
MB 160-218442~1-A	MB	AC-228	4.629E-002	5.406E-002	0.8562
MB 160-218442~1-A	MB	AG-108M	5.830E-003	1.413E-002	0.4125
MB 160-218442~1-A	MB	AG-110M	1.867E-002	2.797E-002	0.6674
MB 160-218442~1-A	MB	AM-241	4.337E-002	3.562E-002	1.2178
MB 160-218442~1-A	MB	BA-133	3.213E-003	1.707E-002	0.1882
MB 160-218442~1-A	MB	BA-140	7.074E-002	6.022E-002	1.1747
MB 160-218442~1-A	MB	BE-7	2.063E-003	1.089E-001	0.0189
MB 160-218442~1-A	MB	BI-207	-8.550E-003	1.554E-002	-0.5500
MB 160-218442~1-A	MB	BI-210M	-5.240E-005	2.134E-002	-0.0025
MB 160-218442~1-A	MB	BI-212	1.891E-001	2.106E-001	0.8980
MB 160-218442~1-A	MB	BI-214	5.878E-002	4.257E-002	1.3807
MB 160-218442~1-A	MB	CD-109	-3.780E-002	2.773E-001	-0.1363
MB 160-218442~1-A	MB	CD-113M	-1.209E+002	2.006E+002	-0.6023
MB 160-218442~1-A	MB	CE-139	-2.638E-003	1.098E-002	-0.2403
MB 160-218442~1-A	MB	CE-141	0.000E+000	1.549E-002	0.0000
MB 160-218442~1-A	MB	CE-144	2.685E-004	7.314E-002	0.0037
MB 160-218442~1-A	MB	CF-249	1.313E-003	1.950E-002	0.0673
MB 160-218442~1-A	MB	CF-251	-3.857E-003	5.706E-002	-0.0676
MB 160-218442~1-A	MB	CO-56	1.232E-004	1.804E-004	0.6833
MB 160-218442~1-A	MB	CO-57	2.443E-003	8.085E-003	0.3022
MB 160-218442~1-A	MB	CO-58	-1.180E-003	2.037E-002	-0.0579
MB 160-218442~1-A	MB	CO-60	6.900E-003	9.579E-003	0.7203
MB 160-218442~1-A	MB	CR-51	1.599E-003	1.074E-001	0.0149
MB 160-218442~1-A	MB	CS-134	3.207E-002	2.395E-002	1.3391
MB 160-218442~1-A	MB	CS-136	5.803E-003	1.781E-002	0.3257
MB 160-218442~1-A	MB	CS-137	0.000E+000	1.138E-002	0.0000
MB 160-218442~1-A	MB	EU-152	-3.093E-005	4.932E-002	-0.0006
MB 160-218442~1-A	MB	EU-154	-1.070E-001	1.707E-001	-0.6272
MB 160-218442~1-A	MB	EU-155	2.380E-002	1.887E-002	1.2612
MB 160-218442~1-A	MB	FE-59	0.000E+000	8.903E-003	0.0000
MB 160-218442~1-A	MB	GA-68	0.000E+000	1.515E-001	0.0000
MB 160-218442~1-A	MB	GD-153	0.000E+000	1.067E-002	0.0000
MB 160-218442~1-A	MB	HF-181	1.261E-002	1.480E-002	0.8522
MB 160-218442~1-A	MB	HG-203	3.510E-003	1.144E-002	0.3067
MB 160-218442~1-A	MB	I-131	0.000E+000	6.680E-003	0.0000
MB 160-218442~1-A	MB	IR-192	1.578E-003	1.452E-002	0.1086
MB 160-218442~1-A	MB	K-40	-2.137E-001	7.006E-001	-0.3050
MB 160-218442~1-A	MB	LA-140	0.000E+000	7.055E-003	0.0000
MB 160-218442~1-A	MB	MN-54	0.000E+000	5.770E-003	0.0000
MB 160-218442~1-A	MB	NA-22	-2.879E-004	1.602E-002	-0.0180
MB 160-218442~1-A	MB	NB-94	1.568E-003	1.741E-002	0.0901
MB 160-218442~1-A	MB	NB-95	2.922E-003	1.554E-002	0.1880
MB 160-218442~1-A	MB	ND-147	7.112E-002	1.032E-001	0.6894
MB 160-218442~1-A	MB	NP-237	5.092E-003	7.332E-002	0.0695
MB 160-218442~1-A	MB	NP-239	1.565E-002	3.200E-002	0.4890
MB 160-218442~1-A	MB	PA-231	-1.854E-001	3.961E-001	-0.4681
MB 160-218442~1-A	MB	PA-233	7.432E-003	1.916E-002	0.3879
MB 160-218442~1-A	MB	PA-234	1.231E-002	3.411E-002	0.3608
MB 160-218442~1-A	MB	PA-234M	0.000E+000	7.911E-001	0.0000
MB 160-218442~1-A	MB	PB-210	3.880E-001	4.487E-001	0.8648
MB 160-218442~1-A	MB	PB-212	-2.440E-002	9.674E-002	-0.2522
MB 160-218442~1-A	MB	PB-214	-2.424E-002	8.010E-002	-0.3026

MB 160-218442~1-A	MB	PM-144	2.715E-003	1.733E-002	0.1567
MB 160-218442~1-A	MB	PM-146	1.519E-002	1.570E-002	0.9676
MB 160-218442~1-A	MB	RH-106	-2.995E-002	1.833E-001	-0.1634
MB 160-218442~1-A	MB	RU-103	-5.540E-003	1.385E-002	-0.4000
MB 160-218442~1-A	MB	SB-124	3.566E-003	1.681E-002	0.2121
MB 160-218442~1-A	MB	SB-125	-3.271E-002	4.871E-002	-0.6716
MB 160-218442~1-A	MB	SC-46	1.794E-002	1.459E-002	1.2302
MB 160-218442~1-A	MB	SN-113	5.033E-004	1.899E-002	0.0265
MB 160-218442~1-A	MB	SN-126	2.542E-002	1.062E-001	0.2393
MB 160-218442~1-A	MB	TA-182	5.091E-002	6.392E-002	0.7965
MB 160-218442~1-A	MB	TC-99M	4.412E-003	8.994E-003	0.4906
MB 160-218442~1-A	MB	TH-227	0.000E+000	6.308E-002	0.0000
MB 160-218442~1-A	MB	TH-229	1.425E-001	1.928E-001	0.7391
MB 160-218442~1-A	MB	TH-234	-5.703E-002	3.530E-001	-0.1616
MB 160-218442~1-A	MB	TL-208	-2.982E-003	2.496E-002	-0.1195
MB 160-218442~1-A	MB	U-235	-6.134E-003	8.135E-003	-0.7541
MB 160-218442~1-A	MB	Y-88	1.099E-002	2.017E-002	0.5449
MB 160-218442~1-A	MB	ZN-65	0.000E+000	1.005E-002	0.0000
MB 160-218442~1-A	MB	ZR-95	-1.630E-002	3.169E-002	-0.5142

Rec'd : 12-26-06

ANALYTICS
An Isotope Products Laboratories Company

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

74139-334

1.0 Liter Sand in 1 Liter Wide Mouth HDPE "S" Bottle

Customer: Severn Trent Laboratories/Earth City, MO
P.O. No.: 2169577, Item 1
Calibration Date: 01-Oct-2006 12:00 EST **Grams of Master Source:** 0.01552

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Pb-210	46.5	8145.9	———	3079.8	0.33	1.46	2.99	4π LS
Am-241	59.5	157860	———	2034.3	0.33	1.46	2.99	4π LS
Cd-109	88.0	462.60	189000	2933.5	0.57	1.70	3.59	HPGe
Co-57	122.1	271.79	94570	1467.8	0.34	1.30	2.69	HPGe
Ce-139	165.9	137.6	133800	2076.7	0.35	1.10	2.31	HPGe
Hg-203	279.2	46.61	295300	4583	0.40	1.10	2.34	HPGe
Sn-113	391.7	115.1	185600	2880.7	0.42	1.10	2.35	HPGe
Cs-137	661.7	10983	116700	1811.3	0.70	1.20	2.78	HPGe
Y-88	898.0	106.60	455400	7068	0.50	1.10	2.42	HPGe
Co-60	1173.2	1925.4	226900	3522	0.60	1.10	2.51	HPGe
Co-60	1332.5	1925.4	227000	3523	0.90	1.10	2.84	HPGe
Y-88	1836.1	106.6	481200	7469	0.90	1.10	2.84	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
1550 grams of sand. NOTE: Homogeneity was checked by the addition of Tc-99 tracer to the solution used to spike the sand. Ten 10-gram aliquots were removed after mixing and counted to measure the Tc-99. The standard deviation for the 10 measurements was 1.3% with a range of 4.8%. This demonstrates reasonable homogeneity for this source material down to a 10-gram aliquot.
This standard will expire one year after the calibration date.

Source Prepared by: M. I. Taskaeva, Radiochemist

QA Approved: D. M. Montgomery, QA Manager, for Date: 12-21-06

End of Certificate

Reagent

Tuna Can_00002

Rc'd 2/3/10

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

81427-334

1.0 Liter Sand in 1 Liter HDPE Silgan Jar

Customer: TestAmerica/St. Louis, MO
P.O. No.: 2339090, Item 1
Reference Date: 01-Jan-2010 12:00 PM EST **Grams of Master Source:** 0.017570

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Pb-210	46.5	8.120E+03	———	3.141E+03	0.1	2.1	4.1	4π LS
Am-241	59.5	1.580E+05	———	2.034E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.606E+05	2.822E+03	0.4	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	8.471E+04	1.488E+03	0.5	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.209E+05	2.124E+03	0.4	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.726E+05	4.790E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.672E+05	2.938E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.096E+05	1.926E+03	0.6	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.077E+05	7.163E+03	0.4	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.055E+05	3.611E+03	0.5	1.9	3.9	HPGe
Co-60	1332.5	1.925E+03	2.056E+05	3.612E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.308E+05	7.569E+03	0.5	1.9	3.9	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia 30318

Comments:
1550 grams of sand.
This standard will expire one year after the reference date.

Source Prepared by: _____
W. Mao, Radiochemist

QA Approved: _____ Date: 2/1/10
J. D. McCorvey, QA Manager Alternate

Reagent

Tuna Can_00003

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

90099

1.0 Liter Sand in 1 Liter Wide Mouth HDPE Silgan Jar

Customer: TestAmerica St. Louis / Earth City, MO
P.O. No.: 2454150, Item 1
Reference Date: 01-Jan-2012 12:00 PM EST **Grams of Master Source:** 0.017180

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty*, % Type u_A	u_B	U	Calibration Method*
Pb-210	46.5	8.109E+03	———	3.094E+03	0.1	2.1	4.1	4π LS
Am-241	59.5	1.580E+05	———	2.037E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.677E+05	2.881E+03	0.5	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	8.795E+04	1.511E+03	0.4	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.245E+05	2.139E+03	0.4	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.707E+05	4.651E+03	0.3	1.9	3.8	HPGe
Sn-113	391.7	1.151E+02	1.755E+05	3.015E+03	0.4	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.128E+05	1.938E+03	0.7	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.228E+05	7.264E+03	0.5	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.084E+05	3.580E+03	0.6	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.084E+05	3.581E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.476E+05	7.690E+03	0.7	1.9	4.0	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

Comments:
1550 grams of sand. Homogenous down to 10 grams aliquot.
This standard will expire one year after the reference date.

Source Prepared by: _____
Z. Dimitrova, Radiochemist

QA Approved: _____ Date: 30 JAN 12
J.D. McCorvey, Counting Room Manager

Reagent

Tuna Can_00006

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

83814-334

1.0 Liter Sand in 1 Liter Wide Mouth HDPE Silgan Jar

Customer: Test America St. Louis
P.O. No.: 2395112, Item 1
Reference Date: 01-Jan-2011 12:00 PM EST **Grams of Master Source:** 0.016927

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Pb-210	46.5	8.120E+03	———	3.021E+03	0.1	2.1	4.1	4π LS
Am-241	59.5	1.580E+05	———	2.090E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.697E+05	2.873E+03	0.8	2.3	4.9	HPGe
Co-57	122.1	2.718E+02	8.711E+04	1.475E+03	0.5	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.247E+05	2.111E+03	0.5	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.753E+05	4.660E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.769E+05	2.994E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.109E+05	1.877E+03	0.7	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.224E+05	7.150E+03	0.5	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.142E+05	3.626E+03	0.6	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.143E+05	3.627E+03	0.6	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.472E+05	7.570E+03	0.5	1.9	3.9	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

Corporate Office
Laboratory

Comments:
1550 grams of sand. Homogeneous down to 10 gram aliquot.
This standard will expire one year after the reference date.

Source Prepared by: _____
Z. Dimitrova, Radiochemist

QA Approved: _____ Date: 2/11/11
J. D. McCorvey, QA Manager Alternate

Reagent

U-232_00003

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

85539-334

5 mL Liquid in Flame Sealed Vial

Customer: Test America/Earth City, MO
P.O. No.: 2434448, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by Eckert & Ziegler Analytics. The master solution was calibrated by liquid scintillation counting. Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
U-232	2.517E+04	1.725E+04	0.5	2.4	4.9	08/25/2011

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: U-232 daughters, γ-impurities (other than decay products) < 0.1 %.

Source Prepared by: MTaskaeva
M. I. Taskaeva, Radiochemist

QA Approved: _____ Date: 8/25/11
J. D. McCorvey, QA Manager Alternate

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

U-232_00035

Standard ID Number: U-232_00032
True Value = 78.302 Dpm/mL
Date Analyzed: 7/13/2016

Radionuclide: U-232

	Replicates	
#1	81.64	Dpm/mL
#2	78.78	Dpm/mL
#3	74.25	Dpm/mL

Mean = 78.2233333

1 sigma = 3.72631632 1.96 sigma = 7.30358

True Value minus 5% = 74.3869 (True Value - 5%)
True Value plus 5% = 82.2171 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DoD/DOE Consolidated QSM and LANL Statements of Work

1st Reviewed By/Date: Amanda Leigh Dick 07/14/16 ALD 7/14

2nd Reviewed By/Date: RM 7·15·16

Decay Calculations

Raw Sample/Standard Information

Initial Date/Time (t_0):	8/25/2011 0:00		
Decayto Date/Time (t):	7/13/16 0:00		
Initial Activity (A_0):	82.25 dpm		
Initial Aliquot:	1 mL		
Initial Conc:	82.25 dpm/mL		
***Soln. Density:**	1 g/mL		
Nuclide:	U-232		
Half-Life (days):	25165.725	decay days	fraction
****Decay Factor:**	0.9521	1784.00	0.07089
Decay Corr Activity:	7.8306E+01 dpm		
Decay Corr Conc:	7.8306E+01 dpm/mL		

Conversion/Calculations

Final Activity Unit:	dpm
Activity Unit Factor:	1.00000
Final Volume Unit:	mL
Volume Unit Factor:	1.000
Final Concentration:	7.8306E+01 dpm/mL
Aliquot Volume:	1.0000E+00 mL
Final Activity (A):	7.8306E+01 dpm

** Uses basic decay equation: $A = A_0 * \exp(-\ln(2)*(t-t_0)/(\text{half-life})$

* Soln. Density to be used when converting from liquid expressed in mass (g) units to liquid units (mL), and is only applied in that case.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:22:33AM 7/14/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1

Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: U-232_00032 (unclean)
AnalysisResultsID: 171222
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

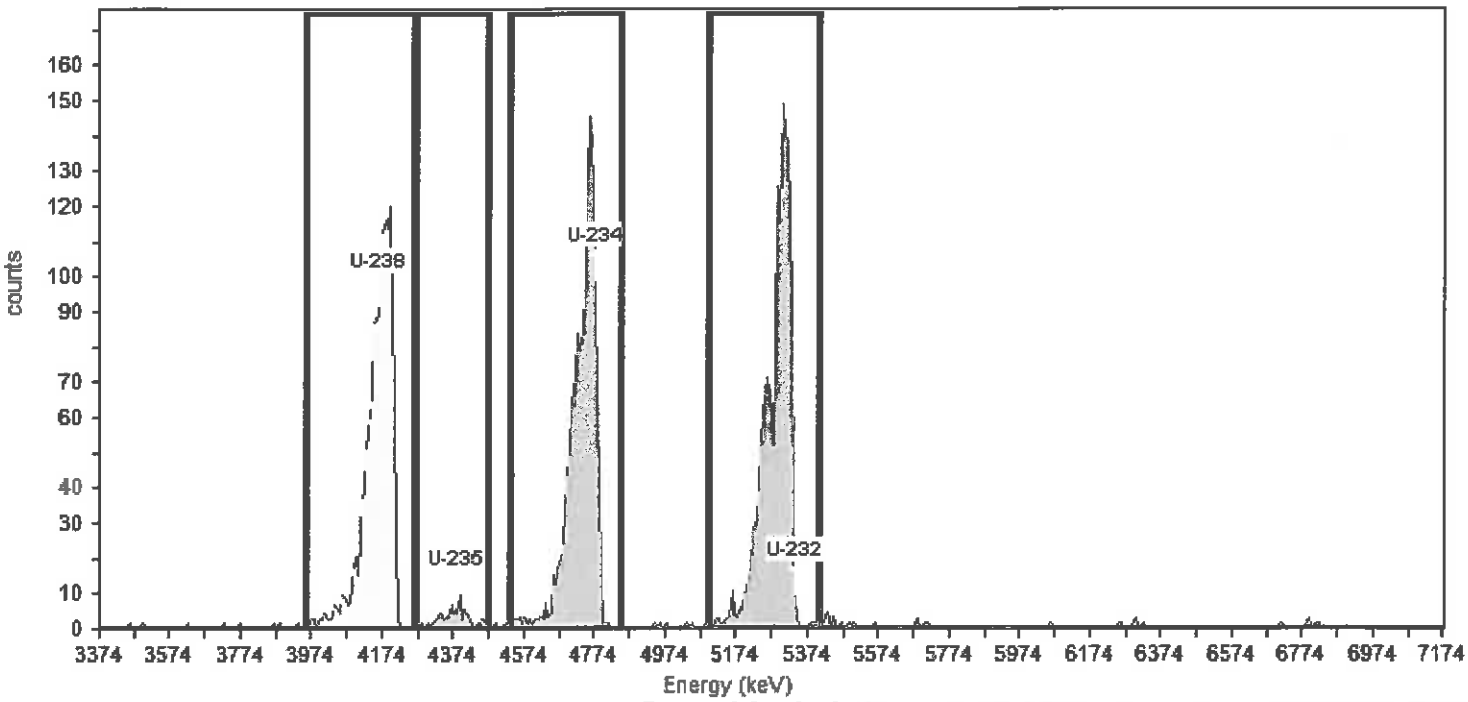
Tracer Name: UNAT_00009
Tracer Activity: 72.26 DPM / mL x (Vol.) 0.10 mL = 7.23 DPM
Tracer Ref. Date: 3/30/2008 4:33:01PM

Tracer Nuclide: U-238
Tracer Recovery: 68.52%

Acquisition

Detector: AV227 SN: 50-120DD5
Acquisition Start Date: 7/13/2016 11:16:29AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 6/24/2016 4:15:27PM
Bkgd Info: Sample: ICB;AV227; Det: AV227; Spectrum #1; 6/24/2016 4:15:27 PM

Energy Calibration: IC-9817;AV227-20151018
Efficiency Calibration:IC-9817;AV227-20151018
Calibration Date: 10/18/2015 9:20:24PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.29% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI_U-232
Decay Correction:7/13/2016 11:14:26AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	69.7	100.0	1202	0.0000	1202.00	4.952E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	90.0	80.2	63	0.0000	63.00	4.723E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	74.4	99.8	1279	1.0000	1278.00	7.699E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	62.9	100.1	1363	4.0000	1359.00	8.164E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:22:42AM 7/14/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: U-232_00032 (unclean)
AnalysisResultsID: 171223
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

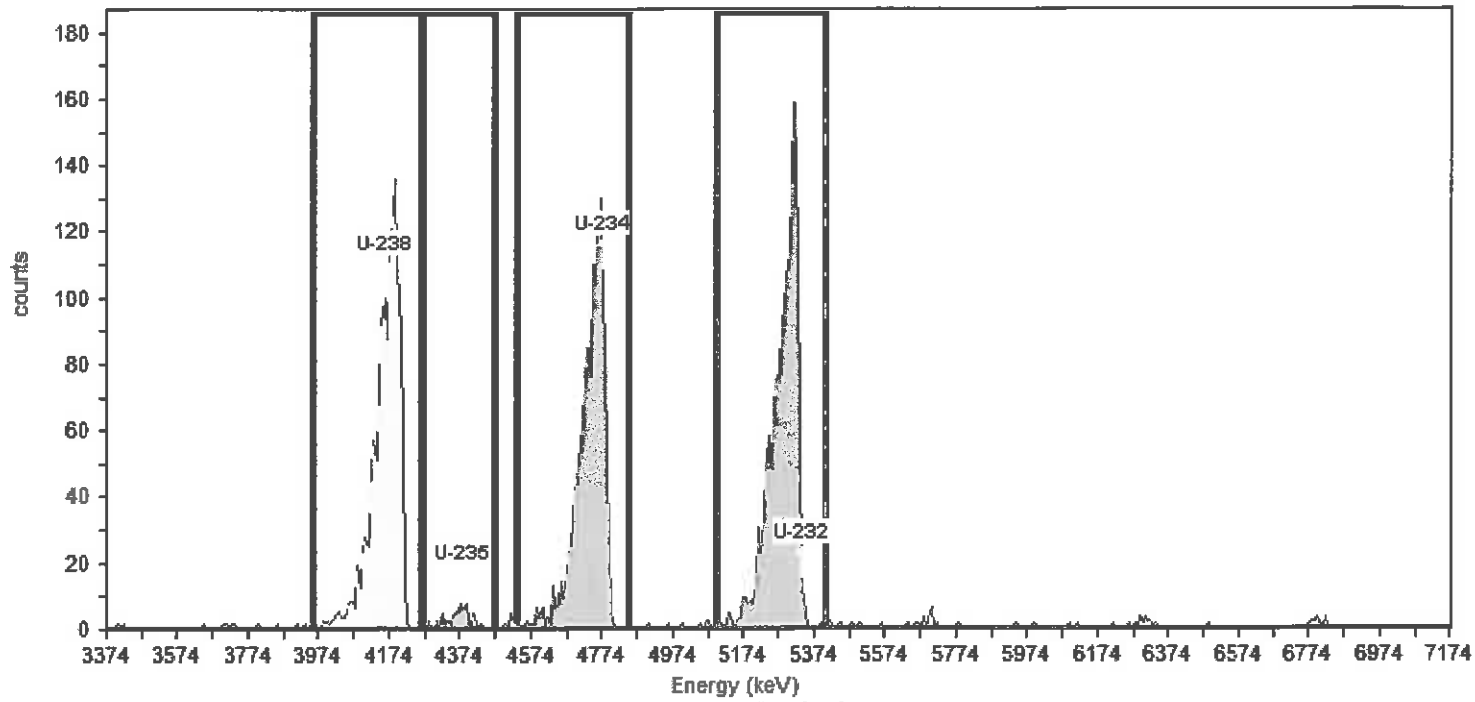
Tracer Name: UNAT_00009
Tracer Activity: 72.26 DPM / mL x (Vol.) 0.10 mL = 7.23 DPM
Tracer Ref. Date: 3/30/2008 4:33:01PM

Tracer Nuclide: U-238
Tracer Recovery: 73.96%

Acquisition

Detector: AV228 SN: 51-005Q6
Acquisition Start Date: 7/13/2016 11:16:29AM
Live Time: 960.00 min.
Real Time: 960.12 min.
Background Date: 6/24/2016 4:15:28PM
Bkgd Info: Sample: ICB;AV228; Det: AV228; Spectrum #1; 6/24/2016 4:15:28 PM

Energy Calibration: IC-9884;AV228-20151018
Efficiency Calibration:IC-9884;AV228-20151018
Calibration Date: 10/18/2015 9:20:29PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.26% +/- 0.36% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI_U-232
Decay Correction:7/13/2016 11:14:26AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	73.9	100.0	1298	2.0000	1296.00	5.345E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	36.6	80.2	53	0.0000	53.00	3.685E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	72.6	99.8	1246	3.0000	1243.00	6.945E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	76.4	100.1	1419	5.0000	1414.00	7.878E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:22:51AM 7/14/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1

Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: U-232_00032 (unclean)
AnalysisResultsID: 171224
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

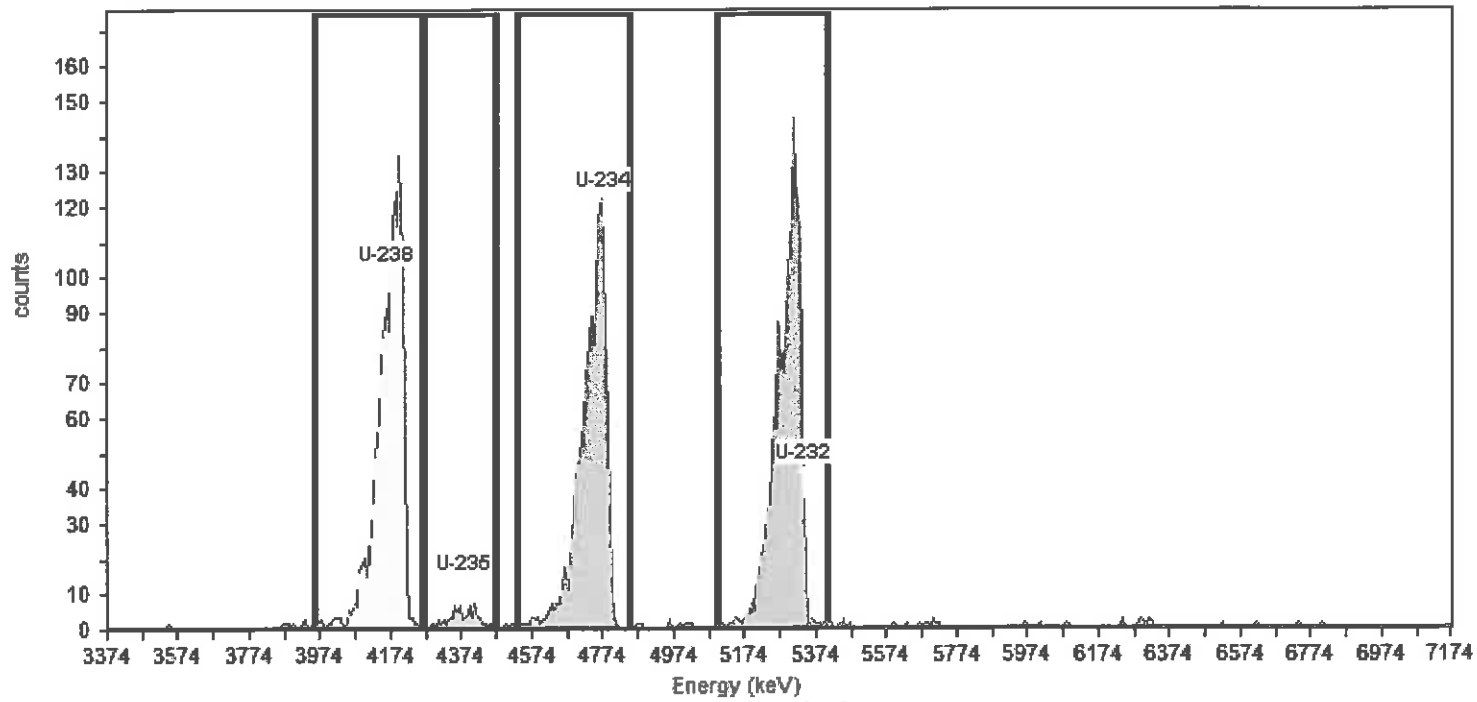
Tracer Name: UNAT_00009
Tracer Activity: 72.26 DPM / mL x (Vol.) 0.10 mL = 7.23 DPM
Tracer Ref. Date: 3/30/2008 4:33:01PM

Tracer Nuclide: U-238
Tracer Recovery: 69.93%

Acquisition

Detector: AV229 SN: 51-005EE4
Acquisition Start Date: 7/13/2016 11:16:30AM
Live Time: 960.00 min.
Real Time: 960.15 min.
Background Date: 7/7/2016 4:03:35PM
Bkgd Info: Sample: BKG;AV229; Det: AV229; Spectrum #1; 7/7/2016 4:03:35 PM

Energy Calibration: IC-9885;AV229-20151018
Efficiency Calibration:IC-9885;AV229-20151018
Calibration Date: 10/18/2015 9:20:33PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.18% +/- 0.38% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI_U-232
Decay Correction:7/13/2016 11:14:26AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	74.2	100.0	1274	4.0000	1270.00	5.053E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	33.2	80.2	63	0.0000	63.00	4.470E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	79.5	99.8	1214	4.0000	1210.00	6.899E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	76.8	100.1	1322	16.0000	1306.00	7.425E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

U-232 unclean Tracer (re-cert exp: 8/16)

Actinide Prep

Ver. by columns

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	Ver. 1	0.1	227	
2	2	1	228	
3	3		229	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A.
i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : UNAT
Std Sol'n No. : UNAT-00012
Vol (mL) : 0.1
Ref Activity (dpm/mL) : 234- 10.69 235- 3.37
Act Ref Date : 238 - 72.26 03-30-08

Samples Spiked and Traced By: SUB 7/11/16
Initials / Date

Verification Signature & Date: CME 7/11/16
Initials / Date

LCS Standard ☐ N/A

Initials / Date

Isotope : U-232 Unclean
Std Sol'n ID. : U-232-00032
Vol (mL) : 0.1
Ref Activity (dpm/mL) : 92.2456
Act Ref Date : 08-25-11

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.		☐	ST-RC-0040 Rev.		☐	ST-RC-0110 Rev.	
☐	ST-RC-0004 Rev.		☐	ST-RC-0041 Rev.		☐	ST-RC-0120 Rev.	
☐	ST-RC-0014 Rev.		☐	ST-RC-0050 Rev.		☐	ST-RC-0232 Rev.	
☐	ST-RC-0020 Rev.		☐	ST-RC-0090 Rev.		☑	ST-RC-0238 Rev.	
☐	ST-RC-0021 Rev.		☑	ST-RC-0100 Rev.		☐	ST-RC-0240 Rev.	
						☐	ST-RC-0241 Rev.	
						☐	ST-RC-0242 Rev.	
						☐	ST-RC-5016 Rev.	
						☐		
						☐		

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☑	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☑	Soil ☐
Short Count ☐	H_2O ☐

Prepared By : SUB
Date : 7/11/16

Reviewed by: _____
Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

U - 232 _ 00032

Reagent ID: U-232_00032

		Expiration Date:	08/06/2016
Description:	U-232 Unclean tracer	Laboratory:	TestAmerica St. Louis
No. of Bottles:	1	Prepared By:	Bernsen, Sarah C
Storage Location:	RAD Actinide STDs	Solvent:	2M HNO3
Reagent Volume:	500.000 mL	Solvent Lot:	n/a
Creation Date:	07/16/2015		
Open Date:			
Container(s):	684064		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
U-232	U-232_00009	03/24/2017	10280.70700	dpm/mL	82.24566	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
U-232_00009	U-232 Parent		03/24/17				4.00000	mL

Uranium only via UTEVA

Batch:_____

ST-RC-0238

*All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

UTEVA lot: _____

U-232 ver.

11.4.4	UTEVA cartridge	
11.4.5	5mL 3M HNO_3	COMPLETED ☐
11.4.6	Load sample	
11.4.7	25mL 3M HNO_3	COMPLETED ☐
11.4.8	5mL 9M HCl	COMPLETED ☐
11.4.9	20mL 5M HCl / 0.05M oxalic	COMPLETED ☐
11.4.10-11.4.11	Elute into clean tube with 15mL 1M HCl	COMPLETED ☐

Uranium only via UTEVA

ST-RC-0238

Batch: ——

*All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

UTEVA lot: U7SR15G

11.4.4	UTEVA cartridge	
11.4.5	5mL 3M HNO_3	COMPLETED ☐
11.4.6	Load sample	
11.4.7	25mL 3M HNO_3	COMPLETED ☐
11.4.8	5mL 9M HCl	COMPLETED ☐
11.4.9	20mL 5M HCl / 0.05M oxalic	COMPLETED ☐
11.4.10-11.4.11	Elute into clean tube with 15mL 1M HCl	COMPLETED ☐

U-232 ver.

Reagent

UNAT Ampoule_00001

New Brunswick Laboratory
U.S. Department of Energy

Certificate of Analysis
CRM 145
Uranyl (Normal) Nitrate Assay and Isotopic Solution

Uranium Mass Fraction: **0.0101356 g U/g solution ± 0.0000011 g U/g solution**
[10.1356 mg U/g solution ± 0.0011 mg U/g solution]

	$^{234}U/^{238}U$	$^{235}U/^{238}U$
Atom Ratio:	**0.000052841**	**0.0072543**
Atom Ratio Uncertainty:	**0.000000082**	**0.0000040**

	^{234}U	^{235}U	^{238}U
Atom Percent:	**0.0052458**	**0.72017**	**99.27458**
Atom Percent Uncertainty:	**0.0000081**	**0.00039**	**0.00039**
Weight Percent:	**0.0051579**	**0.71114**	**99.28370**
Weight Percent Uncertainty:	**0.0000080**	**0.00038**	**0.00038**

Relative Atomic Weight: **238.028918**
Relative Atomic Weight Uncertainty: **0.000012**

Note: ^{233}U and ^{236}U were not detected. The detection limit of uranium ratios for the technique used is 5×10^{-9}.

This Certified Reference Material (CRM) is a uranium concentration and isotopic solution standard intended for use in calibration of and/or quality control for uranium analysis methods. Each unit of CRM 145 consists of approximately 20-mL of uranyl nitrate solution in 1M nitric acid, contained in a sealed glass ampoule.

NOTE: The vial should be handled under proper radiologically-controlled conditions at all times.

The certified uranium content value is based on the mass of high-purity metal dissolved and diluted to a known solution mass. The stated uranium concentration was calculated as the prepared value and verified experimentally by the NBL-modified Davies and Gray titration. The certified uranium isotopic composition and atomic weight is based upon measurements performed on multiple samples by two different measurement techniques on a Thermal Ionization Mass Spectrometer (TIMS), calibrated using CRM U030-A as primary comparator and CRM 129-A as a quality control sample. The isotopic values are shared with CRM 112-A, uranium (normal) metal standard which was the source of uranium used to produce the solutions.

RAD13-0018
UNAT Spike
marrss
None
Prep/Opened: 5/3/2013
Exp(1): 5/10/2014
Exp(2): 5/10/2014

All uncertainties for the certified values are expressed as expanded uncertainties (U) where $U = k*u_c$, where u_c is the

September 30, 2010
Argonne, Illinois

Jon Neuhoff, Director
New Brunswick Laboratory

(Revision of Certificate dated March 30, 2008)

127971
ID: UNAT_00008
Exp: 05/10/14 Prpd: SB Crl: 05/03/13
UNAT spike

combined standard uncertainty and the coverage factor k = 2. Uncertainties were determined according to the JCGM 100:2008 *Guide to the Expression of Uncertainty in Measurement*. The coverage factor of 2 was chosen to provide an approximate 95% level of confidence. The input quantities associated with the uranium content included uncertainties due to weighing, CRM 112-A purity, and buoyancy factors. The input quantities associated with the uranium isotopic composition included uncertainties from the certified value for CRM U030-A, measurement precision, and background corrections associated with the analytical techniques.

The CRM was produced by dissolving uranium metal in a single batch and container, with extensive mixing of the resultant solution followed by dispensation into individual bottles. Subsequent measurements of a random sampling of the total lot produced did not indicate any inhomogeneity in uranium concentration or isotopic composition. The minimum sample sizes taken from packaged units and measured were 30 mg U by titration and 1 μg U by TIMS. The NBL makes no recommendation as to the minimum sample size to be used to ensure concentration or isotopic homogeneity.

Users are cautioned that once the vial is opened, the uranium concentration and/or isotopic composition of the material may be affected by evaporative losses or environmental contamination. User's should take appropriate precautions to safeguard the material before, during and after use to ensure valid certificate values.

Recommended Procedure for Ampoule Handling and Dispensing of Solution

1. The ampoule contains a strongly acidic solution of uranium. Appropriate precautions should be taken.

2. Before opening the ampoule, ensure that any dried uranium or condensed liquid in the neck or body of the ampoule is re-dissolved into solution. This can be accomplished by inverting the ampoule repeatedly.

3. The glass ampoules are scored at the neck for ease of opening. However, glass burrs and fragments pose a cut hazard to anyone opening the ampoules. Appropriate precautions should be taken.

4. Lightly moisten the scored line on the neck with distilled water to help ensure a clean break at the score.

5. Because of the narrow neck of the ampoule it may be difficult or impossible to pour the solution out. Here is one possible method:

    a. Obtain approximately 12-cm length of plastic capillary tubing (e.g. i.d. 0f 0.1", o.d. of 0.16").
    b. Insert one end of the capillary tubing fully into the ampoule
    c. Fold the remaining length of tubing along the outside of the ampoule, ensuring that the tube is not crimped and will allow the free flow of air through the tube and into the ampoule.
    d. Holding the ampoule and tubing in one hand, and a beaker or dispensing bottle in another, invert the ampoule over the container allowing the solution to drain into it.
    e. The capillary tubing allows air to flow into the ampoule, eliminating the "airlock" created by the narrow neck of the open ampoule.

6. The user should be wary of evaporative losses once the ampoule is opened, and prevent uranium contamination of the sample. It is recommended that the entire solution be accurately weighed and aliquanted as soon as possible after opening the sample. Precautions should be taken (clean glass/plastic ware, air filtration, etc) to prevent uranium contamination of the CRM with subsequent perturbation of the isotopic composition.

Reagent

UNAT_00012

St. Louis Radiological Standard Reverification Form

Standard ID Number: UNAT_00011
True Value = 70.69 DPM/L or g
Date Analyzed: 5/5/2016

Radionuclide: U-234

	Replicates	
#1	66.49	DPM/L or g
#2	71.93	DPM/L or g
#3	67.79	DPM/L or g

Mean = 68.73667

1 sigma = 2.840868

1.96 sigma = 5.568102

True Value minus 5% = 67.1555 (True Value - 5%)
True Value plus 5% = 74.2245 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Amanda Dick 05/09/2016

SOP Reference: STL-QA-0002, Current Revision

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:10:46AM 5/9/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

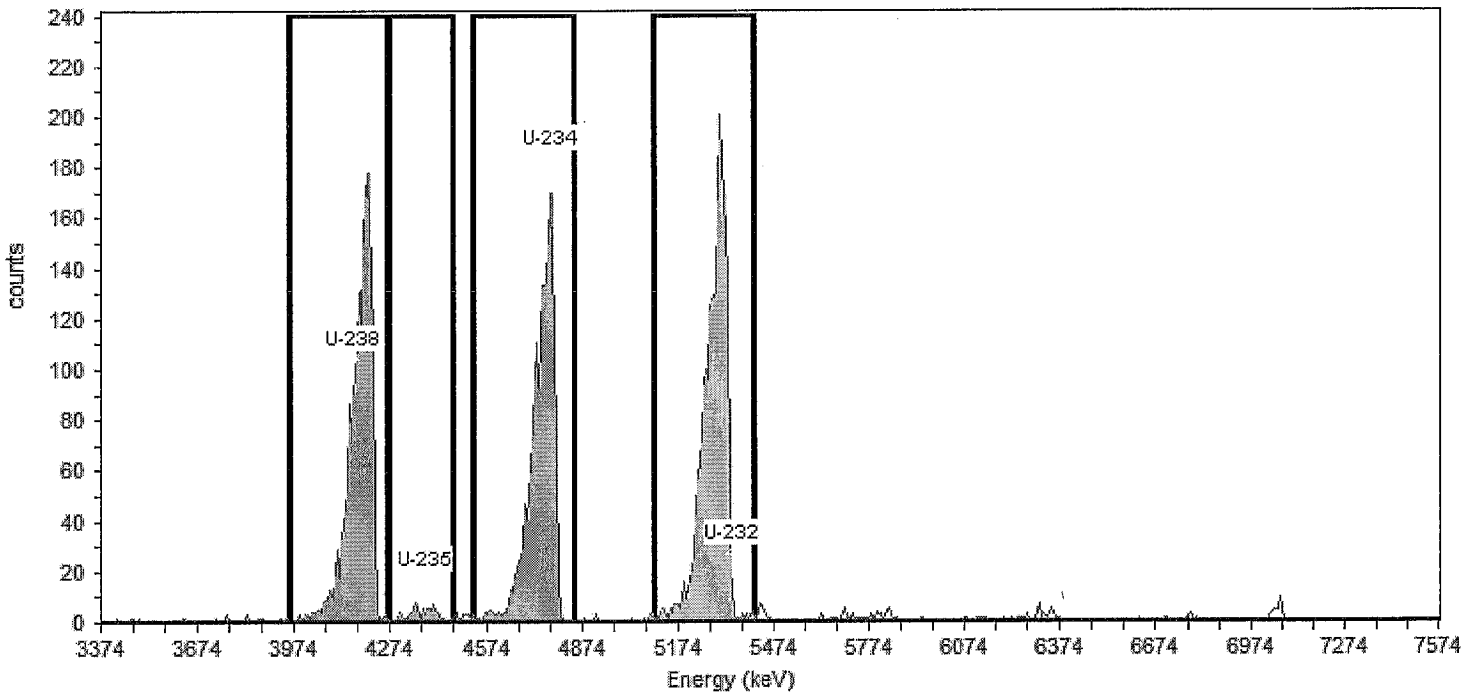
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 100.46%

Acquisition

Detector: AV194 SN: 50-119J2
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 4/22/2016 10:41:10AM
Bkgd Info: Sample: ICB;AV194; Det: AV194; Spectrum #1; 4/22/2016 10:41:10 AM

Energy Calibration: IC-9520;AV194-20151017
Efficiency Calibration:IC-9520;AV194-20151017
Calibration Date: 10/18/2015 3:55:14PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.83% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	77.8	100.0	1645	1.0000	1644.00	6.865E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	22.2	80.2	60	3.0000	57.00	2.968E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	74.8	99.8	1590	1.0000	1589.00	6.649E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	76.2	100.1	1892	8.0000	1884.00	8.262E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:10:20AM 5/9/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

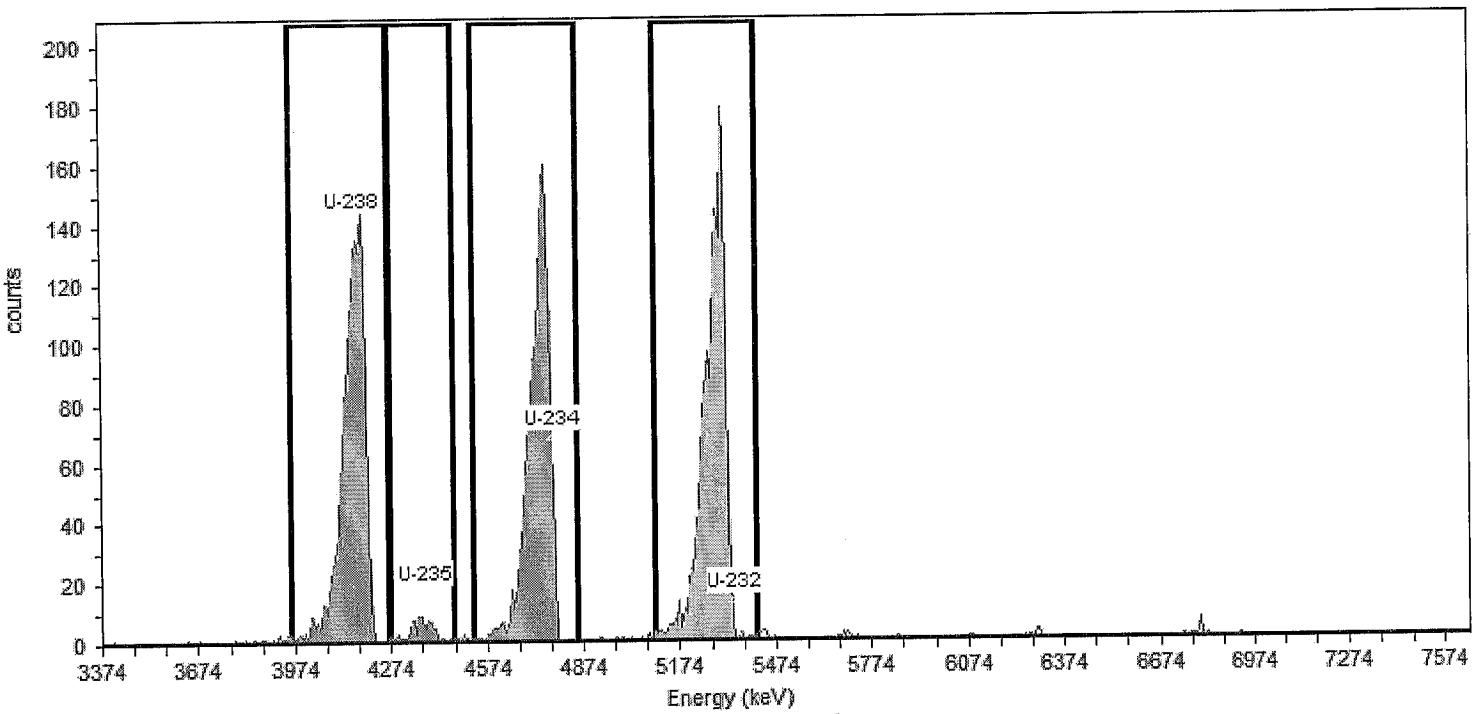
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 83.14%

Acquisition

Detector: AV195 SN: 50-117AA2
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 4/22/2016 10:41:10AM
Bkgd Info: Sample: ICB;AV195; Det: AV195; Spectrum #1; 4/22/2016 10:41:10 AM

Energy Calibration: IC-9792;AV195-20151017a
Efficiency Calibration:IC-9792;AV195-20151017a
Calibration Date: 10/18/2015 3:55:41PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.85% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	73.6	100.0	1490	0.0000	1490.00	7.223E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	78.5	80.2	77	0.0000	77.00	4.654E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	69.4	99.8	1484	3.0000	1481.00	7.193E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	73.2	100.1	1633	10.0000	1623.00	6.838E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:09:54AM 5/9/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

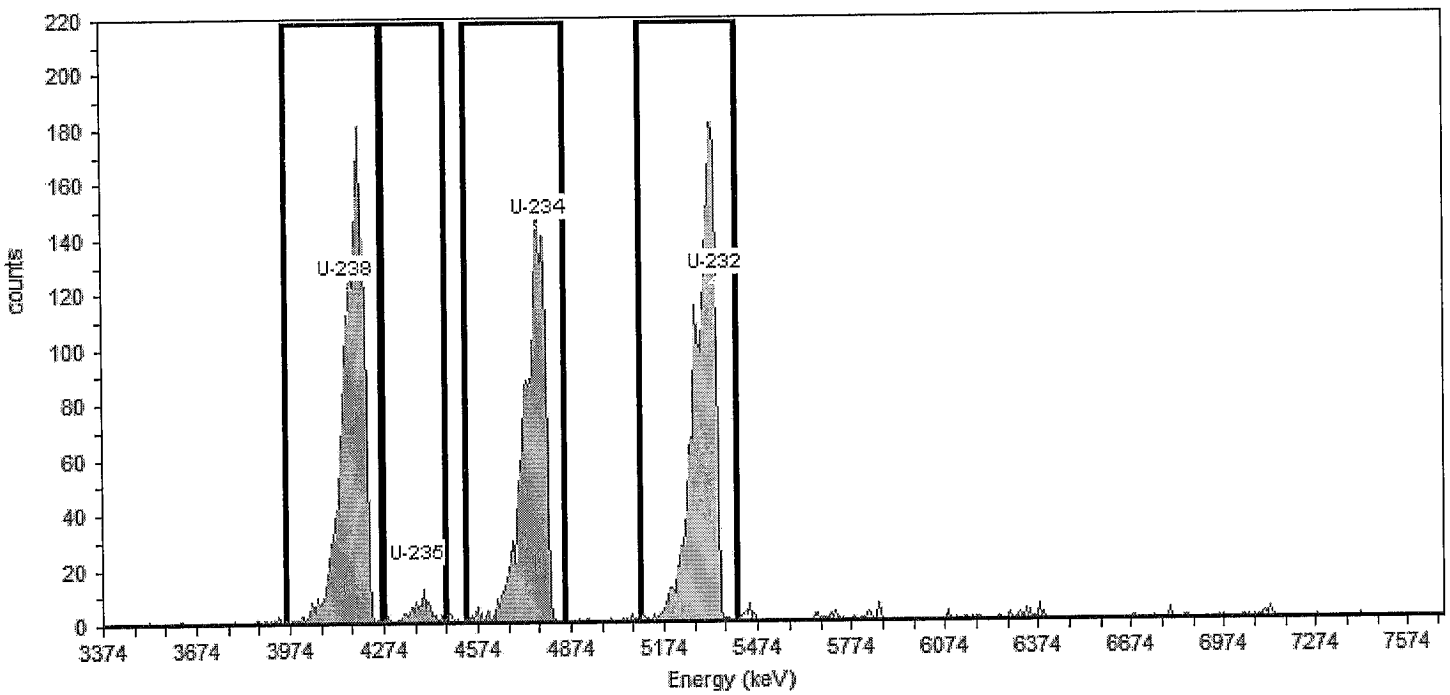
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 95.37%

Acquisition

Detector: AV197 SN: 50-117Z5
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 4/25/2016 9:56:18AM
Bkgd Info: Sample: ICB;AV197; Det: AV197; Spectrum #1; 4/25/2016 9:56:18 AM

Energy Calibration: IC-9794;AV197-20151017
Efficiency Calibration:IC-9794;AV197-20151017
Calibration Date: 10/18/2015 3:55:22PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.48% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	73.5	99.8	1519	3.0000	1516.00	6.779E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	78.8	100.1	1769	6.0000	1763.00	7.844E+001	DPM/mL
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	72.8	100.0	1655	0.0000	1655.00	7.385E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	62.5	80.2	77	0.0000	77.00	4.284E+000	DPM/mL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

UNAT verification

Aliquot Only

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
BC²: 115 1	verification-1	0.1	194	BC: 199
BC²: 116 2	2	1	195	BC: 200
BC²: 117 3	3	1	197	BC: 201
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : U-232

Std Sol'n No. : U-232-00032

Vol (mL) : 0.1

Ref Activity (dpm/mL) : _____

Act Ref Date : _____

Samples Spiked and Traced By: SLB 5/2/16 (Initials / Date)

Verification Signature & Date: JM 5/2/16 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope : UNAT

Std Sol'n ID. : UNAT-00011

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 234-79.169 235-3.370 238-72.2649

Act Ref Date : 03-30-08

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.		
☑	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.		
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.		
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☑	ST-RC-0238 Rev.		
☐	ST-RC-0021 Rev.	☑	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.		
				☐	ST-RC-0241 Rev.		
				☐	ST-RC-0242 Rev.		
				☐	ST-RC-5016 Rev.		
				☐			
				☐			

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☑	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☑	Soil ☐
Short Count ☐	H_2O ☐

Prepared By : SLB

Date : _____

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

UNAT_00011

Reagent ID: UNAT_00011

Description:	UNAT spike	Expiration Date:	05/20/2016
No. of Bottles:	1	Laboratory:	TestAmerica St. Louis
Storage Location:	RAD Actinide STDs	Prepared By:	Bernsen, Sarah C
Reagent Volume:	200.000 mL	Solvent:	1M HNO3
Creation Date:	04/28/2015	Solvent Lot:	n/a
Open Date:			
Container(s):	622074		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
U-234	UNAT Parent_00001	05/20/2016	706.91200	dpm/mL	70.69123	dpm/mL
U-235	UNAT Parent_00001	05/20/2016	33.70600	dpm/mL	3.37064	dpm/mL
U-238	UNAT Parent_00001	05/20/2016	722.65000	dpm/mL	72.26499	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
UNAT Parent_00001	UNAT Parent		05/20/16				20.00000	mL

Uranium only via UTEVA

Batch:_____

ST-RC-0238

*All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

UTEVA lot: UTSR156

11.4.4	UTEVA cartridge	
11.4.5	5mL 3M HNO_3	COMPLETED ☐
11.4.6	Load sample	
11.4.7	25mL 3M HNO_3	COMPLETED ☑
11.4.8	5mL 9M HCl	COMPLETED ☑
11.4.9	20mL 5M HCl / 0.05M oxalic	COMPLETED ☑
11.4.10-11.4.11	Elute into clean tube with 15mL 1M HCl	COMPLETED ☑

St. Louis Radiological Standard Reverification Form

Standard ID Number: UNAT_00011
True Value = 72.2649 DPM/L or g
Date Analyzed: 5/5/2016

Radionuclide: U-238

	Replicates	
#1	68.65	DPM/L or g
#2	72.23	DPM/L or g
#3	73.85	DPM/L or g

Mean = 71.57667

1 sigma = 2.660852 1.96 sigma = 5.21527

True Value minus 5% = 68.65166 (True Value - 5%)
True Value plus 5% = 75.87815 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Amanda Dick 05/09/2016

SOP Reference: STL-QA-0002, Current Revision

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:10:46AM 5/9/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

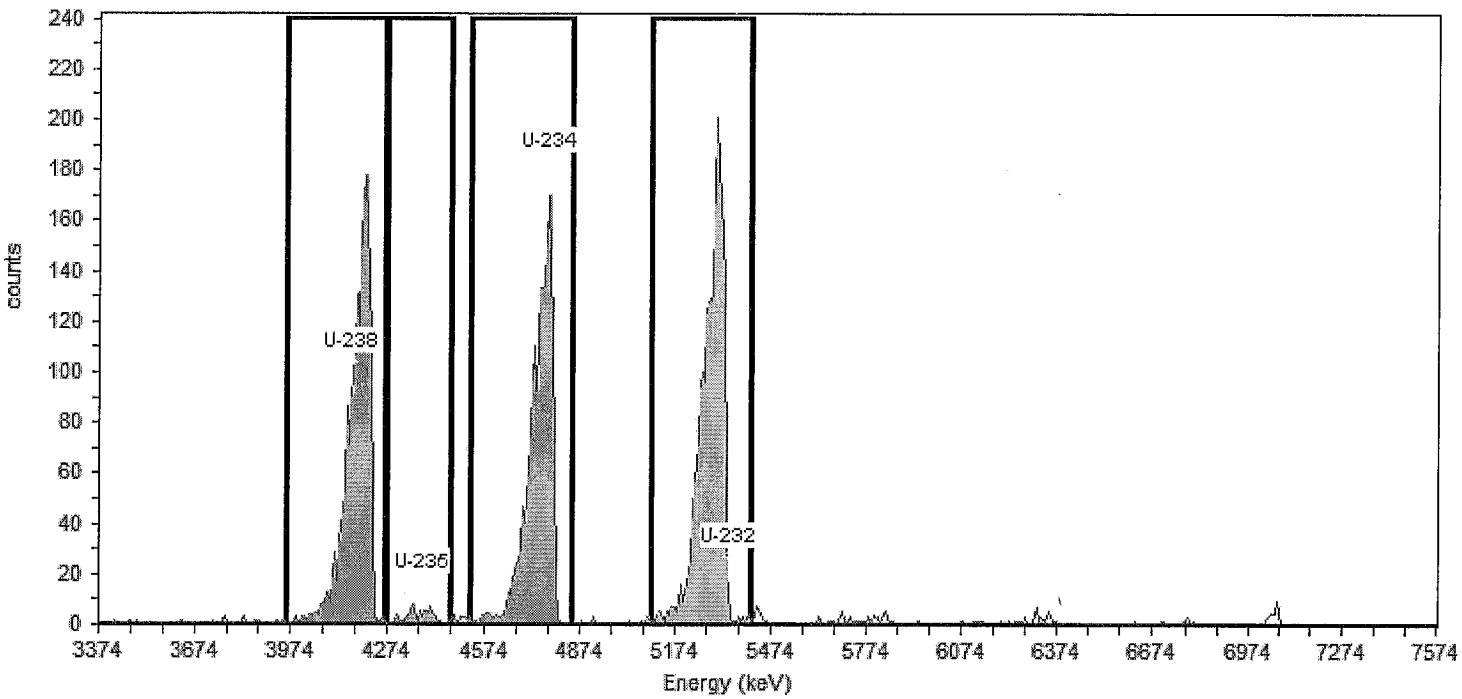
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 100.46%

Acquisition

Detector: AV194 SN: 50-119J2
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 4/22/2016 10:41:10AM
Bkgd Info: Sample: ICB;AV194; Det: AV194; Spectrum #1; 4/22/2016 10:41:10 AM

Energy Calibration: IC-9520;AV194-20151017
Efficiency Calibration:IC-9520;AV194-20151017
Calibration Date: 10/18/2015 3:55:14PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.83% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	77.8	100.0	1645	1.0000	1644.00	6.865E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	22.2	80.2	60	3.0000	57.00	2.968E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	74.8	99.8	1590	1.0000	1589.00	6.649E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	76.2	100.1	1892	8.0000	1884.00	8.262E+001	DPM/mL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:10:20AM 5/9/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

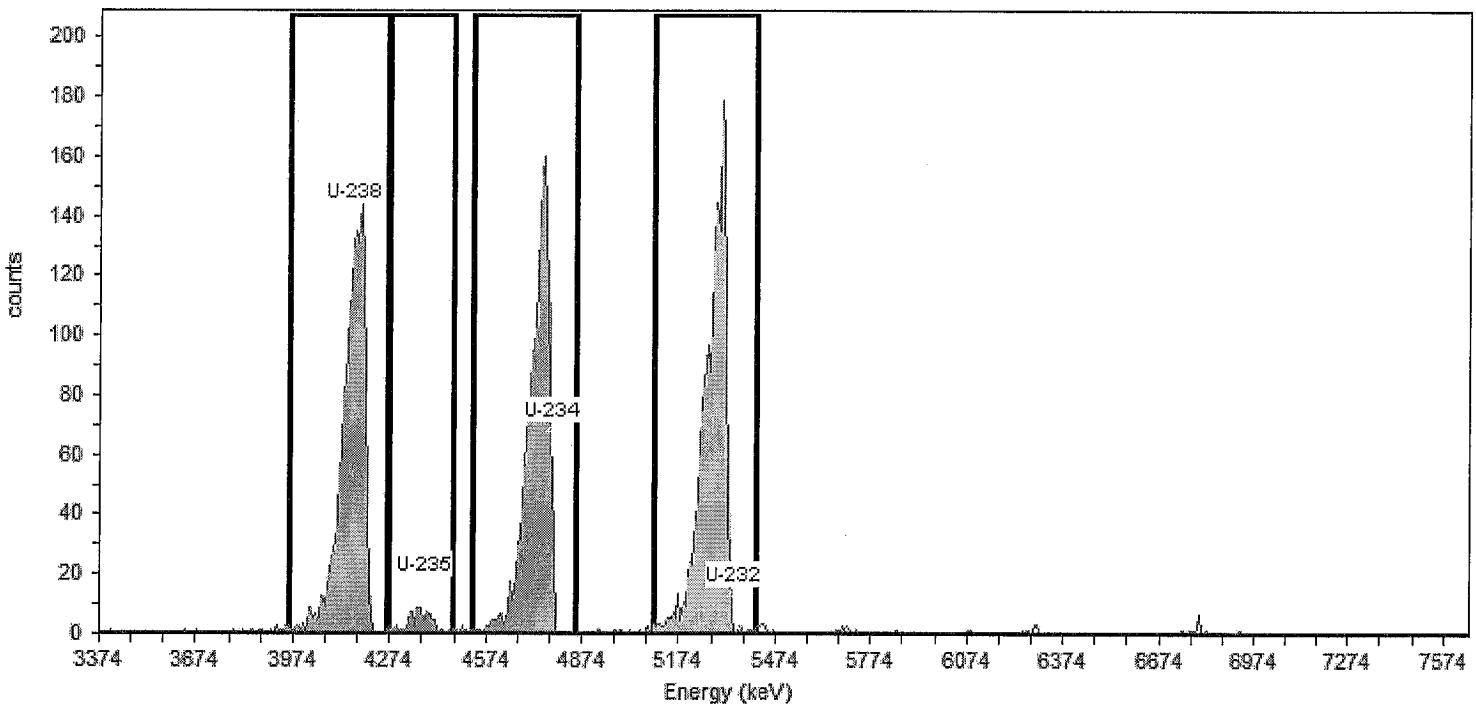
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 83.14%

Acquisition

Detector: AV195 SN: 50-117AA2
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 4/22/2016 10:41:10AM
Bkgd Info: Sample: ICB;AV195; Det: AV195; Spectrum #1; 4/22/2016 10:41:10 AM

Energy Calibration: IC-9792;AV195-20151017a
Efficiency Calibration:IC-9792;AV195-20151017a
Calibration Date: 10/18/2015 3:55:41PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.85% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	73.6	100.0	1490	0.0000	1490.00	7.223E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	78.5	80.2	77	0.0000	77.00	4.654E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	69.4	99.8	1484	3.0000	1481.00	7.193E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	73.2	100.1	1633	10.0000	1623.00	6.838E+001	DPM/mL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:09:54AM 5/9/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

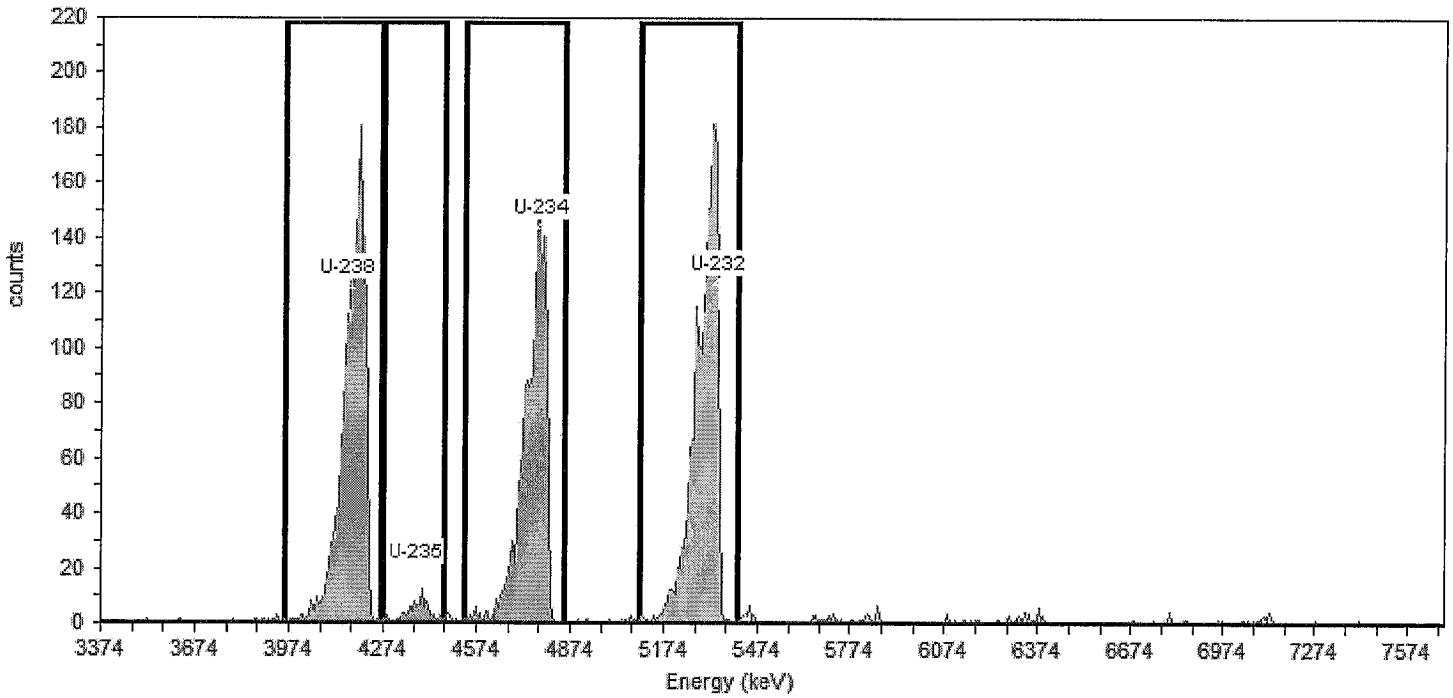
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 95.37%

Acquisition

Detector: AV197 SN: 50-117Z5
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 4/25/2016 9:56:18AM
Bkgd Info: Sample: ICB;AV197; Det: AV197; Spectrum #1; 4/25/2016 9:56:18 AM

Energy Calibration: IC-9794;AV197-20151017
Efficiency Calibration:IC-9794;AV197-20151017
Calibration Date: 10/18/2015 3:55:22PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 24.48% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	73.5	99.8	1519	3.0000	1516.00	6.779E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	78.8	100.1	1769	6.0000	1763.00	7.844E+001	DPM/mL
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	72.8	100.0	1655	0.0000	1655.00	7.385E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	62.5	80.2	77	0.0000	77.00	4.284E+000	DPM/mL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

UNAT verification

Aliquot Only

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
RC#: 115 1	verification-1	0.1	194	RC:199
RC#: 116 2	2	1	195	RC:200
RC#: 117 3	3	1	197	RC:201
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : U-232

Std Sol'n No. : U-232-00032

Vol (mL) : 0.1

Ref Activity (dpm/mL) : _____

Act Ref Date : _____

Samples Spiked and Traced By: SLB 5/2/14 (Initials / Date)

Verification Signature & Date: JM 5/2/16 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope : UNAT

Std Sol'n ID. : UNAT-00011

Vol (mL) : 0.1

Ref Activity (dpm/mL) : ~~234-70.169~~ ~~235-3.370~~ 238-72.2649

Act Ref Date : 03-30-08

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.
☑	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☑	ST-RC-0238 Rev.
☐	ST-RC-0021 Rev.	☑	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.
				☐	ST-RC-0241 Rev.
				☐	ST-RC-0242 Rev.
				☐	ST-RC-5016 Rev.
				☐	
				☐	

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☑	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time		Matrix	
Long Count	☑	Soil	☐
Short Count	☐	H_2O	☐

Prepared By : SLB

Date : _____

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

UNAT_00011

Reagent ID: UNAT_00011

Description:	UNAT spike
No. of Bottles:	1
Storage Location:	RAD Actinide STDs
Reagent Volume:	200.000 mL
Creation Date:	04/28/2015
Open Date:	
Container(s):	622074
Comment:	

Expiration Date:	05/20/2016
Laboratory:	TestAmerica St. Louis
Prepared By:	Bernsen, Sarah C
Solvent:	1M HNO3
Solvent Lot:	n/a

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
U-234	UNAT Parent_00001	05/20/2016	706.91200	dpm/mL	70.69123	dpm/mL
U-235	UNAT Parent_00001	05/20/2016	33.70600	dpm/mL	3.37064	dpm/mL
U-238	UNAT Parent_00001	05/20/2016	722.65000	dpm/mL	72.26499	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
UNAT Parent_00001	UNAT Parent		05/20/16				20.00000	mL

Uranium only via UTEVA

Batch:_____ ST-RC-0238

*All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

UTEVA lot: UTSR156

11.4.4	UTEVA cartridge	
11.4.5	5mL 3M HNO_3	COMPLETED ☐
11.4.6	Load sample	
11.4.7	25mL 3M HNO_3	COMPLETED ☑
11.4.8	5mL 9M HCl	COMPLETED ☑
11.4.9	20mL 5M HCl / 0.05M oxalic	COMPLETED ☑
11.4.10-11.4.11	Elute into clean tube with 15mL 1M HCl	COMPLETED ☑

Method 8260C

Volatile Organic Compounds (GC/MS) by Method 8260C

FORM II
GC/MS VOA SURROGATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid (TCLP) Level: Low

GC Column (1): RTXVMS30 ID: 0.25(mm)

Client Sample ID	Lab Sample ID	DBFM #	DCA #	TOL #	BFB #
YMTFA74SE001	160-18521-1	104	110	100	99
YMTFA75SE001	160-18521-2	99	108	98	97
	LB 160-263916/1-A	100	102	97	97
	LCS 160-264101/12	100	102	99	97
YMTFA75SE001 MS	160-18521-2 MS	102	106	97	96
YMTFA75SE001 MSD	160-18521-2 MSD	99	103	97	94

	QC LIMITS
DBFM = Dibromofluoromethane (Surr)	85-115
DCA = 1,2-Dichloroethane-d4 (Surr)	83-117
TOL = Toluene-d8 (Surr)	85-115
BFB = 4-Bromofluorobenzene (Surr)	84-120

Column to be used to flag recovery values

FORM II 8260C

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Water Level: Low Lab File ID: LLCS4349.D

Lab ID: LCS 160-264101/12 Client ID:

COMPOUND	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC	QC LIMITS REC	#
1,1-Dichloroethene	0.500	0.487	97	79-117	
1,2-Dichloroethane	0.500	0.498	100	80-115	
2-Butanone (MEK)	0.500	0.495	99	64-117	
Benzene	0.500	0.482	96	85-115	
Carbon tetrachloride	0.500	0.494	99	79-119	
Chlorobenzene	0.500	0.496	99	85-115	
Chloroform	0.500	0.482	96	85-115	
Tetrachloroethene	0.500	0.495	99	79-116	
Trichloroethene	0.500	0.486	97	85-115	
Vinyl chloride	0.500	0.550	110	72-136	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA MATRIX SPIKE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid (TCLP) Level: Low Lab File ID: LSMP4363.D

Lab ID: 160-18521-2 MS Client ID: YMTFA75SE001 MS

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC	QC LIMITS REC	#
1,1-Dichloroethene	0.500	0.0037 U	0.475	95	80-115	
1,2-Dichloroethane	0.500	0.0037 U	0.519	104	85-115	
2-Butanone (MEK)	0.500	0.0039 U	0.505	101	67-117	
Benzene	0.500	0.0025 U	0.484	97	85-115	
Carbon tetrachloride	0.500	0.0036 U	0.500	100	79-117	
Chlorobenzene	0.500	0.0038 U	0.488	98	85-115	
Chloroform	0.500	0.00092 U	0.491	98	85-115	
Tetrachloroethene	0.500	0.0028 U	0.487	97	82-115	
Trichloroethene	0.500	0.0029 U	0.490	98	84-115	
Vinyl chloride	0.500	0.0043 U	0.532	106	75-132	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid (TCLP) Level: Low Lab File ID: LSMP4364.D

Lab ID: 160-18521-2 MSD Client ID: YMTFA75SE001 MSD

COMPOUND	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
1,1-Dichloroethene	0.500	0.480	96	1	20	80-115	
1,2-Dichloroethane	0.500	0.498	100	4	20	85-115	
2-Butanone (MEK)	0.500	0.485	97	4	20	67-117	
Benzene	0.500	0.478	96	1	20	85-115	
Carbon tetrachloride	0.500	0.497	99	0	20	79-117	
Chlorobenzene	0.500	0.487	97	0	20	85-115	
Chloroform	0.500	0.484	97	2	20	85-115	
Tetrachloroethene	0.500	0.492	98	1	20	82-115	
Trichloroethene	0.500	0.486	97	1	20	84-115	
Vinyl chloride	0.500	0.545	109	2	20	75-132	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab File ID: LBFB3532.D BFB Injection Date: 07/11/2016

Instrument ID: VMSL BFB Injection Time: 08:18

Analysis Batch No.: 259855

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	19.7	
75	30.0 - 60.0 % of mass 95	46.8	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.7	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	82.5	
175	5.0 - 9.0 % of mass 174	6.2	(7.5) 1
176	95.0 - 101.0 % of mass 174	78.9	(95.6) 1
177	5.0 - 9.0 % of mass 176	5.3	(6.7) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 160-259855/3	LICL3534.D	07/11/2016	09:07
	IC 160-259855/4	LICL3535.D	07/11/2016	09:31
	IC 160-259855/5	LICL3536.D	07/11/2016	09:56
	IC 160-259855/6	LICL3537.D	07/11/2016	10:21
	IC 160-259855/7	LICL3538.D	07/11/2016	10:46
	ICIS 160-259855/8	LICL3539.D	07/11/2016	11:11
	IC 160-259855/9	LICL3540.D	07/11/2016	11:36
	IC 160-259855/10	LICL3541.D	07/11/2016	12:00
	ICV 160-259855/12	LICV3543.D	07/11/2016	12:50

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab File ID: LBFB4338.D BFB Injection Date: 08/09/2016

Instrument ID: VMSL BFB Injection Time: 17:38

Analysis Batch No.: 264101

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	21.6	
75	30.0 - 60.0 % of mass 95	49.9	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.8	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	81.3	
175	5.0 - 9.0 % of mass 174	6.2	(7.6) 1
176	95.0 - 101.0 % of mass 174	78.2	(96.2) 1
177	5.0 - 9.0 % of mass 176	5.3	(6.8) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 160-264101/2	LCCV4339.D	08/09/2016	18:00
	LCS 160-264101/12	LLCS4349.D	08/09/2016	22:27
	LB 160-263916/1-A	LBLK4354.D	08/10/2016	00:32
YMTFA74SE001	160-18521-1	LSMP4361.D	08/10/2016	03:28
YMTFA75SE001	160-18521-2	LSMP4362.D	08/10/2016	03:53
YMTFA75SE001 MS	160-18521-2 MS	LSMP4363.D	08/10/2016	04:18
YMTFA75SE001 MSD	160-18521-2 MSD	LSMP4364.D	08/10/2016	04:43

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: ICIS 160-259855/8 Date Analyzed: 07/11/2016 11:11

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm)

Lab File ID (Standard): LICL3539.D Heated Purge: (Y/N) Y

Calibration ID: 11179

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		2429687	9.09	1668953	11.92	877092	14.10
UPPER LIMIT		4859374	9.59	3337906	12.42	1754184	14.60
LOWER LIMIT		1214844	8.59	834477	11.42	438546	13.60
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 160-259855/12		2498731	9.09	1703329	11.92	876414	14.10

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: CCVIS 160-264101/2 Date Analyzed: 08/09/2016 18:00

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm)

Lab File ID (Standard): LCCV4339.D Heated Purge: (Y/N) Y

Calibration ID: 11179

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2250206	9.07	1599937	11.92	855849	14.09
UPPER LIMIT		4500412	9.57	3199874	12.42	1711698	14.59
LOWER LIMIT		1125103	8.57	799969	11.42	427925	13.59
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 160-264101/12		2201447	9.07	1540300	11.92	808077	14.09
LB 160-263916/1-A		2190498	9.07	1545515	11.92	762846	14.09
160-18521-1	YMTFA74SE001	1857569	9.07	1324168	11.92	653907	14.09
160-18521-2	YMTFA75SE001	1906237	9.07	1344505	11.92	671484	14.09
160-18521-2 MS	YMTFA75SE001 MS	1986978	9.07	1418055	11.92	746924	14.09
160-18521-2 MSD	YMTFA75SE001 MSD	2129718	9.07	1490489	11.92	785985	14.09

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: YMTFA74SE001 | Lab Sample ID: 160-18521-1

Matrix: Solid (TCLP) | Lab File ID: LSMP4361.D

Analysis Method: 8260C | Date Collected: 08/05/2016 07:50

Sample wt/vol: 0.5(mL) | Date Analyzed: 08/10/2016 03:28

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTXVMS30 ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 264101 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	0.0037	U	0.050	0.0037
107-06-2	1,2-Dichloroethane	0.0037	U	0.050	0.0037
78-93-3	2-Butanone (MEK)	0.0039	U	0.050	0.0039
71-43-2	Benzene	0.0025	U	0.050	0.0025
56-23-5	Carbon tetrachloride	0.0036	U	0.050	0.0036
108-90-7	Chlorobenzene	0.0038	U	0.050	0.0038
67-66-3	Chloroform	0.00092	U	0.050	0.00092
127-18-4	Tetrachloroethene	0.0028	U	0.050	0.0028
79-01-6	Trichloroethene	0.0029	U	0.050	0.0029
75-01-4	Vinyl chloride	0.0043	U	0.10	0.0043

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	99		84-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	110		83-117
2037-26-5	Toluene-d8 (Surr)	100		85-115
1868-53-7	Dibromofluoromethane (Surr)	104		85-115

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4361.D
Lims ID: 160-18521-B-1-A
Client ID: YMTFA74SE001
Sample Type: Client
Inject. Date: 10-Aug-2016 03:28:30 ALS Bottle#: 23 Worklist Smp#: 24
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-024
Misc. Info.: 160-18521-B-1-A
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:03:47 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:03:47

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
4 Vinyl chloride	62		3.641				ND	
9 1,1-Dichloroethene	96		5.541				ND	
36 Chloroform	83		8.111				ND	
37 Carbon tetrachloride	117		8.264				ND	
$ 41 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	94	388128	52.1	
43 2-Butanone (MEK)	43		8.418				ND	
44 Benzene	78		8.697				ND	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	92	421038	55.0	
49 1,2-Dichloroethane	62		8.893				ND	
* 51 Fluorobenzene	96	9.074	9.074	0.000	98	1857569	50.0	
53 Trichloroethene	95		9.228				ND	
$ 62 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	1822777	49.9	
65 Tetrachloroethene	164		10.904				ND	
* 76 Chlorobenzene-d5	117	11.924	11.923	0.001	86	1324168	50.0	
77 Chlorobenzene	112		11.937				ND	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	92	601847	49.6	
* 101 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	97	653907	50.0	

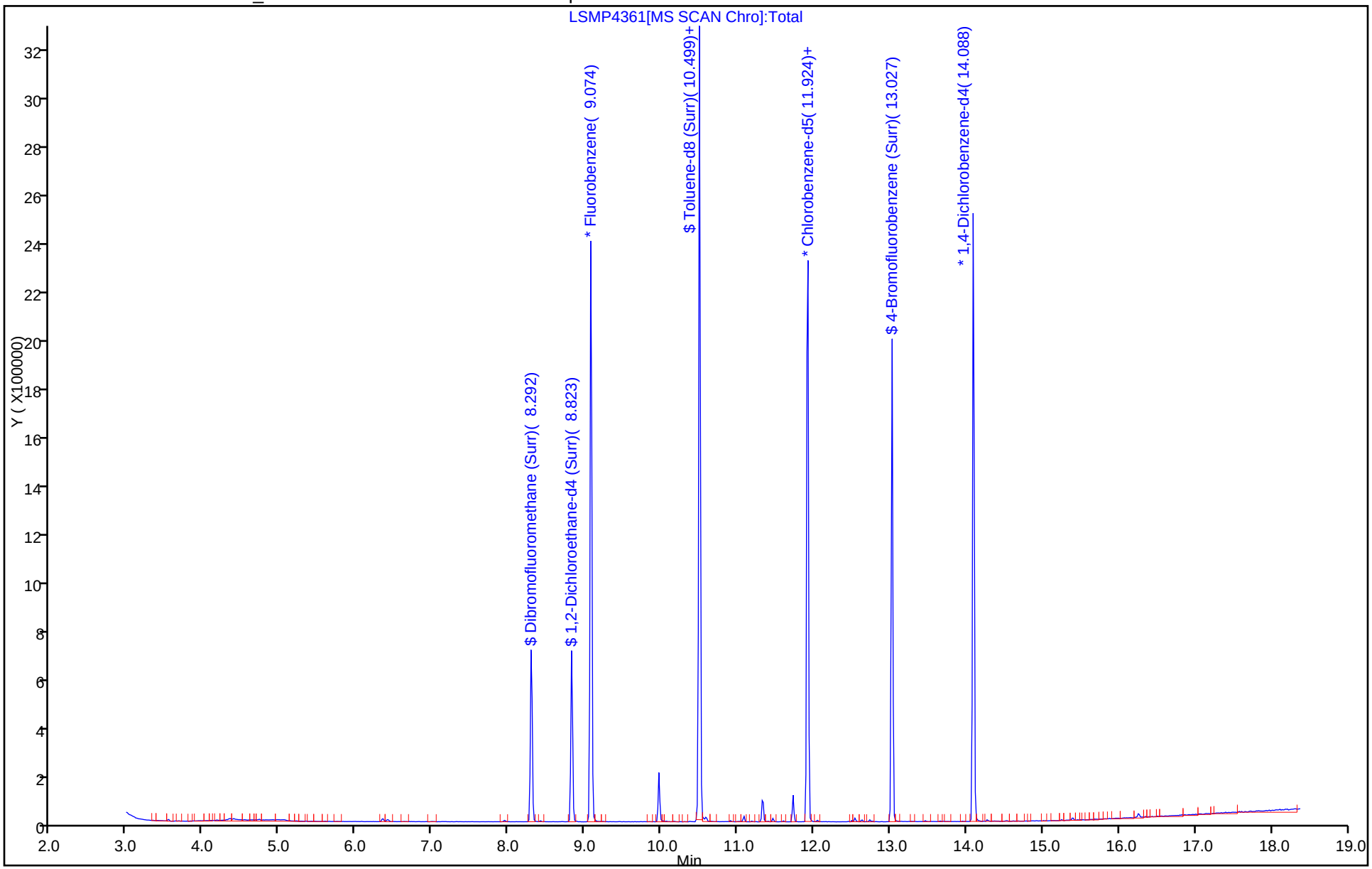
Reagents:

I.S. Working_00134 Amount Added: 10.00 Units: uL Run Reagent
8260 Surr 25_00064 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 16-Aug-2016 23:03:48 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4361.D				
Injection Date:	10-Aug-2016 03:28:30	Instrument ID:	VMSL	Operator ID:	JDH
Lims ID:	160-18521-B-1-A	Lab Sample ID:	160-18521-1	Worklist Smp#:	24
Client ID:	YMTFA74SE001				
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	23
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4361.D
Lims ID: 160-18521-B-1-A
Client ID: YMTFA74SE001
Sample Type: Client
Inject. Date: 10-Aug-2016 03:28:30 ALS Bottle#: 23 Worklist Smp#: 24
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-024
Misc. Info.: 160-18521-B-1-A
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:03:47 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:03:47

Compound	Amount Added	Amount Recovered	% Rec.
$ 41 Dibromofluoromethane (Surr)	50.0	52.1	104.22
$ 47 1,2-Dichloroethane-d4 (Surr)	50.0	55.0	109.93
$ 62 Toluene-d8 (Surr)	50.0	49.9	99.78
$ 86 4-Bromofluorobenzene (Surr)	50.0	49.6	99.28

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: YMTFA75SE001 | Lab Sample ID: 160-18521-2

Matrix: Solid (TCLP) | Lab File ID: LSMP4362.D

Analysis Method: 8260C | Date Collected: 08/05/2016 09:25

Sample wt/vol: 0.5(mL) | Date Analyzed: 08/10/2016 03:53

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTXVMS30 ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 264101 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	0.0037	U	0.050	0.0037
107-06-2	1,2-Dichloroethane	0.0037	U	0.050	0.0037
78-93-3	2-Butanone (MEK)	0.0039	U	0.050	0.0039
71-43-2	Benzene	0.0025	U	0.050	0.0025
56-23-5	Carbon tetrachloride	0.0036	U	0.050	0.0036
108-90-7	Chlorobenzene	0.0038	U	0.050	0.0038
67-66-3	Chloroform	0.00092	U	0.050	0.00092
127-18-4	Tetrachloroethene	0.0028	U	0.050	0.0028
79-01-6	Trichloroethene	0.0029	U	0.050	0.0029
75-01-4	Vinyl chloride	0.0043	U	0.10	0.0043

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		84-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	108		83-117
2037-26-5	Toluene-d8 (Surr)	98		85-115
1868-53-7	Dibromofluoromethane (Surr)	99		85-115

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4362.D
Lims ID: 160-18521-D-2-A
Client ID: YMTFA75SE001
Sample Type: Client
Inject. Date: 10-Aug-2016 03:53:30 ALS Bottle#: 24 Worklist Smp#: 25
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-025
Misc. Info.: 160-18521-D-2-A
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:04:34 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:04:33

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85		3.125				ND	
2 1,2-Dichloro-1,1,2,2-tetra	135		3.376				ND	
3 Chloromethane	50		3.488				ND	
4 Vinyl chloride	62		3.641				ND	
122 Butadiene	39		3.683				ND	
5 Bromomethane	94		4.256				ND	
6 Chloroethane	64		4.479				ND	
7 Trichlorofluoromethane	101		4.731				ND	
123 Dichlorofluoromethane	67		4.829				ND	
8 Ethyl ether	74		5.248				ND	
11 Ethanol	45		5.471				ND	
9 1,1-Dichloroethene	96		5.541				ND	
10 Carbon disulfide	76		5.597				ND	
12 1,1,2-Trichloro-1,2,2-trif	151		5.597				ND	
13 Iodomethane	142		5.764				ND	
S 26 1,2-Dichloroethene, Total	96		5.816				ND	
14 Acrolein	56		6.030				ND	
15 3-Chloro-1-propene	39		6.211				ND	
16 Isopropyl alcohol	45		6.225				ND	
17 Methylene Chloride	84		6.351				ND	
18 Acetone	43		6.407				ND	
19 trans-1,2-Dichloroethene	96		6.546				ND	
20 Methyl acetate	74		6.560				ND	
21 Hexane	86		6.630				ND	
22 Methyl tert-butyl ether	73		6.672				ND	
24 Acetonitrile	41		6.993				ND	
25 Isopropyl ether	45		7.091				ND	
23 2-Methyl-2-propanol	59		7.091				ND	
27 2-Chloro-1,3-butadiene	53		7.245				ND	
28 1,1-Dichloroethane	63		7.273				ND	
29 Acrylonitrile	53		7.329				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
30 Tert-butyl ethyl ether	59		7.496				ND	
31 Vinyl acetate	43		7.510				ND	
32 cis-1,2-Dichloroethene	96		7.845				ND	
33 2,2-Dichloropropane	77		7.957				ND	
35 Chlorobromomethane	128		8.055				ND	
34 Cyclohexane	84		8.055				ND	
36 Chloroform	83		8.111				ND	
39 Ethyl acetate	45		8.194				ND	
37 Carbon tetrachloride	117		8.264				ND	
38 Tetrahydrofuran	71		8.292				ND	
$ 41 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	94	380106	49.7	
40 1,1,1-Trichloroethane	97		8.334				ND	
43 2-Butanone (MEK)	43		8.418				ND	
42 1,1-Dichloropropene	75		8.446				ND	
125 Isooctane	57		8.530				ND	
117 n-Heptane	43		8.613				ND	
44 Benzene	78		8.697				ND	
45 Propionitrile	54		8.725				ND	
46 Methacrylonitrile	41		8.739				ND	
48 Tert-amyl methyl ether	73		8.767				ND	
50 Isobutyl alcohol	42		8.823				ND	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	92	424087	53.9	
49 1,2-Dichloroethane	62		8.893				ND	
* 51 Fluorobenzene	96	9.074	9.074	0.000	98	1906237	50.0	
118 1,4-Difluorobenzene	114		9.130				ND	
53 Trichloroethene	95		9.228				ND	
52 Methylcyclohexane	55		9.228				ND	
54 n-Butanol	56		9.451				ND	
55 Dibromomethane	93		9.647				ND	
56 1,2-Dichloropropane	63		9.731				ND	
57 Dichlorobromomethane	83		9.759				ND	
124 Ethyl acrylate	55		9.856				ND	
58 Methyl methacrylate	69		9.856				ND	
59 1,4-Dioxane	88		9.940				ND	
60 2-Chloroethyl vinyl ether	63		10.233				ND	
128 2-Pentanone	43		10.253				ND	
61 cis-1,3-Dichloropropene	75		10.331				ND	
$ 62 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	1818571	49.0	
63 Toluene	92		10.555				ND	
64 2-Nitropropane	43		10.764				ND	
66 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
67 trans-1,3-Dichloropropene	75		10.904				ND	
65 Tetrachloroethene	164		10.904				ND	
69 Ethyl methacrylate	69		10.988				ND	
68 1,1,2-Trichloroethane	83		11.058				ND	
70 Chlorodibromomethane	129		11.239				ND	
71 1,3-Dichloropropane	76		11.323				ND	
119 n-Butyl acetate	43	11.463	11.463	0.000	95	4441	0.4390	
72 Ethylene Dibromide	107		11.490				ND	
74 2-Hexanone	43		11.588				ND	
S 73 1,3-Dichloropropene, Total	75		11.620				ND	
75 1-Chlorohexane	91		11.854				ND	

Report Date: 16-Aug-2016 23:04:36 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4362.D

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
78 Ethylbenzene	91		11.923				ND	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	86	1344505	50.0	
77 Chlorobenzene	112		11.937				ND	
79 1,1,1,2-Tetrachloroethane	131		11.979				ND	
80 m-Xylene & p-Xylene	106		12.049				ND	
82 o-Xylene	106		12.454				ND	
83 Styrene	104		12.496				ND	
84 Bromoform	173		12.566				ND	
85 Isopropylbenzene	105		12.733				ND	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	92	605861	48.7	
88 N-Propylbenzene	91		13.111				ND	
87 Bromobenzene	156		13.152				ND	
89 1,1,2,2-Tetrachloroethane	83		13.166				ND	
91 1,3,5-Trimethylbenzene	105		13.278				ND	
90 2-Chlorotoluene	91		13.306				ND	
92 1,2,3-Trichloropropane	110		13.334				ND	
93 trans-1,4-Dichloro-2-buten	53		13.348				ND	
94 Cyclohexanone	55		13.418				ND	
95 4-Chlorotoluene	91		13.460				ND	
96 tert-Butylbenzene	119		13.599				ND	
97 1,2,4-Trimethylbenzene	105		13.655				ND	
81 Pentachloroethane	167		13.655				ND	
98 sec-Butylbenzene	105		13.767				ND	
99 4-Isopropyltoluene	119		13.893				ND	
100 1,3-Dichlorobenzene	146		14.032				ND	
* 101 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	97	671484	50.0	
120 1,2,3-Trimethylbenzene	105		14.102				ND	
102 1,4-Dichlorobenzene	146		14.116				ND	
103 n-Butylbenzene	134		14.298				ND	
121 Benzyl chloride	126		14.340				ND	
104 1,2-Dichlorobenzene	146		14.535				ND	
106 n-Nonyl Aldehyde	57		15.247				ND	
105 1,2-Dibromo-3-Chloropropan	157		15.317				ND	
107 1,3,5-Trichlorobenzene	180		15.331				ND	
108 Hexachlorobutadiene	225		15.918				ND	
109 1,2,4-Trichlorobenzene	180		15.988				ND	
110 Naphthalene	128		16.351				ND	
S 112 Xylenes, Total	106		16.500				ND	
111 1,2,3-Trichlorobenzene	180		16.546				ND	
126 C6-C12	1		0.000				ND	
S 113 Trihalomethanes, Total	1		0.000				ND	
127 2-Methylpentane	1		0.000				ND	

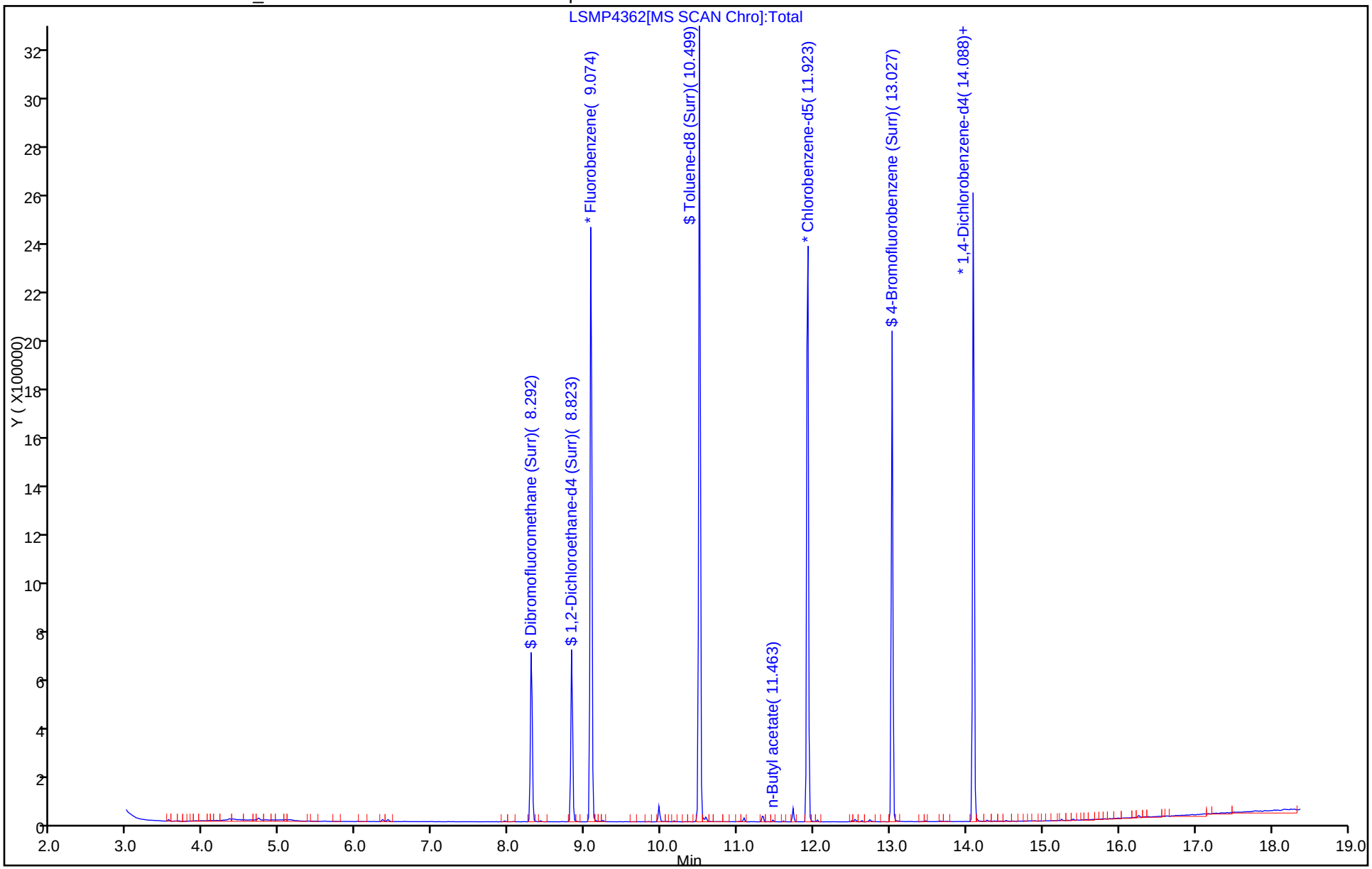
Reagents:

I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00064	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 16-Aug-2016 23:04:36 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4362.D				
Injection Date:	10-Aug-2016 03:53:30	Instrument ID:	VMSL	Operator ID:	JDH
Lims ID:	160-18521-D-2-A	Lab Sample ID:	160-18521-2	Worklist Smp#:	25
Client ID:	YMTFA75SE001				
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	24
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4362.D
Lims ID: 160-18521-D-2-A
Client ID: YMTFA75SE001
Sample Type: Client
Inject. Date: 10-Aug-2016 03:53:30 ALS Bottle#: 24 Worklist Smp#: 25
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-025
Misc. Info.: 160-18521-D-2-A
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:04:34 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:04:33

Compound	Amount Added	Amount Recovered	% Rec.
$ 41 Dibromofluoromethane (Surr)	50.0	49.7	99.46
$ 47 1,2-Dichloroethane-d4 (Surr)	50.0	53.9	107.89
$ 62 Toluene-d8 (Surr)	50.0	49.0	98.04
$ 86 4-Bromofluorobenzene (Surr)	50.0	48.7	97.33

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-259855/3	LICL3534.D
Level 2	IC 160-259855/4	LICL3535.D
Level 3	IC 160-259855/5	LICL3536.D
Level 4	IC 160-259855/6	LICL3537.D
Level 5	IC 160-259855/7	LICL3538.D
Level 6	ICIS 160-259855/8	LICL3539.D
Level 7	IC 160-259855/9	LICL3540.D
Level 8	IC 160-259855/10	LICL3541.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5		B	M1	M2								
Dichlorodifluoromethane	+++++ 0.3135	+++++ 0.3246	0.3584 0.3199	0.3378	0.3245	Ave		0.3298			0.1000	4.9		20.0			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	+++++ 0.1536	+++++ 0.1494	0.1645 0.1559	0.1601	0.1457	Ave		0.1548			0.0100	4.5		20.0			
Chloromethane	+++++ 0.4042	+++++ 0.4486	0.4683 0.4458	0.4454	0.4296	Ave		0.4403			0.1000	4.9		20.0			
Vinyl chloride	0.3005 0.3505	0.3638 0.3774	0.3855 0.3717	0.3686	0.3601	Ave		0.3598			0.1000	7.3		20.0			
Butadiene	+++++ 0.3411	+++++ 0.3696	0.3747 0.3555	0.3615	0.3531	Ave		0.3592			0.0100	3.4		20.0			
Bromomethane	+++++ 0.1284	+++++ 0.1418	0.1688 0.1482	0.1533	0.1435	Ave		0.1473			0.1000	9.1		20.0			
Chloroethane	+++++ 0.1746	+++++ 0.1827	0.2086 0.1904	0.1947	0.1855	Ave		0.1894			0.1000	6.2		20.0			
Trichlorofluoromethane	+++++ 0.3687	+++++ 0.3754	0.4374 0.3868	0.4049	0.3819	Ave		0.3925			0.1000	6.4		20.0			
Dichlorofluoromethane	+++++ 0.4247	+++++ 0.4460	0.5060 0.4445	0.4654	0.4437	Ave		0.4550			0.0100	6.2		20.0			
Ethyl ether	+++++ 0.0986	+++++ 0.1076	0.1137 0.1093	0.1064	0.1016	Ave		0.1062			0.0100	5.1		20.0			
1,1-Dichloroethene	+++++ 0.2526	+++++ 0.2578	0.2888 0.2545	0.2737	0.2601	Ave		0.2646			0.1000	5.3		20.0			
Ethanol	+++++ 0.0002	+++++ 0.0003	0.0003 0.0003	0.0003	0.0003	Ave		0.0003		*	0.0010	14.9		20.0			
Carbon disulfide	+++++ 0.8814	+++++ 0.8913	1.0033 0.8721	0.9484	0.9228	Ave		0.9199			0.1000	5.4		20.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	+++++ 0.2295	+++++ 0.2328	0.2676 0.2280	0.2514	0.2405	Ave		0.2416			0.1000	6.4		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5		B	M1	M2								
Iodomethane	+++++ 0.1934	+++++ 0.2188	0.1481 0.2226	0.1470	0.1702	Ave		0.1833			0.0100	18.3		20.0			
Acrolein	+++++ 0.0214	+++++ 0.0227	0.0216 0.0239	0.0218	0.0210	Ave		0.0221			0.0010	4.8		20.0			
Allyl chloride	+++++ 0.3115	+++++ 0.3166	0.3471 0.3062	0.3181	0.3143	Ave		0.3190			0.0100	4.5		20.0			
Isopropyl alcohol	+++++ 0.0083	+++++ 0.0089	0.0095 0.0087	0.0092	0.0087	Ave		0.0089		*	0.0100	4.8		20.0			
Methylene Chloride	+++++ 0.2258	+++++ 0.2340	0.2697 0.2345	0.2508	0.2370	Ave		0.2419			0.1000	6.6		20.0			
Acetone	+++++ 0.0368	+++++ 0.0364	0.0635 0.0381	0.0528	0.0440	Lin1	0.1394	0.0363		*	0.1000				0.9980		0.9900
trans-1,2-Dichloroethene	+++++ 0.2727	0.2976 0.2711	0.3108 0.2656	0.2901	0.2840	Ave		0.2846			0.1000	5.7		20.0			
Methyl acetate	+++++ 0.0189	+++++ 0.0196	0.0204 0.0198	0.0197	0.0192	Ave		0.0196		*	0.1000	2.6		20.0			
n-Hexane	+++++ 0.0970	+++++ 0.0970	0.1037 0.0956	0.1021	0.1003	Ave		0.0993			0.0100	3.3		20.0			
Methyl tert-butyl ether	+++++ 0.4752	+++++ 0.5056	0.5343 0.5056	0.5111	0.4862	Ave		0.5030			0.1000	4.1		20.0			
Acetonitrile	+++++ 0.0155	+++++ 0.0161	0.0187 0.0164	0.0171	0.0160	Ave		0.0166			0.0010	7.0		20.0			
Isopropyl ether	+++++ 0.8329	+++++ 0.8657	0.9387 0.8550	0.8747	0.8490	Ave		0.8693			0.0100	4.2		20.0			
tert-Butyl alcohol	+++++ 0.0090	+++++ 0.0095	0.0102 0.0096	0.0095	0.0091	Ave		0.0095		*	0.0100	4.6		20.0			
2-Chloro-1,3-butadiene	+++++ 0.5100	+++++ 0.5163	0.5457 0.5032	0.5243	0.5170	Ave		0.5194			0.0100	2.8		20.0			
1,1-Dichloroethane	+++++ 0.4928	+++++ 0.5019	0.5720 0.4958	0.5308	0.5131	Ave		0.5177			0.2000	5.8		20.0			
Acrylonitrile	+++++ 0.0496	+++++ 0.0520	0.0557 0.0519	0.0532	0.0507	Ave		0.0522			0.0100	4.1		20.0			
Tert-butyl ethyl ether	+++++ 0.6741	+++++ 0.7105	0.7412 0.7069	0.7065	0.6848	Ave		0.7040			0.0100	3.3		20.0			
Vinyl acetate	+++++ 0.3824	+++++ 0.3940	0.4140 0.3925	0.3974	0.3929	Ave		0.3955			0.0100	2.6		20.0			
cis-1,2-Dichloroethene	+++++ 0.2703	0.3006 0.2736	0.3056 0.2732	0.2885	0.2777	Ave		0.2842			0.1000	5.0		20.0			
2,2-Dichloropropane	+++++ 0.4176	+++++ 0.4257	0.4790 0.4199	0.4476	0.4284	Ave		0.4364			0.0100	5.4		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5		B	M1	M2								
Bromochloromethane	+++++ 0.0993	+++++ 0.1013	0.1174 0.0983	0.1082	0.1024	Ave		0.1045			0.0100	6.9		20.0			
Cyclohexane	+++++ 0.4834	+++++ 0.4782	0.5411 0.4612	0.5106	0.4954	Ave		0.4950			0.1000	5.7		20.0			
Chloroform	+++++ 0.4136	0.4637 0.4198	0.4779 0.4141	0.4487	0.4274	Ave		0.4379			0.2000	5.9		20.0			
Ethyl acetate	+++++ 0.0196	+++++ 0.0209	0.0205 0.0214	0.0213	0.0198	Ave		0.0206			0.0100	3.6		20.0			
Carbon tetrachloride	+++++ 0.3776	+++++ 0.3748	0.4199 0.3616	0.3985	0.3918	Ave		0.3874			0.1000	5.3		20.0			
Tetrahydrofuran	+++++ 0.0138	+++++ 0.0148	0.0144 0.0148	0.0144	0.0143	Ave		0.0144			0.0010	2.7		20.0			
1,1,1-Trichloroethane	+++++ 0.4234	+++++ 0.4235	0.4802 0.4123	0.4469	0.4351	Ave		0.4369			0.1000	5.6		20.0			
2-Butanone (MEK)	+++++ 0.0613	+++++ 0.0625	0.0751 0.0634	0.0687	0.0657	Ave		0.0661		*	0.1000	7.7		20.0			
1,1-Dichloropropene	+++++ 0.3906	+++++ 0.3778	0.4289 0.3676	0.4099	0.4008	Ave		0.3959			0.0100	5.6		20.0			
Isooctane	+++++ 1.4147	+++++ 1.4077	1.5745 1.3285	1.5015	1.4652	Ave		1.4487			0.0100	5.9		20.0			
n-Heptane	+++++ 0.6269	+++++ 0.5906	0.6783 0.5569	0.6666	0.6555	Ave		0.6291			0.0100	7.5		20.0			
Benzene	0.9689 1.0503	1.1722 1.0408	1.2074 0.9945	1.1268	1.1033	Ave		1.0830			0.5000	7.8		20.0			
Propionitrile	+++++ 0.0186	+++++ 0.0195	0.0207 0.0192	0.0200	0.0192	Ave		0.0195			0.0010	3.7		20.0			
Methacrylonitrile	+++++ 0.0958	+++++ 0.0986	0.1072 0.0935	0.1022	0.0988	Ave		0.0994			0.0100	4.9		20.0			
Tert-amyl methyl ether	+++++ 0.5149	+++++ 0.5460	0.5714 0.5469	0.5431	0.5194	Ave		0.5403			0.0100	3.8		20.0			
Isobutanol	+++++ 0.0038	+++++ 0.0042	0.0041 0.0042	0.0038	0.0038	Ave		0.0040			0.0010	4.9		20.0			
1,2-Dichloroethane	+++++ 0.2572	0.3043 0.2639	0.2981 0.2623	0.2779	0.2652	Ave		0.2755			0.1000	6.8		20.0			
Methylcyclohexane	+++++ 0.4958	+++++ 0.4711	0.5538 0.4461	0.5320	0.5147	Ave		0.5023			0.1000	7.9		20.0			
Trichloroethene	+++++ 0.2827	0.2938 0.2663	0.3138 0.2519	0.3034	0.2947	Ave		0.2867			0.2000	7.5		20.0			
1-Butanol	+++++ 0.0038	+++++ 0.0042	0.0038 0.0044	0.0037	0.0037	Ave		0.0039		*	0.0100	7.2		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5		B	M1	M2								
Dibromomethane	+++++ 0.1002	+++++ 0.1038	0.1136 0.1032	0.1055	0.1022	Ave		0.1048			0.0100	4.5		20.0			
1,2-Dichloropropane	+++++ 0.2505	+++++ 0.2558	0.2780 0.2539	0.2663	0.2587	Ave		0.2605			0.1000	3.9		20.0			
Bromodichloromethane	+++++ 0.2802	+++++ 0.2887	0.3088 0.2852	0.2967	0.2855	Ave		0.2909			0.2000	3.6		20.0			
Ethyl acrylate	+++++ 0.0185	+++++ 0.0209	0.0206 0.0209	0.0210	0.0192	Ave		0.0202			0.0100	5.3		20.0			
Methyl methacrylate	+++++ 0.0989	+++++ 0.1061	0.1028 0.1079	0.0976	0.0982	Ave		0.1019			0.0100	4.3		20.0			
1,4-Dioxane	+++++ 0.0013	+++++ 0.0014	0.0013 0.0014	0.0013	0.0013	Ave		0.0013			0.0010	3.3		20.0			
2-Chloroethyl vinyl ether	+++++ 0.0640	+++++ 0.0689	0.0632 0.0664	0.0637	0.0644	Ave		0.0651			0.0100	3.3		20.0			
cis-1,3-Dichloropropene	+++++ 0.3589	+++++ 0.3622	0.3814 0.3615	0.3638	0.3577	Ave		0.3642			0.2000	2.4		20.0			
Toluene	1.0154 1.0188	1.0728 1.0037	1.1310 1.0014	1.0687	1.0520	Ave		1.0455			0.4000	4.3		20.0			
2-Nitropropane	+++++ 0.0555	+++++ 0.0652	0.0606 0.0698	0.0580	0.0542	Ave		0.0605			0.0100	9.9		20.0			
4-Methyl-2-pentanone (MIBK)	+++++ 0.1960	+++++ 0.2175	0.2097 0.2299	0.1978	0.1923	Ave		0.2072			0.1000	7.0		20.0			
trans-1,3-Dichloropropene	+++++ 0.4124	+++++ 0.4390	0.4351 0.4486	0.4142	0.4119	Ave		0.4269			0.1000	3.8		20.0			
Tetrachloroethene	+++++ 0.3666	0.3865 0.3401	0.4018 0.3278	0.3827	0.3860	Ave		0.3702			0.2000	7.3		20.0			
Ethyl methacrylate	+++++ 0.2856	+++++ 0.3217	0.2846 0.3430	0.2738	0.2736	Ave		0.2970			0.0100	9.6		20.0			
1,1,2-Trichloroethane	+++++ 0.1799	+++++ 0.1938	0.1963 0.2020	0.1900	0.1815	Ave		0.1906			0.1000	4.5		20.0			
Dibromochloromethane	+++++ 0.2761	+++++ 0.2979	0.2784 0.3136	0.2728	0.2736	Ave		0.2854			0.1000	5.8		20.0			
1,3-Dichloropropane	+++++ 0.4028	+++++ 0.4318	0.4324 0.4498	0.4244	0.4054	Ave		0.4244			0.0100	4.2		20.0			
n-Butyl acetate	+++++ 0.3535	+++++ 0.3974	0.3806 0.4197	0.3577	0.3484	Ave		0.3762			0.0100	7.5		20.0			
1,2-Dibromoethane (EDB)	+++++ 0.2058	+++++ 0.2202	0.2180 0.2307	0.2078	0.2025	Ave		0.2142			0.1000	5.0		20.0			
2-Hexanone	+++++ 0.1342	+++++ 0.1497	0.1474 0.1590	0.1427	0.1339	Ave		0.1445			0.1000	6.7		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5		B	M1	M2								
1-Chlorohexane	+++++ 0.6151	+++++ 0.5430	0.6180 0.5142	0.6126	0.6326	Ave		0.5892			0.0100	8.2		20.0			
Ethylbenzene	1.8765 1.8810	2.0281 1.7222	2.0783 1.6005	1.9671	1.9634	Ave		1.8897			0.1000	8.4		20.0			
Chlorobenzene	+++++ 1.0274	+++++ 0.9814	1.1418 0.9541	1.0889	1.0709	Ave		1.0441			0.5000	6.7		20.0			
1,1,1,2-Tetrachloroethane	+++++ 0.3471	+++++ 0.3568	0.3655 0.3636	0.3555	0.3489	Ave		0.3562			0.0100	2.1		20.0			
m-Xylene & p-Xylene	0.6726 0.7597	0.7449 0.6973	0.7860 0.6672	0.7664	0.7825	Ave		0.7346			0.1000	6.6		20.0			
o-Xylene	0.6155 0.7160	0.7052 0.6731	0.7561 0.6584	0.7247	0.7284	Ave		0.6972			0.3000	6.5		20.0			
Styrene	+++++ 1.1079	+++++ 1.0769	1.1156 1.0606	1.0762	1.1038	Ave		1.0902			0.3000	2.0		20.0			
Bromoform	+++++ 0.2795	+++++ 0.3141	0.2828 0.3448	0.2669	0.2670	Ave		0.2925			0.1000	10.6		20.0			
Isopropylbenzene	+++++ 3.6733	+++++ 3.2655	3.9334 3.0815	3.7620	3.8074	Ave		3.5872			0.1000	9.4		20.0			
N-Propylbenzene	+++++ 4.3222	+++++ 3.6619	4.4991 3.3706	4.3718	4.5102	Ave		4.1226			0.0100	11.7		20.0			
Bromobenzene	+++++ 0.8075	+++++ 0.8027	0.8961 0.8309	0.8427	0.8190	Ave		0.8331			0.0100	4.1		20.0			
1,1,2,2-Tetrachloroethane	+++++ 0.4361	+++++ 0.4806	0.4780 0.5195	0.4653	0.4436	Ave		0.4705			0.3000	6.4		20.0			
1,3,5-Trimethylbenzene	+++++ 2.9976	+++++ 2.6279	3.0842 2.5072	3.0359	3.1158	Ave		2.8948			0.0100	9.0		20.0			
2-Chlorotoluene	+++++ 2.7504	+++++ 2.4949	3.0027 2.4482	2.8346	2.8632	Ave		2.7323			0.0100	8.0		20.0			
1,2,3-Trichloropropane	+++++ 0.1436	+++++ 0.1560	0.1611 0.1655	0.1510	0.1401	Ave		0.1529			0.0100	6.5		20.0			
trans-1,4-Dichloro-2-butene	+++++ 0.1560	+++++ 0.1727	0.1571 0.1853	0.1544	0.1500	Ave		0.1626			0.0100	8.3		20.0			
Cyclohexanone	+++++ 0.0120	+++++ 0.0143	0.0131 0.0155	0.0122	0.0122	Lin	-0.769	0.0157			0.0010				0.9970		0.9900
4-Chlorotoluene	+++++ 2.5329	+++++ 2.3260	2.7066 2.2625	2.6018	2.6301	Ave		2.5100			0.0100	7.1		20.0			
tert-Butylbenzene	+++++ 2.8113	+++++ 2.4401	2.9333 2.2644	2.8487	2.9386	Ave		2.7061			0.0100	10.5		20.0			
1,2,4-Trimethylbenzene	+++++ 3.0092	+++++ 2.6810	3.0997 2.5437	3.0203	3.0940	Ave		2.9080			0.0100	8.1		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5		B	M1	M2								
sec-Butylbenzene	+++++ 4.1271	+++++ 3.3931	4.2263 3.0395	4.1728	4.3340	Ave		3.8821			0.0100	13.7		20.0			
4-Isopropyltoluene	+++++ 3.6143	+++++ 2.9481	3.5931 2.6456	3.6081	3.7918	Ave		3.3668			0.0100	13.6		20.0			
1,3-Dichlorobenzene	+++++ 1.6724	+++++ 1.5600	1.8230 1.5287	1.7417	1.7184	Ave		1.6741			0.6000	6.7		20.0			
1,2,3-Trimethylbenzene	+++++ 2.8166	+++++ 2.6259	2.9862 2.5130	2.9083	2.8977	Ave		2.7913			0.0100	6.6		20.0			
1,4-Dichlorobenzene	+++++ 1.6263	+++++ 1.5110	1.7976 1.4665	1.6976	1.6894	Ave		1.6314			0.5000	7.6		20.0			
n-Butylbenzene	+++++ 0.9335	+++++ 0.7502	0.8865 0.6628	0.9111	0.9829	Ave		0.8545			0.0100	14.3		20.0			
Benzyl chloride	+++++ 0.2200	+++++ 0.2448	0.2165 0.2649	0.2210	0.2107	Ave		0.2296			0.0100	9.1		20.0			
1,2-Dichlorobenzene	+++++ 1.4518	+++++ 1.4154	1.5962 1.4076	1.5058	1.4815	Ave		1.4764			0.4000	4.7		20.0			
Nonanal	+++++ 0.3648	+++++ 0.4272	0.3188 0.4693	0.3123	0.3311	Ave		0.3706			0.0100	17.3		20.0			
1,2-Dibromo-3-Chloropropane	+++++ 0.0956	+++++ 0.1081	0.1028 0.1159	0.1010	0.0949	Ave		0.1031			0.0500	7.7		20.0			
1,3,5-Trichlorobenzene	+++++ 1.2677	+++++ 1.1488	1.3347 1.0774	1.2944	1.3370	Ave		1.2433			0.0100	8.6		20.0			
Hexachlorobutadiene	+++++ 0.6919	+++++ 0.5338	0.6768 0.4380	0.6835	0.7388	Ave		0.6271			0.0100	18.4		20.0			
1,2,4-Trichlorobenzene	+++++ 1.0551	+++++ 1.0168	1.1388 1.0091	1.1034	1.0890	Ave		1.0687			0.2000	4.8		20.0			
Naphthalene	+++++ 1.5338	+++++ 1.6928	1.5479 1.8041	1.5336	1.5125	Ave		1.6041			0.0100	7.3		20.0			
1,2,3-Trichlorobenzene	+++++ 0.9185	+++++ 0.9191	0.9792 0.9165	0.9614	0.9359	Ave		0.9384			0.0100	2.8		20.0			
Dibromofluoromethane (Surr)	+++++ 0.2006	+++++ 0.2008	0.2045 0.2034	0.1971	0.1965	Ave		0.2005			0.0100	1.6		20.0			
1,2-Dichloroethane-d4 (Surr)	+++++ 0.2052	+++++ 0.2043	0.2099 0.2084	0.2065	0.2028	Ave		0.2062			0.0100	1.3		20.0			
Toluene-d8 (Surr)	+++++ 1.4097	+++++ 1.4130	1.3724 1.3362	1.3724	1.3741	Ave		1.3796			0.0100	2.1		20.0			
4-Bromofluorobenzene (Surr)	+++++ 0.9381	+++++ 0.9506	0.9111 0.9528	0.9080	0.9014	Ave		0.9270			0.0100	2.5		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-259855/3	LICL3534.D
Level 2	IC 160-259855/4	LICL3535.D
Level 3	IC 160-259855/5	LICL3536.D
Level 4	IC 160-259855/6	LICL3537.D
Level 5	IC 160-259855/7	LICL3538.D
Level 6	ICIS 160-259855/8	LICL3539.D
Level 7	IC 160-259855/9	LICL3540.D
Level 8	IC 160-259855/10	LICL3541.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
Dichlorodifluoromethane	FB	Ave	+++++ 761630	+++++ 1593351	82696 3208669	157596	305649	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	FB	Ave	+++++ 373166	+++++ 733263	37949 1563145	74701	137211	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Chloromethane	FB	Ave	+++++ 982121	+++++ 2202442	108053 4470763	207752	404691	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Vinyl chloride	FB	Ave	13746 851496	32253 1853026	88958 3727493	171956	339272	1.00 50.0	2.50 100	5.00 200	10.0	20.0
Butadiene	FB	Ave	+++++ 828849	+++++ 1814289	86467 3565778	168613	332601	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Bromomethane	FB	Ave	+++++ 311885	+++++ 696284	38949 1486584	71520	135155	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Chloroethane	FB	Ave	+++++ 424113	+++++ 896892	48136 1909249	90817	174742	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Trichlorofluoromethane	FB	Ave	+++++ 895833	+++++ 1842754	100921 3879418	188861	359720	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Dichlorofluoromethane	FB	Ave	+++++ 1031917	+++++ 2189504	116758 4457523	217092	418000	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Ethyl ether	FB	Ave	+++++ 239474	+++++ 528346	26226 1096262	49635	95731	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,1-Dichloroethene	FB	Ave	+++++ 613776	+++++ 1265661	66637 2552547	127674	245031	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Ethanol	FB	Ave	+++++ 20391	+++++ 59232	2993 107637	5553	12082	+++++ 2000	+++++ 4000	200 8000	400	800
Carbon disulfide	FB	Ave	+++++ 2141452	+++++ 4375493	231496 8746107	442399	869278	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	FB	Ave	+++++ 557569	+++++ 1142906	61755 2286542	117286	226515	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Iodomethane	FB	Ave	+++++ 469865	+++++ 1074384	34182 2232044	68556	160307	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
Acrolein	FB	Ave	+++++ 259625	+++++ 556576	24901 1199035	50804	98954	+++++ 250	+++++ 500	25.0 1000	50.0	100
Allyl chloride	FB	Ave	+++++ 756800	+++++ 1554195	80096 3070789	148405	296119	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Isopropyl alcohol	FB	Ave	+++++ 200576	+++++ 435532	21872 875417	42871	81639	+++++ 500	+++++ 1000	50.0 2000	100	200
Methylene Chloride	FB	Ave	+++++ 548541	+++++ 1148676	62239 2351310	116970	223261	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Acetone	FB	Lin1	+++++ 89410	+++++ 178669	14662 381838	24610	41473	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
trans-1,2-Dichloroethene	FB	Ave	+++++ 662609	26380 1330848	71715 2664120	135303	267560	+++++ 50.0	2.50 100	5.00 200	10.0	20.0
Methyl acetate	FB	Ave	+++++ 229756	+++++ 480688	23532 993567	45999	90502	+++++ 250	+++++ 500	25.0 1000	50.0	100
n-Hexane	FB	Ave	+++++ 235576	+++++ 475975	23938 958899	47648	94464	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Methyl tert-butyl ether	FB	Ave	+++++ 1154703	+++++ 2482021	123277 5070940	238417	458007	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Acetonitrile	FB	Ave	+++++ 375760	+++++ 788502	43201 1643309	79700	150539	+++++ 500	+++++ 1000	50.0 2000	100	200
Isopropyl ether	FB	Ave	+++++ 2023696	+++++ 4250040	216605 8574912	408043	799807	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
tert-Butyl alcohol	FB	Ave	+++++ 218091	+++++ 467508	23631 962705	44194	86132	+++++ 500	+++++ 1000	50.0 2000	100	200
2-Chloro-1,3-butadiene	FB	Ave	+++++ 1239138	+++++ 2534620	125905 5046190	244585	487011	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,1-Dichloroethane	FB	Ave	+++++ 1197243	+++++ 2464244	131980 4972809	247606	483330	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Acrylonitrile	FB	Ave	+++++ 1204461	+++++ 2554941	128633 5206067	248127	477229	+++++ 500	+++++ 1000	50.0 2000	100	200
Tert-butyl ethyl ether	FB	Ave	+++++ 1637894	+++++ 3488060	171028 7089715	329554	645096	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Vinyl acetate	FB	Ave	+++++ 929050	+++++ 1934208	95524 3936544	185395	370122	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
cis-1,2-Dichloroethene	FB	Ave	+++++ 656797	26652 1343080	70519 2739530	134576	261566	+++++ 50.0	2.50 100	5.00 200	10.0	20.0
2,2-Dichloropropane	FB	Ave	+++++ 1014711	+++++ 2089734	110527 4211182	208800	403531	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Bromochloromethane	FB	Ave	+++++ 241249	+++++ 497110	27078 986199	50464	96435	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Cyclohexane	FB	Ave	+++++ 1174513	+++++ 2347466	124844 4625170	238169	466649	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
Chloroform	FB	Ave	+++++ 1004837	41106 2061064	110276 4153207	209325	402594	+++++ 50.0	2.50 100	5.00 200	10.0	20.0
Ethyl acetate	FB	Ave	+++++ 95123	+++++ 205375	9459 428474	19837	37334	+++++ 100	+++++ 200	10.0 400	20.0	40.0
Carbon tetrachloride	FB	Ave	+++++ 917563	+++++ 1840269	96888 3626933	185899	369050	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Tetrahydrofuran	FB	Ave	+++++ 66843	+++++ 145545	6658 296718	13450	26873	+++++ 100	+++++ 200	10.0 400	20.0	40.0
1,1,1-Trichloroethane	FB	Ave	+++++ 1028642	+++++ 2079138	110795 4134865	208474	409888	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
2-Butanone (MEK)	FB	Ave	+++++ 148920	+++++ 306787	17327 635647	32044	61929	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,1-Dichloropropene	FB	Ave	+++++ 949010	+++++ 1854746	98964 3686493	191227	377538	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Isooctane	FB	Ave	+++++ 3437250	+++++ 6910825	363303 13324022	700395	1380256	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
n-Heptane	FB	Ave	+++++ 1523231	+++++ 2899569	156507 5585414	310945	617462	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Benzene	FB	Ave	44324 2552014	103923 5109725	278608 9973910	525624	1039382	1.00 50.0	2.50 100	5.00 200	10.0	20.0
Propionitrile	FB	Ave	+++++ 452647	+++++ 957713	47676 1923854	93376	180546	+++++ 500	+++++ 1000	50.0 2000	100	200
Methacrylonitrile	FB	Ave	+++++ 2327568	+++++ 4838758	247428 9375499	476943	930593	+++++ 500	+++++ 1000	50.0 2000	100	200
Tert-amyl methyl ether	FB	Ave	+++++ 1251166	+++++ 2680366	131837 5485317	253330	489263	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Isobutanol	FB	Ave	+++++ 232977	+++++ 514666	23932 1047842	44622	89312	+++++ 1250	+++++ 2500	125 5000	250	500
1,2-Dichloroethane	FB	Ave	+++++ 624911	26976 1295543	68791 2630393	129634	249784	+++++ 50.0	2.50 100	5.00 200	10.0	20.0
Methylcyclohexane	FB	Ave	+++++ 1204673	+++++ 2312921	127784 4474317	248154	484883	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Trichloroethene	FB	Ave	+++++ 686863	26043 1307377	72407 2526759	141520	277597	+++++ 50.0	2.50 100	5.00 200	10.0	20.0
1-Butanol	FB	Ave	+++++ 232109	+++++ 516671	22002 1098018	43263	87170	+++++ 1250	+++++ 2500	125 5000	250	500
Dibromomethane	FB	Ave	+++++ 243477	+++++ 509672	26219 1034870	49216	96253	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2-Dichloropropane	FB	Ave	+++++ 608683	+++++ 1255627	64155 2546414	124202	243708	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Bromodichloromethane	FB	Ave	+++++ 680821	+++++ 1417463	71260 2860712	138426	268920	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
Ethyl acrylate	FB	Ave	+++++ 44999	+++++ 102656	4764 209886	9798	18057	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Methyl methacrylate	FB	Ave	+++++ 480480	+++++ 1041774	47420 2164579	91066	184974	+++++ 100	+++++ 200	10.0 400	20.0	40.0
1,4-Dioxane	FB	Ave	+++++ 64587	+++++ 136905	5953 282347	12504	24969	+++++ 1000	+++++ 2000	100 4000	200	400
2-Chloroethyl vinyl ether	FB	Ave	+++++ 155595	+++++ 338270	14589 665976	29736	60689	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
cis-1,3-Dichloropropene	FB	Ave	+++++ 872045	+++++ 1778272	87995 3625045	169724	336959	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Toluene	CBNZ d5	Ave	32328 1700320	66732 3251217	182458 6328573	348300	690071	1.00 50.0	2.50 100	5.00 200	10.0	20.0
2-Nitropropane	CBNZ d5	Ave	+++++ 185114	+++++ 422274	19557 882785	37831	71055	+++++ 100	+++++ 200	10.0 400	20.0	40.0
4-Methyl-2-pentanone (MIBK)	CBNZ d5	Ave	+++++ 327138	+++++ 704424	33838 1452858	64465	126132	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
trans-1,3-Dichloropropene	CBNZ d5	Ave	+++++ 688315	+++++ 1422096	70193 2835347	134984	270158	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Tetrachloroethene	CBNZ d5	Ave	+++++ 611801	24043 1101511	64828 2071919	124717	253220	+++++ 50.0	2.50 100	5.00 200	10.0	20.0
Ethyl methacrylate	CBNZ d5	Ave	+++++ 476697	+++++ 1042117	45907 2167808	89226	179454	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,1,2-Trichloroethane	CBNZ d5	Ave	+++++ 300325	+++++ 627666	31666 1276732	61916	119027	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Dibromochloromethane	CBNZ d5	Ave	+++++ 460800	+++++ 965009	44909 1981862	88908	179451	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,3-Dichloropropane	CBNZ d5	Ave	+++++ 672188	+++++ 1398496	69755 2842902	138331	265892	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
n-Butyl acetate	CBNZ d5	Ave	+++++ 589910	+++++ 1287060	61403 2652340	116581	228509	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2-Dibromoethane (EDB)	CBNZ d5	Ave	+++++ 343417	+++++ 713265	35163 1458081	67732	132845	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
2-Hexanone	CBNZ d5	Ave	+++++ 223981	+++++ 484931	23776 1004983	46502	87837	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1-Chlorohexane	CBNZ d5	Ave	+++++ 1026594	+++++ 1758709	99708 3249379	199638	414970	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Ethylbenzene	CBNZ d5	Ave	59746 3139338	126160 5578531	335292 10115151	641109	1287848	1.00 50.0	2.50 100	5.00 200	10.0	20.0
Chlorobenzene	CBNZ d5	Ave	+++++ 1714685	+++++ 3178814	184207 6029897	354898	702443	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,1,1,2-Tetrachloroethane	CBNZ d5	Ave	+++++ 579232	+++++ 1155584	58963 2297835	115847	228844	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
m-Xylene & p-Xylene	CBNZ d5	Ave	21413 1267886	46337 2258746	126812 4216299	249766	513289	1.00 50.0	2.50 100	5.00 200	10.0	20.0
o-Xylene	CBNZ d5	Ave	19598 1194933	43868 2180085	121988 4161260	236174	477761	1.00 50.0	2.50 100	5.00 200	10.0	20.0
Styrene	CBNZ d5	Ave	+++++ 1849034	+++++ 3488147	179986 6703082	350731	724026	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Bromoform	DCBd 4	Ave	+++++ 245133	+++++ 521731	23186 1083071	44670	91774	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Isopropylbenzene	DCBd 4	Ave	+++++ 3221819	+++++ 5423751	322498 9680087	629663	1308508	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
N-Propylbenzene	DCBd 4	Ave	+++++ 3790936	+++++ 6082165	368876 10588220	731736	1550032	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Bromobenzene	DCBd 4	Ave	+++++ 708264	+++++ 1333208	73471 2610264	141040	281465	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,1,2,2-Tetrachloroethane	DCBd 4	Ave	+++++ 382491	+++++ 798246	39189 1631946	77883	152462	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,3,5-Trimethylbenzene	DCBd 4	Ave	+++++ 2629208	+++++ 4364665	252870 7875940	508139	1070837	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
2-Chlorotoluene	DCBd 4	Ave	+++++ 2412342	+++++ 4143845	246187 7690782	474450	984007	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2,3-Trichloropropane	DCBd 4	Ave	+++++ 125953	+++++ 259104	13211 519866	25277	48151	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
trans-1,4-Dichloro-2-butene	DCBd 4	Ave	+++++ 136857	+++++ 286906	12881 582084	25846	51534	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Cyclohexanone	DCBd 4	Lin	+++++ 105561	+++++ 236753	10749 488174	20455	41917	+++++ 500	+++++ 1000	50.0 2000	100	200
4-Chlorotoluene	DCBd 4	Ave	+++++ 2221627	+++++ 3863364	221912 7107432	435476	903881	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
tert-Butylbenzene	DCBd 4	Ave	+++++ 2465809	+++++ 4052873	240498 7113248	476801	1009921	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2,4-Trimethylbenzene	DCBd 4	Ave	+++++ 2639345	+++++ 4452923	254144 7990736	505522	1063331	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
sec-Butylbenzene	DCBd 4	Ave	+++++ 3619877	+++++ 5635664	346509 9548043	698423	1489482	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
4-Isopropyltoluene	DCBd 4	Ave	+++++ 3170088	+++++ 4896646	294594 8310644	603903	1303149	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,3-Dichlorobenzene	DCBd 4	Ave	+++++ 1466889	+++++ 2591105	149467 4802173	291526	590573	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2,3-Trimethylbenzene	DCBd 4	Ave	+++++ 2470377	+++++ 4361365	244833 7894061	486775	995861	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,4-Dichlorobenzene	DCBd 4	Ave	+++++ 1426405	+++++ 2509591	147387 4606691	284142	580606	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 259855

SDG No.: Headworks/9720-8

Instrument ID: VMSL GC Column: RTXVMS30 ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 07/11/2016 09:07 Calibration End Date: 07/11/2016 12:00 Calibration ID: 11179

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
n-Butylbenzene	DCBd 4	Ave	+++++ 818808	+++++ 1245950	72686 2082048	152488	337784	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Benzyl chloride	DCBd 4	Ave	+++++ 192920	+++++ 406580	17750 832130	36984	72407	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2-Dichlorobenzene	DCBd 4	Ave	+++++ 1273380	+++++ 2350898	130872 4421898	252041	509141	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Nonanal	DCBd 4	Ave	+++++ 319987	+++++ 709628	26141 1474097	52275	113787	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2-Dibromo-3-Chloropropane	DCBd 4	Ave	+++++ 83887	+++++ 179561	8431 364211	16913	32626	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,3,5-Trichlorobenzene	DCBd 4	Ave	+++++ 1111873	+++++ 1907994	109434 3384467	216643	459493	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Hexachlorobutadiene	DCBd 4	Ave	+++++ 606825	+++++ 886639	55486 1375802	114399	253923	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2,4-Trichlorobenzene	DCBd 4	Ave	+++++ 925454	+++++ 1688897	93372 3169872	184678	374250	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Naphthalene	DCBd 4	Ave	+++++ 1345321	+++++ 2811660	126908 5667361	256689	519817	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2,3-Trichlorobenzene	DCBd 4	Ave	+++++ 805627	+++++ 1526475	80285 2878963	160915	321658	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Dibromofluoromethane (Surr)	FB	Ave	+++++ 487477	+++++ 985780	47181 2039434	91944	185107	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
1,2-Dichloroethane-d4 (Surr)	FB	Ave	+++++ 498674	+++++ 1003089	48435 2089798	96318	191086	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
Toluene-d8 (Surr)	CBNZ d5	Ave	+++++ 2352739	+++++ 4576786	221404 8444363	447283	901297	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0
4-Bromofluorobenzene (Surr)	DCBd 4	Ave	+++++ 822825	+++++ 1578872	74701 2993109	151985	309788	+++++ 50.0	+++++ 100	5.00 200	10.0	20.0

Curve Type Legend:

Ave = Average ISTD
Lin = Linear ISTD
Lin1 = Linear 1/conc ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3534.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 11-Jul-2016 09:07:30 ALS Bottle#: 2 Worklist Smp#: 3
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: IC
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-5mL-8260_VMSL*sub1

Method: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 13-Jul-2016 08:34:58 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK053

First Level Reviewer: rhoadess Date: 11-Jul-2016 13:20:27

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	96	13769	1.00	0.9126	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	27	3490	1.00	0.4927	
3 Chloromethane	50	3.488	3.488	0.000	99	17614	1.00	0.8744	
4 Vinyl chloride	62	3.641	3.641	0.000	97	13746	1.00	0.8352	
122 Butadiene	39	3.683	3.683	0.000	89	16363	1.00	1.00	
5 Bromomethane	94	4.256	4.256	0.000	88	7010	1.00	1.04	
6 Chloroethane	64	4.493	4.479	0.014	95	6987	1.00	0.8064	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	98	15944	1.00	0.8879	
123 Dichlorofluoromethane	67	4.828	4.829	-0.001	96	20967	1.00	1.01	
8 Ethyl ether	74	5.247	5.248	-0.001	95	3787	1.00	0.7795	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	97	10570	1.00	0.8732	
11 Ethanol	45		5.597				ND	ND	
10 Carbon disulfide	76	5.597	5.597	0.000	100	36925	1.00	0.8774	
12 1,1,2-Trichloro-1,2,2-trif	151	5.611	5.611	0.000	89	9102	1.00	0.8234	
13 Iodomethane	142	5.764	5.764	0.000	53	6109	1.00	0.7283	
S 26 1,2-Dichloroethene, Total	96				0			1.79	
14 Acrolein	56	6.044	6.030	0.014	94	4469	5.00	4.43	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	91	13798	1.00	0.9455	
16 Isopropyl alcohol	45	6.225	6.239	-0.014	25	4706	10.0	11.6	
17 Methylene Chloride	84	6.351	6.351	0.000	98	13538	1.00	1.22	
18 Acetone	43	6.421	6.421	0.000	98	5879	1.00	-0.2999	
19 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	11717	1.00	0.9001	
20 Methyl acetate	74	6.560	6.560	0.000	99	3405	5.00	3.80	
21 Hexane	86	6.644	6.630	0.014	81	3742	1.00	0.8239	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	88	19086	1.00	0.8294	
24 Acetonitrile	41	6.993	6.993	0.000	99	9277	10.0	12.2	
23 2-Methyl-2-propanol	59	7.105	7.105	0.000	33	3319	10.0	7.64	
25 Isopropyl ether	45	7.105	7.105	0.000	96	34107	1.00	0.8576	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	92	19382	1.00	0.8157	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	95	20492	1.00	0.8652	
29 Acrylonitrile	53	7.342	7.343	-0.001	98	19988	10.0	8.37	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	96	25619	1.00	0.7954	
31 Vinyl acetate	43	7.524	7.524	0.000	97	14677	1.00	0.8111	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	79	11620	1.00	0.8937	
33 2,2-Dichloropropane	77	7.971	7.971	0.000	91	18187	1.00	0.9110	
35 Chlorobromomethane	128	8.055	8.069	-0.014	91	4022	1.00	0.8416	
34 Cyclohexane	84	8.069	8.069	0.000	93	18920	1.00	0.8356	
36 Chloroform	83	8.111	8.111	0.000	95	17533	1.00	0.8752	
39 Ethyl acetate	45	8.208	8.208	0.000	98	1934	2.00	2.05	
37 Carbon tetrachloride	117	8.278	8.278	0.000	95	15118	1.00	0.8530	
38 Tetrahydrofuran	71	8.292	8.292	0.000	62	1336	2.00	2.03	
$ 41 Dibromofluoromethane (Surr	113	8.292	8.306	-0.014	93	8381	1.00	0.9138	
40 1,1,1-Trichloroethane	97	8.348	8.348	0.000	98	17318	1.00	0.8665	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	96	3900	1.00	1.29	
42 1,1-Dichloropropene	75	8.446	8.460	-0.014	94	15989	1.00	0.8827	
125 Isooctane	57	8.543	8.544	-0.001	100	55189	1.00	0.8327	
117 n-Heptane	43	8.613	8.613	0.000	95	24998	1.00	0.8685	
44 Benzene	78	8.697	8.697	0.000	96	44324	1.00	0.8946	
45 Propionitrile	54	8.725	8.725	0.000	92	7406	10.0	8.29	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	40711	10.0	8.96	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	97	22567	1.00	0.9130	
50 Isobutyl alcohol	42	8.823	8.823	0.000	76	3661	25.0	20.0	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.823	8.837	-0.014	91	9387	1.00	1.00	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	96	10653	1.00	0.8451	
* 51 Fluorobenzene	96	9.088	9.088	0.000	99	2287446	50.0	50.0	
52 Methylcyclohexane	55	9.242	9.242	0.000	94	20934	1.00	0.9111	
53 Trichloroethene	95	9.242	9.242	0.000	67	12353	1.00	0.9420	
54 n-Butanol	56	9.451	9.465	-0.014	92	3704	25.0	20.6	
55 Dibromomethane	93	9.647	9.647	0.000	89	3957	1.00	0.8257	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	93	10053	1.00	0.8434	
57 Dichlorobromomethane	83	9.773	9.773	-0.001	95	10894	1.00	0.8187	
124 Ethyl acrylate	55	9.856	9.856	0.000	78	878	1.00	0.9503	
58 Methyl methacrylate	69	9.856	9.856	0.000	93	7493	2.00	1.61	
59 1,4-Dioxane	88	9.954	9.954	0.000	3	416	20.0	6.75	M
60 2-Chloroethyl vinyl ether	63	10.247	10.248	-0.001	17	2262	1.00	0.7592	M
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	93	13732	1.00	0.8241	
$ 62 Toluene-d8 (Surr)	98	10.499	10.513	-0.014	93	43273	1.00	0.9852	
63 Toluene	92	10.555	10.555	0.000	99	32328	1.00	0.9712	
64 2-Nitropropane	43	10.764	10.778	-0.014	98	3270	2.00	1.70	
66 4-Methyl-2-pentanone (MIBK	43	10.862	10.862	0.000	98	5177	1.00	0.7848	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	82	11010	1.00	0.8101	
65 Tetrachloroethene	164	10.904	10.918	-0.014	95	10748	1.00	0.9118	
69 Ethyl methacrylate	69	10.988	10.988	0.000	56	6632	1.00	0.7012	
68 1,1,2-Trichloroethane	83	11.057	11.058	-0.001	89	5304	1.00	0.8741	
70 Chlorodibromomethane	129	11.239	11.239	0.000	87	7057	1.00	0.7766	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	93	10491	1.00	0.7764	
119 n-Butyl acetate	43	11.476	11.477	-0.001	94	11962	1.00	1.00	
72 Ethylene Dibromide	107	11.490	11.491	0.000	97	5199	1.00	0.7625	
74 2-Hexanone	43	11.602	11.602	0.000	82	5502	1.00	1.20	
S 73 1,3-Dichloropropene, Total	75				0			1.63	
75 1-Chlorohexane	91	11.853	11.868	-0.015	94	17256	1.00	0.9198	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	85	1591920	50.0	50.0	
78 Ethylbenzene	91	11.923	11.923	0.000	60	59746	1.00	0.99	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
77 Chlorobenzene	112	11.937	11.937	0.000	92	31257	1.00	0.9403	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	89	10000	1.00	0.8818	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	97	21413	1.00	0.9156	
82 o-Xylene	106	12.454	12.454	0.000	97	19598	1.00	0.8829	
83 Styrene	104	12.496	12.510	-0.014	95	29338	1.00	0.8452	
84 Bromoform	173	12.566	12.566	0.000	91	3565	1.00	0.7371	
85 Isopropylbenzene	105	12.733	12.734	-0.001	96	52719	1.00	0.8889	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	89	14767	1.00	0.9634	
88 N-Propylbenzene	91	13.124	13.125	-0.001	98	61133	1.00	0.8969	
87 Bromobenzene	156	13.152	13.152	0.000	87	11851	1.00	0.8603	
89 1,1,2,2-Tetrachloroethane	83	13.180	13.180	0.000	26	5870	1.00	0.7545	M
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	95	41412	1.00	0.8652	
90 2-Chlorotoluene	91	13.306	13.306	0.000	97	39908	1.00	0.8834	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	1	2545	1.00	0.9467	M
92 1,2,3-Trichloropropane	110	13.334	13.348	-0.014	5	1633	1.00	0.6460	
94 Cyclohexanone	55	13.418	13.418	0.000	75	2072	10.0	57.1	
95 4-Chlorotoluene	91	13.460	13.460	0.000	96	36830	1.00	0.8875	
96 tert-Butylbenzene	119	13.613	13.613	0.000	92	40049	1.00	0.8951	
97 1,2,4-Trimethylbenzene	105	13.669	13.669	0.000	96	40448	1.00	0.8412	
98 sec-Butylbenzene	105	13.781	13.781	0.000	94	58173	1.00	0.9063	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	50597	1.00	0.9089	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	98	25023	1.00	0.9040	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	58	41822	1.00	0.9062	
* 101 1,4-Dichlorobenzene-d4	152	14.102	14.102	0.000	94	826705	50.0	50.0	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	90	25046	1.00	0.9285	
103 n-Butylbenzene	134	14.312	14.312	0.000	94	12481	1.00	0.8834	
121 Benzyl chloride	126	14.339	14.340	-0.001	10	2920	1.00	0.7691	M
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	95	21827	1.00	0.8941	
106 n-Nonyl Aldehyde	57	15.261	15.261	0.000	85	5282	1.00	0.8620	
105 1,2-Dibromo-3-Chloropropan	157	15.331	15.331	0.000	1	1260	1.00	0.7393	
107 1,3,5-Trichlorobenzene	180	15.345	15.345	0.000	97	18739	1.00	0.9116	
108 Hexachlorobutadiene	225	15.932	15.932	0.000	95	10239	1.00	0.9875	
109 1,2,4-Trichlorobenzene	180	15.987	16.002	-0.015	94	16293	1.00	0.9221	
110 Naphthalene	128	16.351	16.351	0.000	97	22241	1.00	0.8386	
S 112 Xylenes, Total	106				0			1.80	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	96	14521	1.00	0.9359	
S 113 Trihalomethanes, Total	1				0			3.21	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

8260 NewWkMix_00174	Amount Added: 0.20	Units: uL	
8260 Surr 25_00063	Amount Added: 0.20	Units: uL	
I.S. Working_00133	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 13-Jul-2016 08:34:59 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3534.D

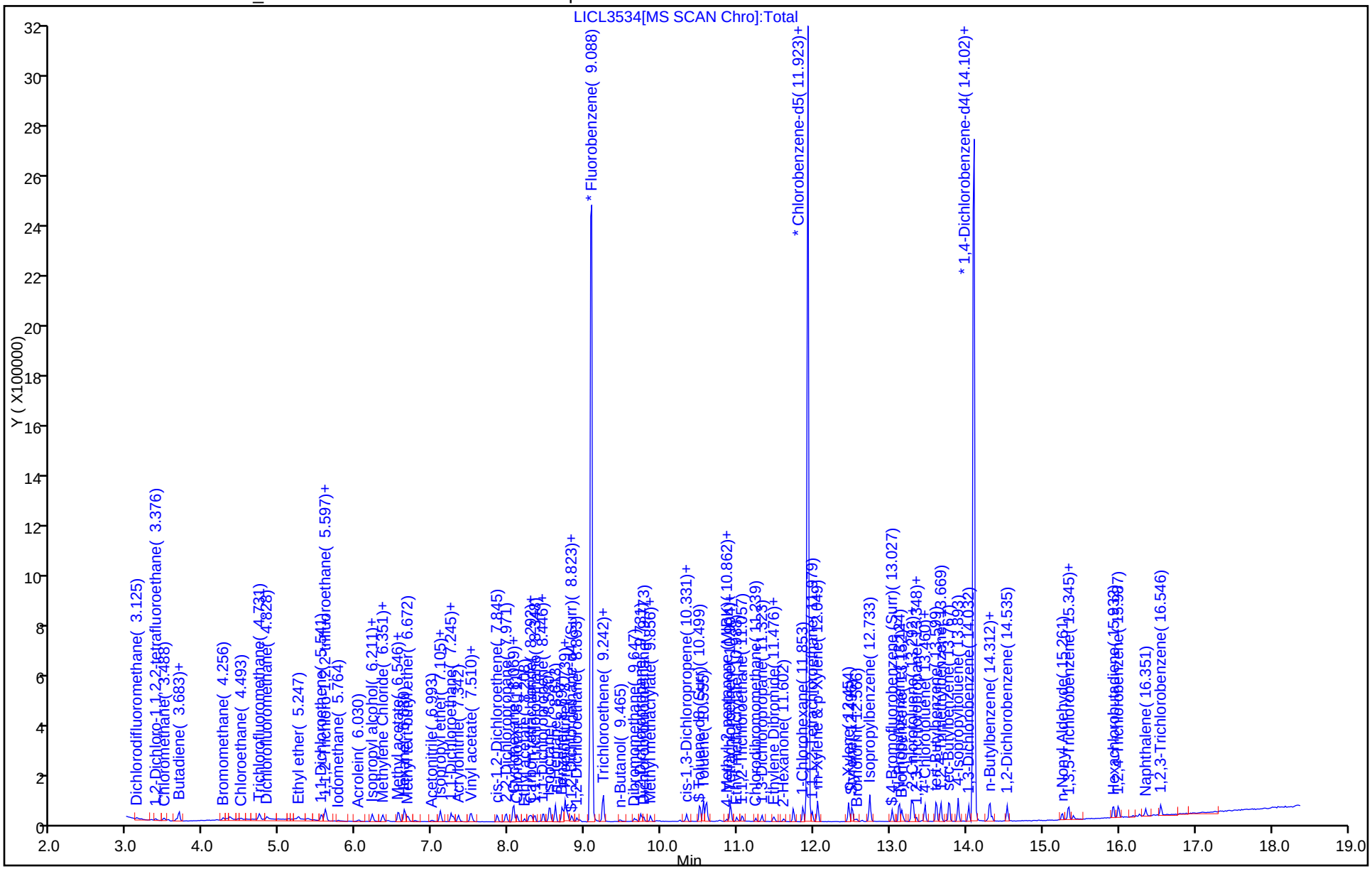
Injection Date: 11-Jul-2016 09:07:30 Instrument ID: VMSL Operator ID: SMCR

Lims ID: ic Worklist Smp#: 3

Client ID:

Purge Vol: 5.000 mL Dil. Factor: 1.0000 ALS Bottle#: 2

Method: 5mL-8260_VMSL Limit Group: MSV-8260



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

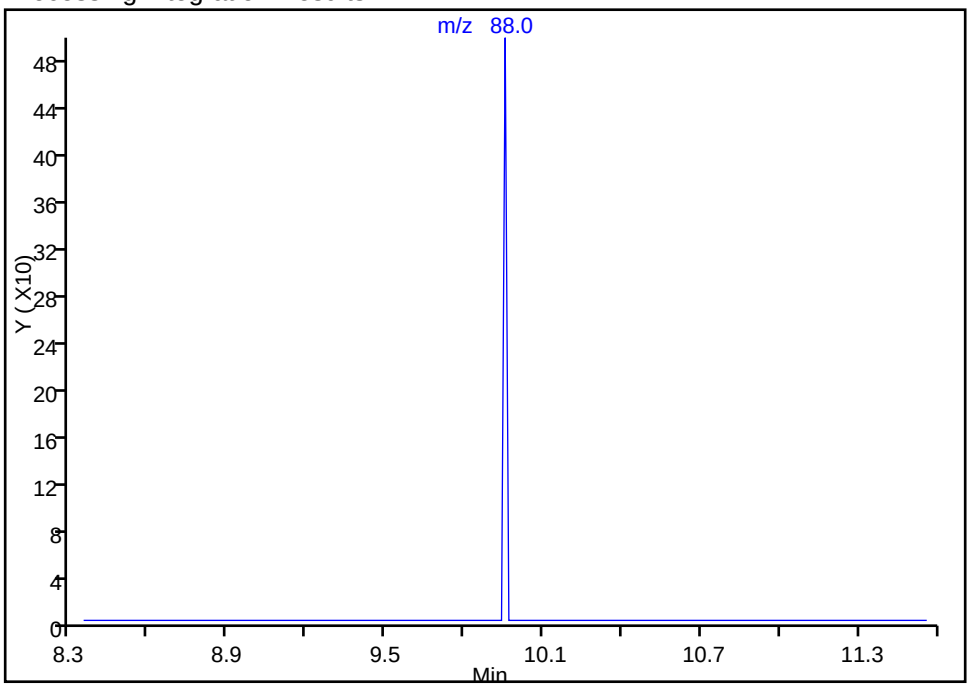
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3534.D				
Injection Date:	11-Jul-2016 09:07:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	3
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

59 1,4-Dioxane, CAS: 123-91-1

Signal: 1

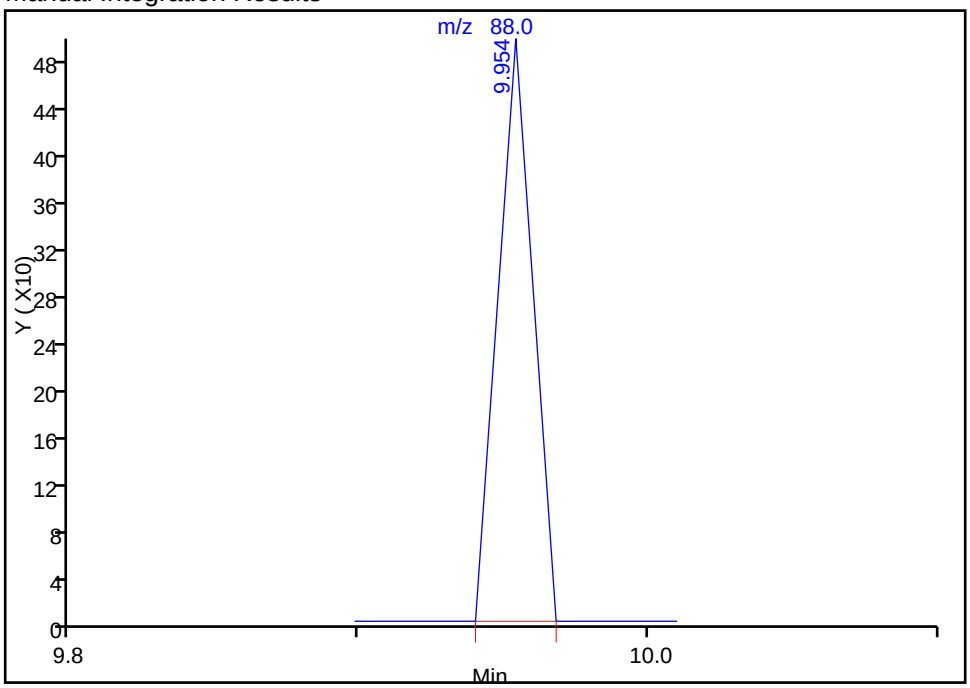
Not Detected
Expected RT: 9.95

Processing Integration Results



RT: 9.95
Area: 416
Amount: 6.746808
Amount Units: ug/l

Manual Integration Results



Reviewer: rhoadess, 11-Jul-2016 13:20:27
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

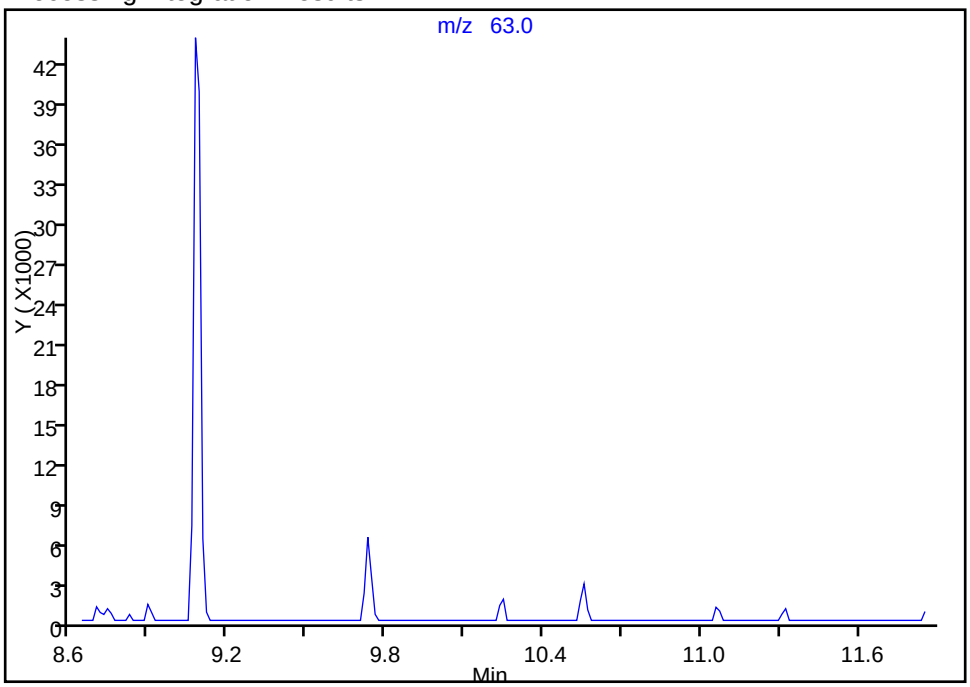
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3534.D				
Injection Date:	11-Jul-2016 09:07:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	3
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

60 2-Chloroethyl vinyl ether, CAS: 110-75-8

Signal: 1

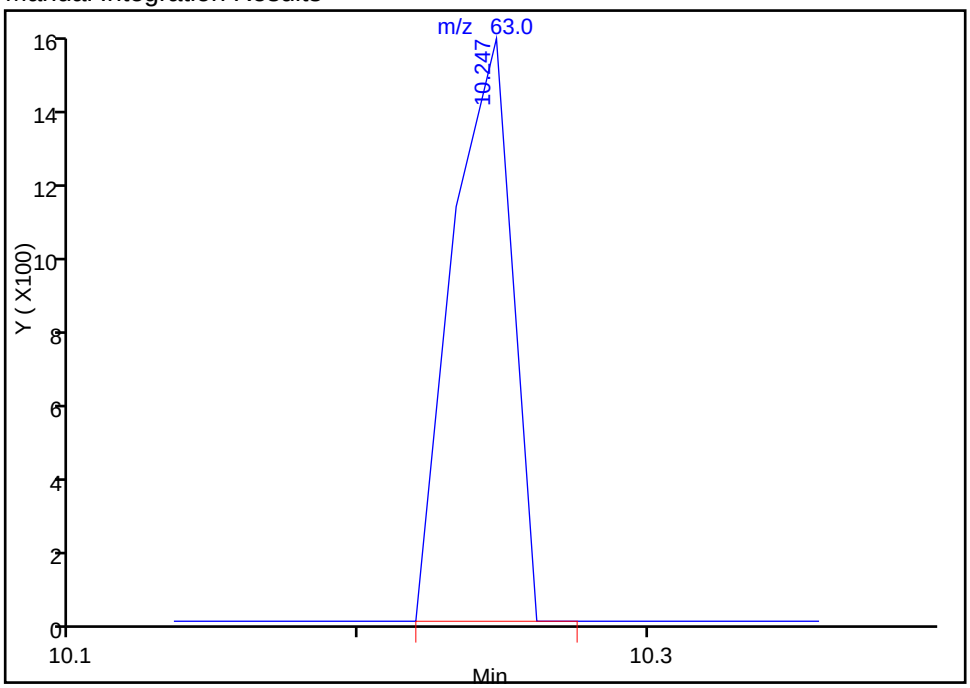
Processing Integration Results

Not Detected
Expected RT: 10.25



Manual Integration Results

RT: 10.25
Area: 2262
Amount: 0.759228
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:20:27
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

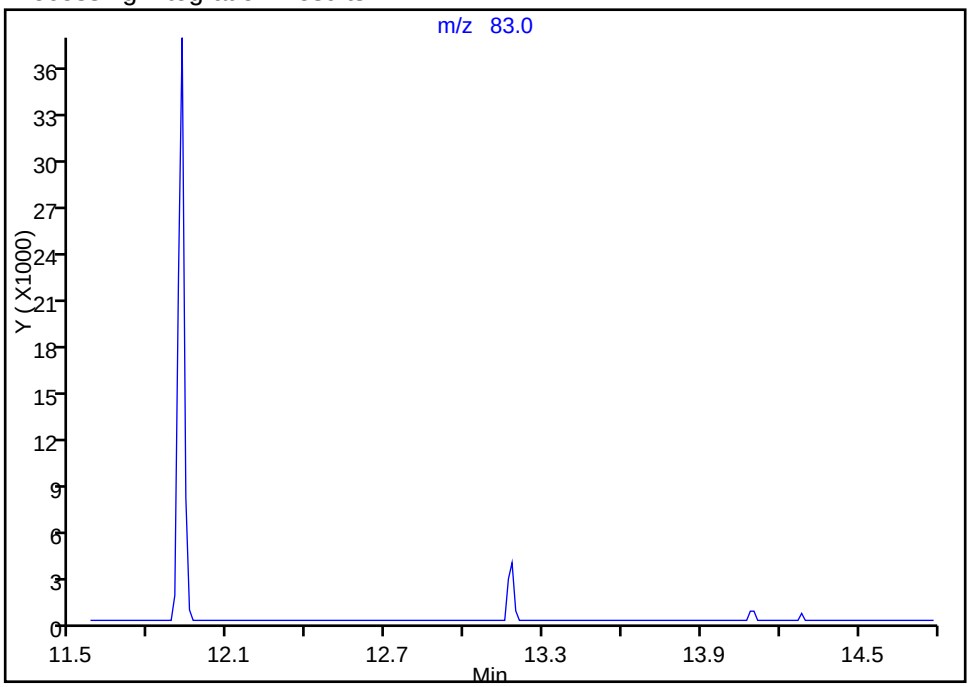
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3534.D				
Injection Date:	11-Jul-2016 09:07:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	3
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

89 1,1,2,2-Tetrachloroethane, CAS: 79-34-5

Signal: 1

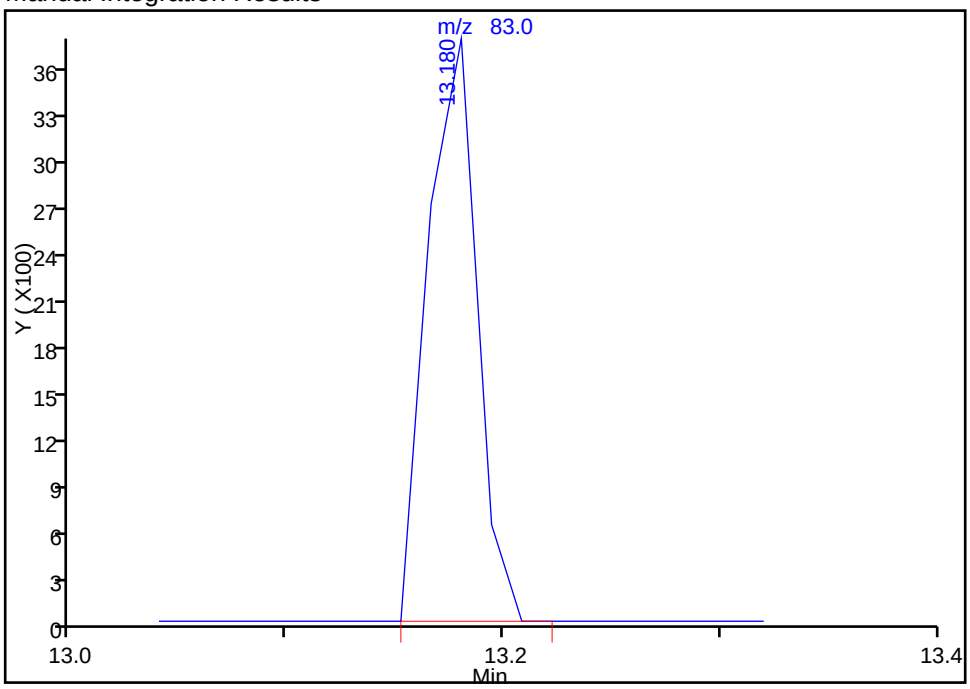
Processing Integration Results

Not Detected
Expected RT: 13.18



Manual Integration Results

RT: 13.18
Area: 5870
Amount: 0.754535
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:20:27
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

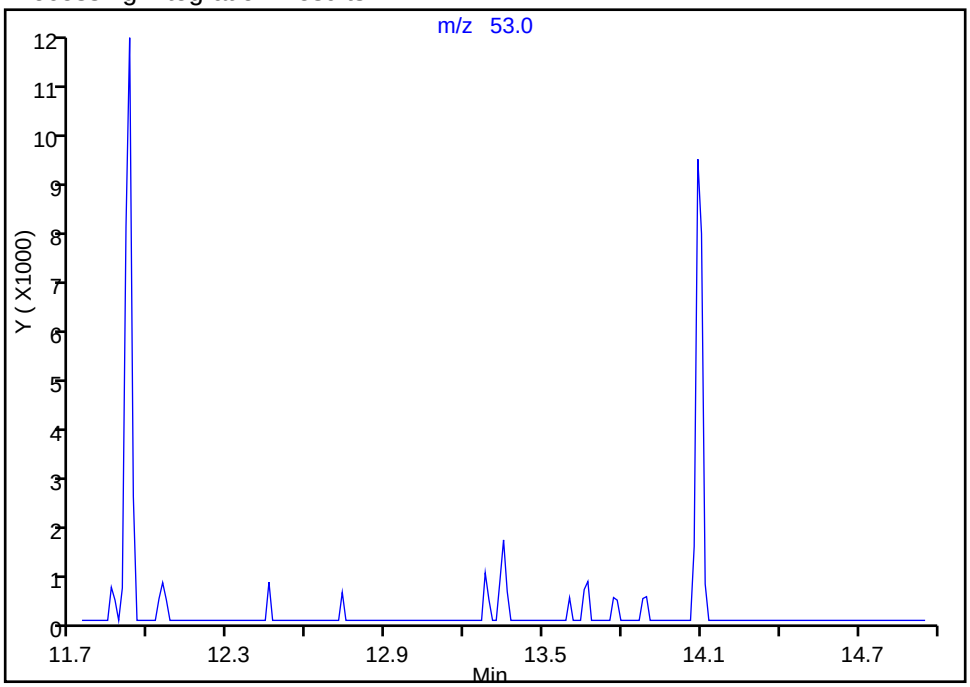
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3534.D				
Injection Date:	11-Jul-2016 09:07:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	3
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

93 trans-1,4-Dichloro-2-butene, CAS: 110-57-6

Signal: 1

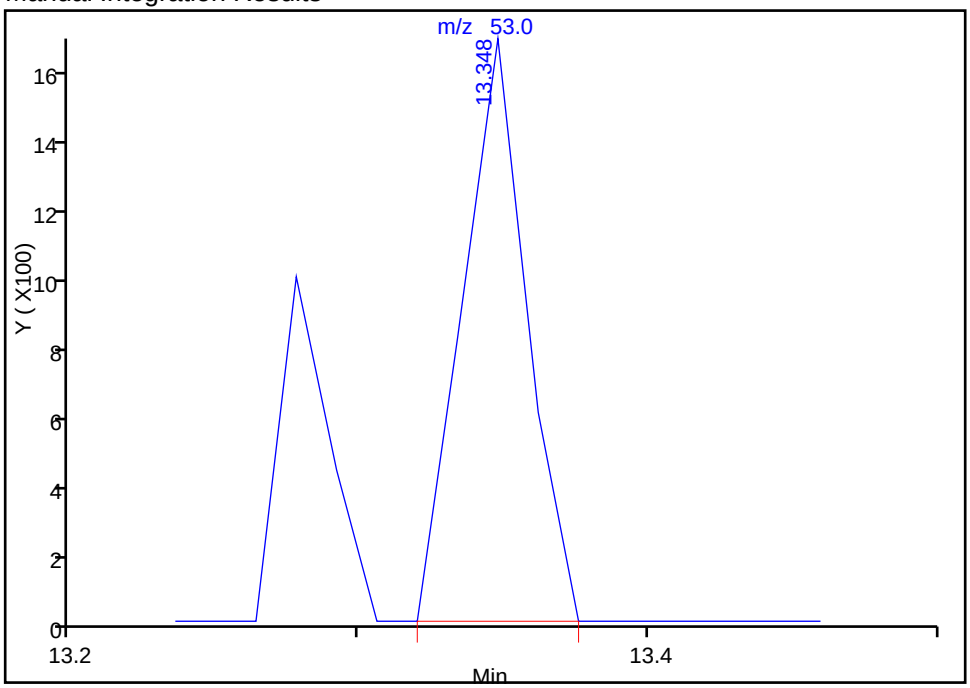
Processing Integration Results

Not Detected
Expected RT: 13.35



Manual Integration Results

RT: 13.35
Area: 2545
Amount: 0.946695
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:20:27
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

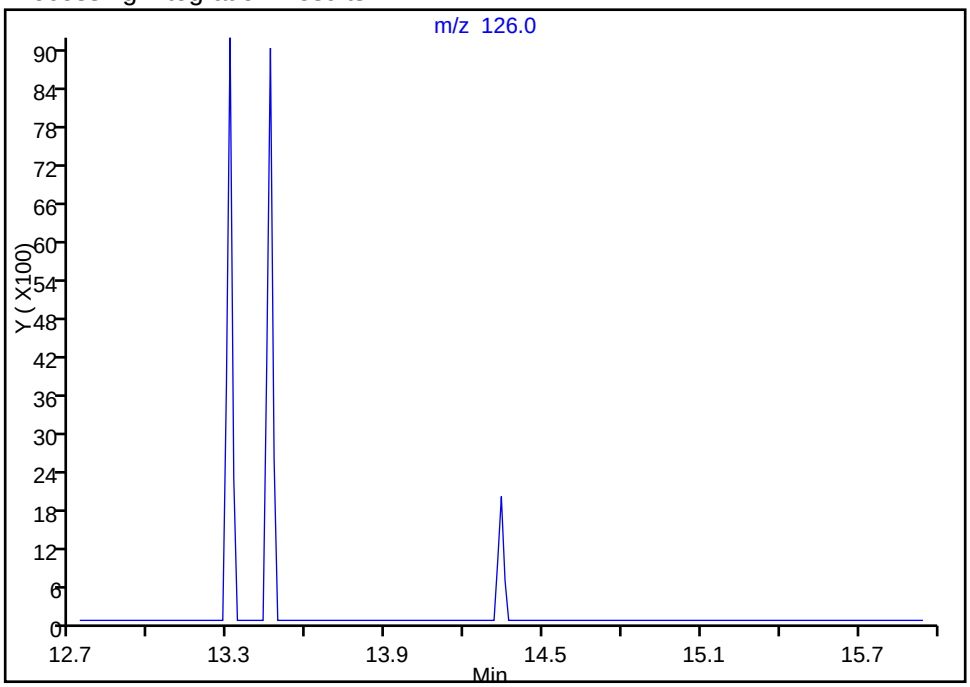
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3534.D				
Injection Date:	11-Jul-2016 09:07:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	3
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

121 Benzyl chloride, CAS: 100-44-7

Signal: 1

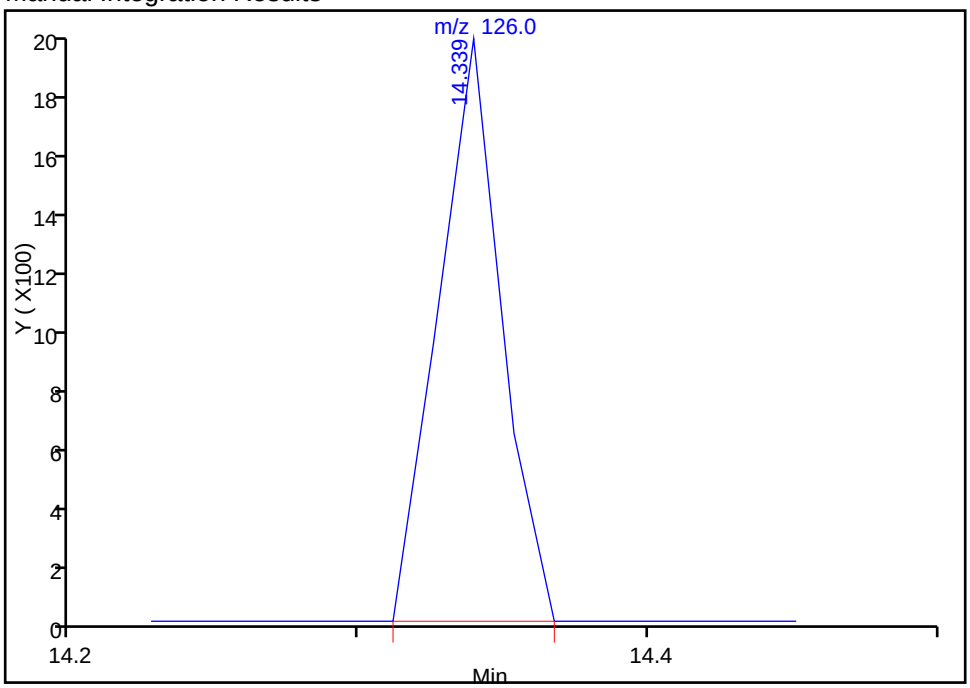
Processing Integration Results

Not Detected
Expected RT: 14.34



Manual Integration Results

RT: 14.34
Area: 2920
Amount: 0.769082
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:20:27
Audit Action: Manually Integrated Audit Reason: Missed Peak

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3535.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 11-Jul-2016 09:31:30 ALS Bottle#: 3 Worklist Smp#: 4
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: IC
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-5mL-8260_VMSL*sub1

Method: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 13-Jul-2016 08:35:03 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK053

First Level Reviewer: rhoadess Date: 11-Jul-2016 13:22:16

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	29347	2.50	2.51	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	96	12422	2.50	2.26	M
3 Chloromethane	50	3.488	3.488	0.000	98	40393	2.50	2.59	
4 Vinyl chloride	62	3.641	3.641	0.000	97	32253	2.50	2.53	
122 Butadiene	39	3.683	3.683	0.000	90	34494	2.50	2.71	
5 Bromomethane	94	4.256	4.256	0.000	92	15038	2.50	2.88	
6 Chloroethane	64	4.493	4.479	0.014	99	18497	2.50	2.75	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	98	35811	2.50	2.57	
123 Dichlorofluoromethane	67	4.829	4.829	-0.001	100	44885	2.50	2.78	
8 Ethyl ether	74	5.247	5.248	-0.001	94	10499	2.50	2.79	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	97	23920	2.50	2.55	
11 Ethanol	45	5.583	5.597	-0.014	89	822	100.0	80.8	
10 Carbon disulfide	76	5.597	5.597	0.000	99	82522	2.50	2.53	
12 1,1,2-Trichloro-1,2,2-trif	151	5.611	5.611	0.000	90	21760	2.50	2.54	
13 Iodomethane	142	5.764	5.764	0.000	98	12791	2.50	1.97	
S 26 1,2-Dichloroethene, Total	96				0			5.26	
14 Acrolein	56	6.030	6.030	0.000	96	11422	12.5	14.6	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	91	31831	2.50	2.81	
16 Isopropyl alcohol	45	6.225	6.239	-0.014	18	11275	25.0	35.9	
17 Methylene Chloride	84	6.351	6.351	0.000	99	25090	2.50	2.92	
18 Acetone	43	6.421	6.421	0.000	98	8410	2.50	2.69	
19 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	26380	2.50	2.61	
20 Methyl acetate	74	6.560	6.560	0.000	99	9520	12.5	13.7	
21 Hexane	86	6.630	6.630	0.000	93	8335	2.50	2.37	
22 Methyl tert-butyl ether	73	6.686	6.672	0.014	86	49910	2.50	2.80	
24 Acetonitrile	41	6.993	6.993	0.000	97	19395	25.0	32.9	
23 2-Methyl-2-propanol	59	7.105	7.105	0.000	34	8817	25.0	26.2	
25 Isopropyl ether	45	7.105	7.105	0.000	94	81889	2.50	2.66	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	93	45330	2.50	2.46	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	95	48516	2.50	2.64	
29 Acrylonitrile	53	7.342	7.343	-0.001	99	53203	25.0	28.7	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
30 Tert-butyl ethyl ether	59	7.510	7.496	0.014	97	66689	2.50	2.67	
31 Vinyl acetate	43	7.524	7.524	0.000	97	40767	2.50	2.91	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	26652	2.50	2.64	
33 2,2-Dichloropropane	77	7.971	7.971	0.000	92	40721	2.50	2.63	
35 Chlorobromomethane	128	8.055	8.069	-0.014	92	10180	2.50	2.75	
34 Cyclohexane	84	8.069	8.069	0.000	93	43683	2.50	2.49	
36 Chloroform	83	8.111	8.111	0.000	93	41106	2.50	2.65	
39 Ethyl acetate	45	8.208	8.208	0.000	99	4260	5.00	5.84	
37 Carbon tetrachloride	117	8.278	8.278	0.000	97	34279	2.50	2.50	
38 Tetrahydrofuran	71	8.292	8.292	0.000	68	2662	5.00	5.21	
$ 41 Dibromofluoromethane (Surr	113	8.292	8.306	-0.014	95	17573	2.50	2.47	
40 1,1,1-Trichloroethane	97	8.348	8.348	0.000	98	38490	2.50	2.48	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	95	8141	2.50	3.47	
42 1,1-Dichloropropene	75	8.460	8.460	0.000	95	35895	2.50	2.56	
125 Isooctane	57	8.544	8.544	0.000	100	126629	2.50	2.46	
117 n-Heptane	43	8.613	8.613	0.000	95	55345	2.50	2.48	
44 Benzene	78	8.697	8.697	0.000	97	103923	2.50	2.71	
45 Propionitrile	54	8.725	8.725	0.000	94	19308	25.0	27.9	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	102371	25.0	29.1	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	95	51716	2.50	2.70	
50 Isobutyl alcohol	42	8.823	8.823	0.000	92	9867	62.5	69.6	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.823	8.837	-0.014	93	19945	2.50	2.73	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	95	26976	2.50	2.76	
* 51 Fluorobenzene	96	9.088	9.088	0.000	99	1773068	50.0	50.0	
52 Methylcyclohexane	55	9.242	9.242	0.000	93	45963	2.50	2.58	
53 Trichloroethene	95	9.242	9.242	0.000	68	26043	2.50	2.56	
54 n-Butanol	56	9.465	9.465	0.000	87	8993	62.5	64.4	
55 Dibromomethane	93	9.647	9.647	0.000	95	10176	2.50	2.74	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	94	25122	2.50	2.72	
57 Dichlorobromomethane	83	9.773	9.773	0.000	98	26332	2.50	2.55	
124 Ethyl acrylate	55	9.856	9.856	0.000	97	2162	2.50	3.02	
58 Methyl methacrylate	69	9.856	9.856	0.000	95	19058	5.00	5.27	
59 1,4-Dioxane	88	9.954	9.954	0.000	90	2367	50.0	49.5	
60 2-Chloroethyl vinyl ether	63	10.247	10.248	-0.001	90	5693	2.50	2.47	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	93	33285	2.50	2.58	
$ 62 Toluene-d8 (Surr)	98	10.513	10.513	0.000	93	83559	2.50	2.43	
63 Toluene	92	10.555	10.555	0.000	98	66732	2.50	2.57	
64 2-Nitropropane	43	10.764	10.778	-0.014	95	8497	5.00	5.64	
66 4-Methyl-2-pentanone (MIBK	43	10.862	10.862	0.000	96	13626	2.50	2.64	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	92	27155	2.50	2.56	
65 Tetrachloroethene	164	10.904	10.918	-0.014	94	24043	2.50	2.61	
69 Ethyl methacrylate	69	10.988	10.988	0.000	91	17539	2.50	2.37	
68 1,1,2-Trichloroethane	83	11.057	11.058	-0.001	89	12568	2.50	2.65	
70 Chlorodibromomethane	129	11.239	11.239	0.000	92	17886	2.50	2.52	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	94	28064	2.50	2.66	
119 n-Butyl acetate	43	11.476	11.477	-0.001	95	25500	2.50	2.72	
72 Ethylene Dibromide	107	11.490	11.491	0.000	98	13354	2.50	2.51	
74 2-Hexanone	43	11.602	11.602	0.000	92	10907	2.50	3.03	
S 73 1,3-Dichloropropene, Total	75				0			5.13	
75 1-Chlorohexane	91	11.854	11.868	-0.014	94	35603	2.50	2.43	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	86	1244116	50.0	50.0	
78 Ethylbenzene	91	11.923	11.923	0.000	65	126160	2.50	2.68	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
77 Chlorobenzene	112	11.937	11.937	0.000	91	70399	2.50	2.71	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	92	22844	2.50	2.58	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	97	46337	2.50	2.54	
82 o-Xylene	106	12.454	12.454	0.000	97	43868	2.50	2.53	
83 Styrene	104	12.496	12.510	-0.014	95	64296	2.50	2.37	
84 Bromoform	173	12.566	12.566	0.000	96	9464	2.50	2.47	
85 Isopropylbenzene	105	12.733	12.734	-0.001	95	113875	2.50	2.42	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	90	29727	2.50	2.45	
88 N-Propylbenzene	91	13.124	13.125	-0.001	98	131172	2.50	2.43	
87 Bromobenzene	156	13.152	13.152	0.000	92	27762	2.50	2.55	
89 1,1,2,2-Tetrachloroethane	83	13.180	13.180	0.000	96	16447	2.50	2.67	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	94	90350	2.50	2.38	
90 2-Chlorotoluene	91	13.306	13.306	0.000	96	91719	2.50	2.56	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	86	5259	2.50	2.47	
92 1,2,3-Trichloropropane	110	13.334	13.348	-0.014	11	4918	2.50	2.46	
94 Cyclohexanone	55	13.418	13.418	0.000	89	4526	25.0	71.2	
95 4-Chlorotoluene	91	13.460	13.460	0.000	97	82328	2.50	2.51	
96 tert-Butylbenzene	119	13.613	13.613	0.000	93	86713	2.50	2.45	
97 1,2,4-Trimethylbenzene	105	13.669	13.669	0.000	97	90238	2.50	2.37	
98 sec-Butylbenzene	105	13.781	13.781	0.000	94	122929	2.50	2.42	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	102874	2.50	2.33	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	98	56200	2.50	2.56	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	56	92710	2.50	2.54	
* 101 1,4-Dichlorobenzene-d4	152	14.102	14.102	0.000	94	654608	50.0	50.0	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	97	58139	2.50	2.72	
103 n-Butylbenzene	134	14.312	14.312	0.000	94	26628	2.50	2.38	
121 Benzyl chloride	126	14.340	14.340	0.000	94	7335	2.50	2.44	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	98	49845	2.50	2.58	
106 n-Nonyl Aldehyde	57	15.261	15.261	0.000	90	10353	2.50	2.13	
105 1,2-Dibromo-3-Chloropropan	157	15.317	15.331	-0.014	17	3092	2.50	2.29	
107 1,3,5-Trichlorobenzene	180	15.345	15.345	0.000	97	41885	2.50	2.57	
108 Hexachlorobutadiene	225	15.932	15.932	0.000	97	20847	2.50	2.54	
109 1,2,4-Trichlorobenzene	180	15.988	16.002	-0.014	94	36348	2.50	2.60	
110 Naphthalene	128	16.351	16.351	0.000	97	51480	2.50	2.45	
S 112 Xylenes, Total	106				0			5.06	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	97	32728	2.50	2.66	
S 113 Trihalomethanes, Total	1				0			10.2	

QC Flag Legend

Review Flags

M - Manually Integrated

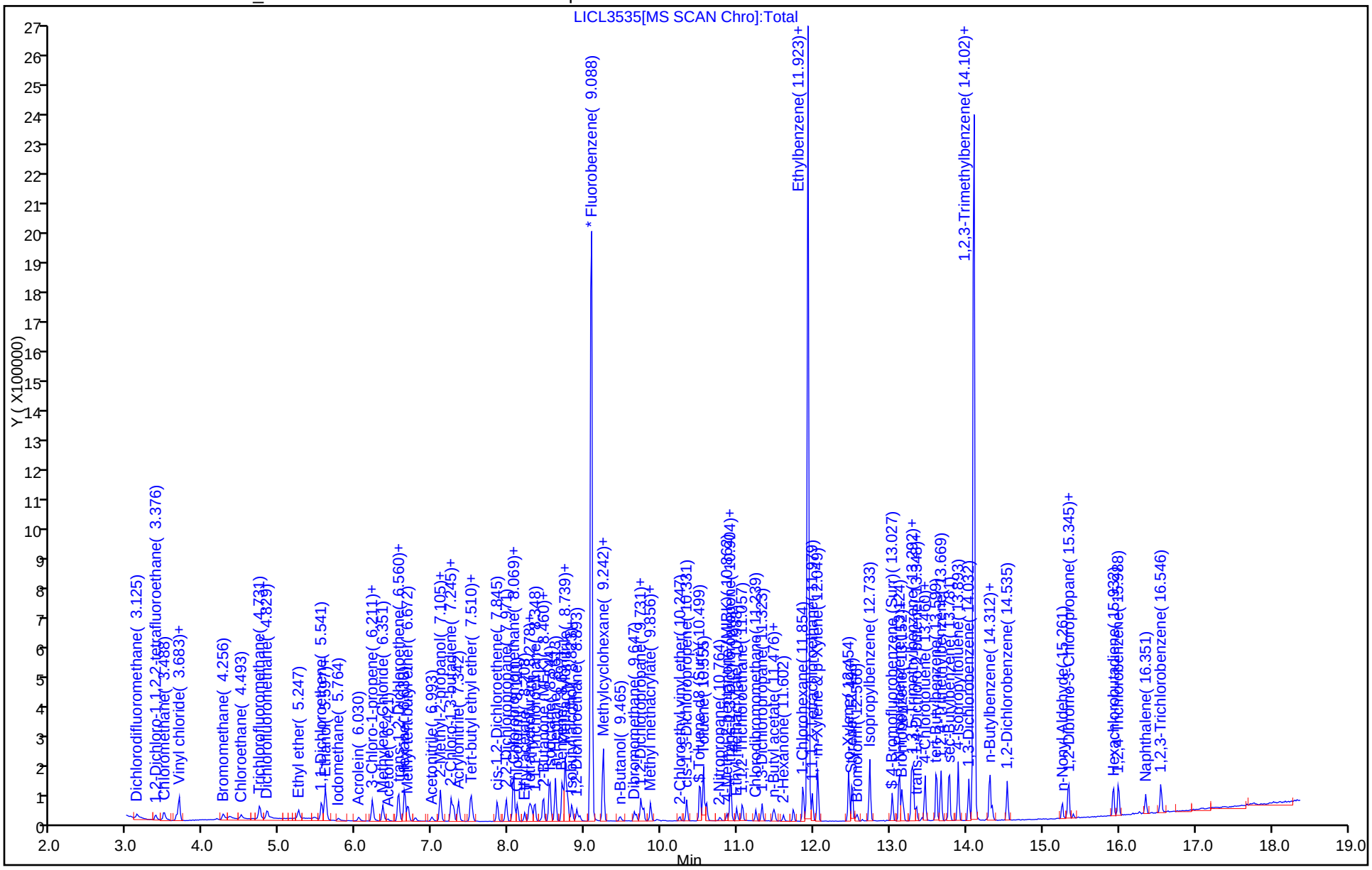
Reagents:

8260 NewWkMix_00174	Amount Added: 0.50	Units: uL	
8260 Surr 25_00063	Amount Added: 0.50	Units: uL	
I.S. Working_00133	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 13-Jul-2016 08:35:05 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3535.D				
Injection Date:	11-Jul-2016 09:31:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	4
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

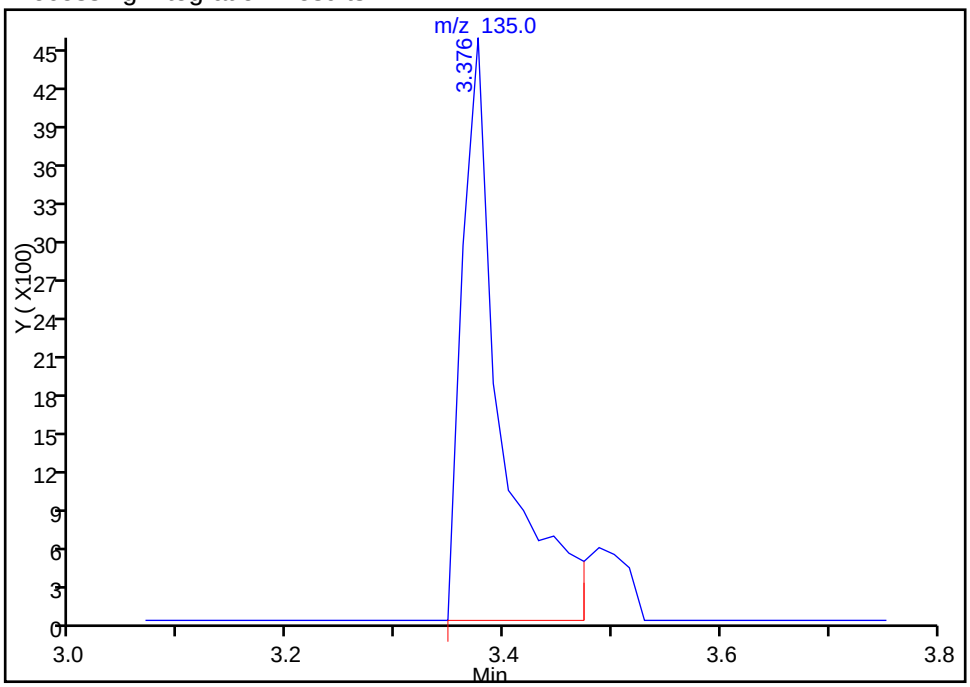
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3535.D				
Injection Date:	11-Jul-2016 09:31:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	3	Worklist Smp#:	4
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

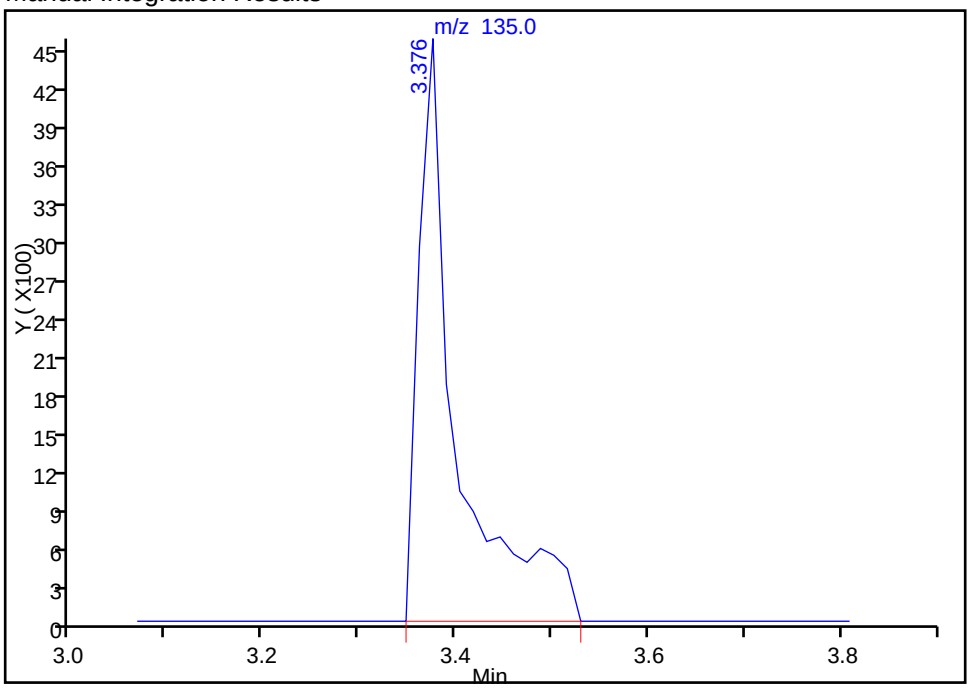
Processing Integration Results

RT: 3.38
Area: 11181
Amount: 2.773565
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 12422
Amount: 2.262253
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:22:16

Audit Action: Manually Integrated Audit Reason: Peak Tail

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3536.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 11-Jul-2016 09:56:30 ALS Bottle#: 4 Worklist Smp#: 5
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 10
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-5mL-8260_VMSL*sub1

Method: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 13-Jul-2016 08:35:09 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK053

First Level Reviewer: rhoadess Date: 11-Jul-2016 13:25:32

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	82696	5.00	5.43	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	97	37949	5.00	5.31	M
3 Chloromethane	50	3.488	3.488	0.000	99	108053	5.00	5.32	
4 Vinyl chloride	62	3.641	3.641	0.000	98	88958	5.00	5.36	
122 Butadiene	39	3.683	3.683	0.000	89	86467	5.00	5.22	
5 Bromomethane	94	4.256	4.256	0.000	91	38949	5.00	5.73	
6 Chloroethane	64	4.493	4.479	0.014	99	48136	5.00	5.51	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	98	100921	5.00	5.57	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	99	116758	5.00	5.56	
8 Ethyl ether	74	5.248	5.248	0.000	96	26226	5.00	5.35	
9 1,1-Dichloroethene	96	5.555	5.541	0.014	95	66637	5.00	5.46	
11 Ethanol	45	5.583	5.597	-0.014	100	2993	200.0	225.9	
10 Carbon disulfide	76	5.597	5.597	0.000	100	231496	5.00	5.45	
12 1,1,2-Trichloro-1,2,2-trif	151	5.611	5.611	0.000	88	61755	5.00	5.54	
13 Iodomethane	142	5.764	5.764	0.000	98	34182	5.00	4.04	
S 26 1,2-Dichloroethene, Total	96				0			10.8	
14 Acrolein	56	6.030	6.030	0.000	98	24901	25.0	24.5	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	92	80096	5.00	5.44	
16 Isopropyl alcohol	45	6.225	6.239	-0.014	97	21872	50.0	53.5	
17 Methylene Chloride	84	6.351	6.351	0.000	98	62239	5.00	5.57	
18 Acetone	43	6.421	6.421	0.000	97	14662	5.00	4.91	
19 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	71715	5.00	5.46	
20 Methyl acetate	74	6.560	6.560	0.000	99	23532	25.0	26.0	
21 Hexane	86	6.644	6.630	0.014	93	23938	5.00	5.22	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	95	123277	5.00	5.31	
24 Acetonitrile	41	6.993	6.993	0.000	98	43201	50.0	56.3	
23 2-Methyl-2-propanol	59	7.105	7.105	0.000	34	23631	50.0	53.9	
25 Isopropyl ether	45	7.105	7.105	0.000	95	216605	5.00	5.40	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	92	125905	5.00	5.25	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	95	131980	5.00	5.52	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
29 Acrylonitrile	53	7.343	7.343	0.000	99	128633	50.0	53.4	
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	171028	5.00	5.26	
31 Vinyl acetate	43	7.524	7.524	0.000	97	95524	5.00	5.23	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	80	70519	5.00	5.38	
33 2,2-Dichloropropane	77	7.971	7.971	0.000	92	110527	5.00	5.49	
35 Chlorobromomethane	128	8.055	8.069	-0.014	92	27078	5.00	5.62	
34 Cyclohexane	84	8.069	8.069	0.000	92	124844	5.00	5.47	
36 Chloroform	83	8.111	8.111	0.000	95	110276	5.00	5.46	
39 Ethyl acetate	45	8.208	8.208	0.000	99	9459	10.0	9.96	
37 Carbon tetrachloride	117	8.278	8.278	0.000	97	96888	5.00	5.42	
38 Tetrahydrofuran	71	8.292	8.292	0.000	73	6658	10.0	10.0	
$ 41 Dibromofluoromethane (Surr	113	8.306	8.306	0.000	95	47181	5.00	5.10	
40 1,1,1-Trichloroethane	97	8.348	8.348	0.000	98	110795	5.00	5.50	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	89	17327	5.00	5.68	
42 1,1-Dichloropropene	75	8.460	8.460	0.000	97	98964	5.00	5.42	
125 Isooctane	57	8.544	8.544	0.000	100	363303	5.00	5.43	
117 n-Heptane	43	8.613	8.613	0.000	95	156507	5.00	5.39	
44 Benzene	78	8.697	8.697	0.000	98	278608	5.00	5.57	
45 Propionitrile	54	8.725	8.725	0.000	95	47676	50.0	52.9	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	247428	50.0	54.0	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	96	131837	5.00	5.29	
50 Isobutyl alcohol	42	8.823	8.823	0.000	91	23932	125.0	129.8	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.837	8.837	0.000	91	48435	5.00	5.09	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	97	68791	5.00	5.41	
* 51 Fluorobenzene	96	9.088	9.088	0.000	99	2307412	50.0	50.0	
52 Methylcyclohexane	55	9.242	9.242	0.000	92	127784	5.00	5.51	
53 Trichloroethene	95	9.242	9.242	0.000	64	72407	5.00	5.47	
54 n-Butanol	56	9.465	9.465	0.000	88	22002	125.0	121.0	
55 Dibromomethane	93	9.647	9.647	0.000	95	26219	5.00	5.42	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	93	64155	5.00	5.34	
57 Dichlorobromomethane	83	9.773	9.773	0.000	98	71260	5.00	5.31	
124 Ethyl acrylate	55	9.856	9.856	0.000	96	4764	5.00	5.11	
58 Methyl methacrylate	69	9.856	9.856	0.000	96	47420	10.0	10.1	
59 1,4-Dioxane	88	9.954	9.954	0.000	96	5953	100.0	95.7	
60 2-Chloroethyl vinyl ether	63	10.247	10.248	-0.001	92	14589	5.00	4.85	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	93	87995	5.00	5.23	
$ 62 Toluene-d8 (Surr)	98	10.513	10.513	0.000	93	221404	5.00	4.97	
63 Toluene	92	10.555	10.555	0.000	99	182458	5.00	5.41	
64 2-Nitropropane	43	10.764	10.778	-0.014	99	19557	10.0	10.0	
66 4-Methyl-2-pentanone (MIBK	43	10.862	10.862	0.000	97	33838	5.00	5.06	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	88	70193	5.00	5.10	
65 Tetrachloroethene	164	10.904	10.918	-0.014	97	64828	5.00	5.43	
69 Ethyl methacrylate	69	10.988	10.988	0.000	92	45907	5.00	4.79	
68 1,1,2-Trichloroethane	83	11.058	11.058	0.000	91	31666	5.00	5.15	
70 Chlorodibromomethane	129	11.239	11.239	0.000	91	44909	5.00	4.88	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	95	69755	5.00	5.09	
119 n-Butyl acetate	43	11.477	11.477	0.000	96	61403	5.00	5.06	
72 Ethylene Dibromide	107	11.490	11.491	0.000	98	35163	5.00	5.09	
74 2-Hexanone	43	11.602	11.602	0.000	94	23776	5.00	5.10	
S 73 1,3-Dichloropropene, Total	75				0			10.3	
75 1-Chlorohexane	91	11.868	11.868	0.000	96	99708	5.00	5.24	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	86	1613294	50.0	50.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
78 Ethylbenzene	91	11.923	11.923	0.000	98	335292	5.00	5.50	
77 Chlorobenzene	112	11.937	11.937	0.000	94	184207	5.00	5.47	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	93	58963	5.00	5.13	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	97	126812	5.00	5.35	
82 o-Xylene	106	12.454	12.454	0.000	97	121988	5.00	5.42	
83 Styrene	104	12.510	12.510	0.000	95	179986	5.00	5.12	
84 Bromoform	173	12.566	12.566	0.000	95	23186	5.00	4.83	
85 Isopropylbenzene	105	12.733	12.734	-0.001	96	322498	5.00	5.48	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	88	74701	5.00	4.91	
88 N-Propylbenzene	91	13.125	13.125	0.000	98	368876	5.00	5.46	
87 Bromobenzene	156	13.152	13.152	0.000	92	73471	5.00	5.38	
89 1,1,2,2-Tetrachloroethane	83	13.180	13.180	0.000	96	39189	5.00	5.08	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	95	252870	5.00	5.33	
90 2-Chlorotoluene	91	13.306	13.306	0.000	97	246187	5.00	5.49	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	83	12881	5.00	4.83	
92 1,2,3-Trichloropropane	110	13.334	13.348	-0.014	83	13211	5.00	5.27	
94 Cyclohexanone	55	13.418	13.418	0.000	90	10749	50.0	91.0	
95 4-Chlorotoluene	91	13.460	13.460	0.000	97	221912	5.00	5.39	
96 tert-Butylbenzene	119	13.613	13.613	0.000	92	240498	5.00	5.42	
97 1,2,4-Trimethylbenzene	105	13.669	13.669	0.000	97	254144	5.00	5.33	
98 sec-Butylbenzene	105	13.781	13.781	0.000	94	346509	5.00	5.44	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	294594	5.00	5.34	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	99	149467	5.00	5.44	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	60	244833	5.00	5.35	
* 101 1,4-Dichlorobenzene-d4	152	14.102	14.102	0.000	94	819888	50.0	50.0	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	96	147387	5.00	5.51	
103 n-Butylbenzene	134	14.312	14.312	0.000	95	72686	5.00	5.19	
121 Benzyl chloride	126	14.340	14.340	0.000	96	17750	5.00	4.71	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	98	130872	5.00	5.41	
106 n-Nonyl Aldehyde	57	15.261	15.261	0.000	90	26141	5.00	4.30	
105 1,2-Dibromo-3-Chloropropan	157	15.331	15.331	0.000	83	8431	5.00	4.99	
107 1,3,5-Trichlorobenzene	180	15.345	15.345	0.000	98	109434	5.00	5.37	
108 Hexachlorobutadiene	225	15.932	15.932	0.000	97	55486	5.00	5.40	
109 1,2,4-Trichlorobenzene	180	16.002	16.002	0.000	94	93372	5.00	5.33	
110 Naphthalene	128	16.351	16.351	0.000	97	126908	5.00	4.82	
S 112 Xylenes, Total	106				0			10.8	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	96	80285	5.00	5.22	
S 113 Trihalomethanes, Total	1				0			20.5	

QC Flag Legend

Review Flags

M - Manually Integrated

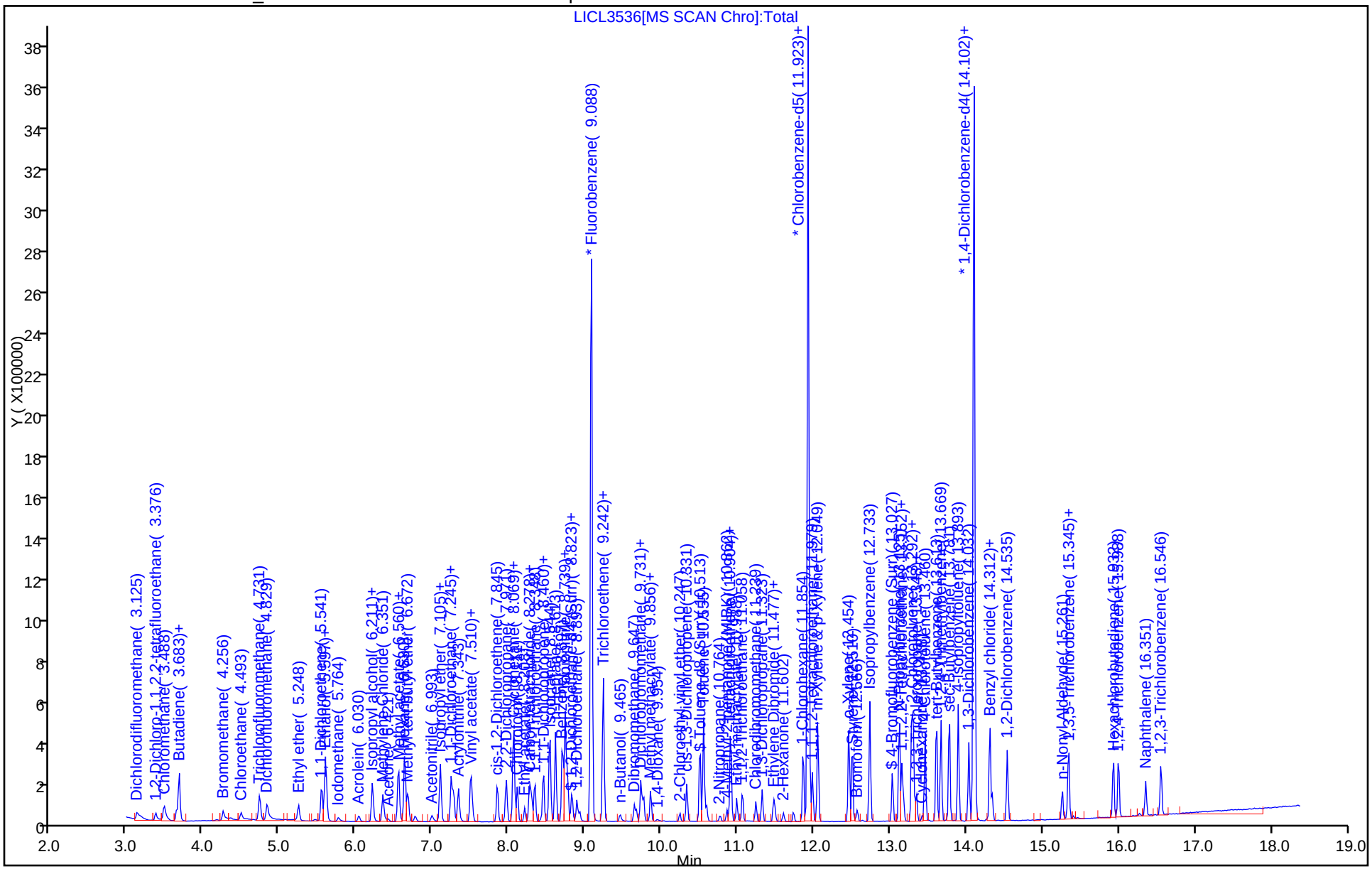
Reagents:

8260 NewWkMix_00174	Amount Added: 1.00	Units: uL	
8260 Surr 25_00063	Amount Added: 1.00	Units: uL	
I.S. Working_00133	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 13-Jul-2016 08:35:10 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3536.D				
Injection Date:	11-Jul-2016 09:56:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	5
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

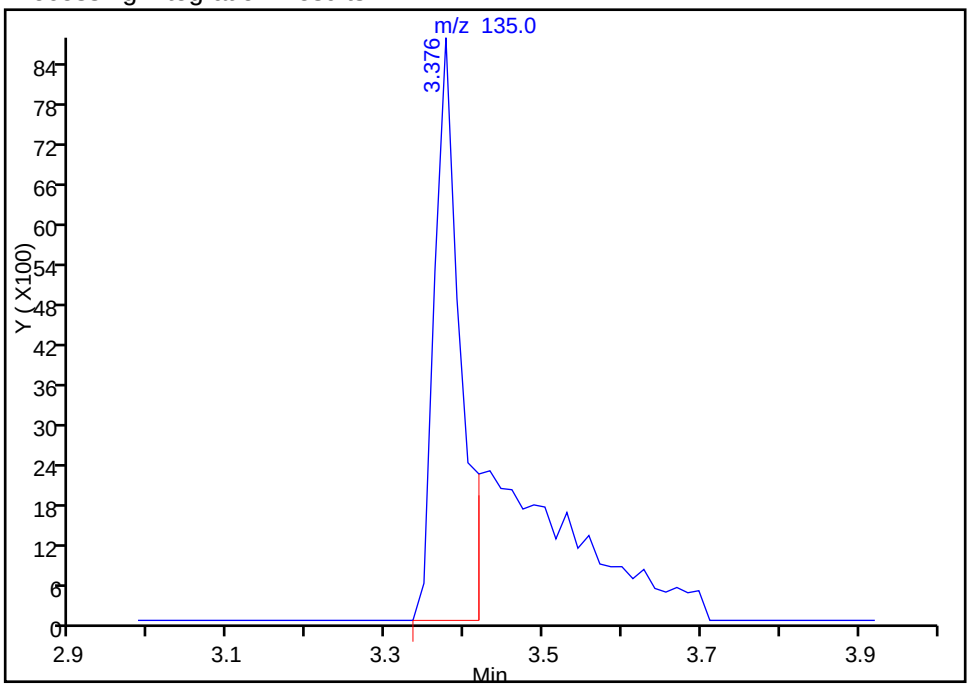
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3536.D				
Injection Date:	11-Jul-2016 09:56:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	4	Worklist Smp#:	5
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

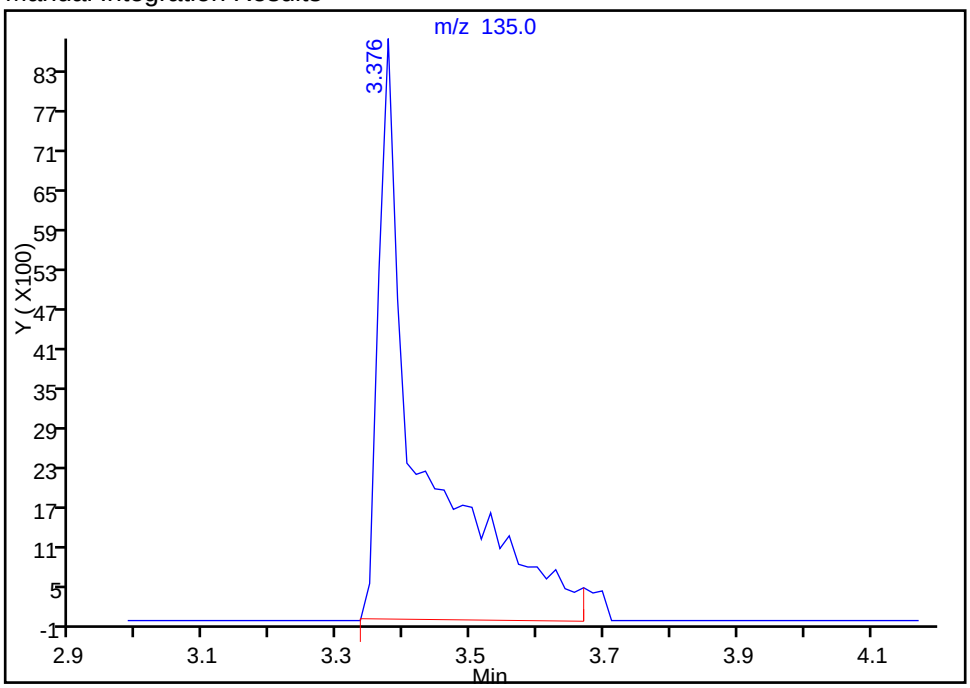
Processing Integration Results

RT: 3.38
Area: 19990
Amount: 3.752640
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 37949
Amount: 5.310680
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:25:32

Audit Action: Manually Integrated Audit Reason: Peak Tail

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3537.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 11-Jul-2016 10:21:30 ALS Bottle#: 5 Worklist Smp#: 6
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 20
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-5mL-8260_VMSL*sub1

Method: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 13-Jul-2016 08:35:13 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK053

First Level Reviewer: rhoadess Date: 11-Jul-2016 13:30:00

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	157596	10.0	10.2	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	97	74701	10.0	10.3	
3 Chloromethane	50	3.488	3.488	0.000	99	207752	10.0	10.1	
4 Vinyl chloride	62	3.642	3.641	0.001	98	171956	10.0	10.2	
122 Butadiene	39	3.683	3.683	0.000	89	168613	10.0	10.1	
5 Bromomethane	94	4.256	4.256	0.000	91	71520	10.0	10.4	
6 Chloroethane	64	4.494	4.479	0.015	99	90817	10.0	10.3	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	188861	10.0	10.3	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	99	217092	10.0	10.2	
8 Ethyl ether	74	5.248	5.248	0.000	95	49635	10.0	10.0	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	96	127674	10.0	10.3	
11 Ethanol	45	5.583	5.597	-0.014	100	5553	400.0	414.7	M
10 Carbon disulfide	76	5.597	5.597	0.000	100	442399	10.0	10.3	
12 1,1,2-Trichloro-1,2,2-trif	151	5.611	5.611	0.000	88	117286	10.0	10.4	
13 Iodomethane	142	5.764	5.764	0.000	97	68556	10.0	8.02	
S 26 1,2-Dichloroethene, Total	96				0			20.3	
14 Acrolein	56	6.030	6.030	0.000	100	50804	50.0	49.4	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	92	148405	10.0	9.97	
16 Isopropyl alcohol	45	6.225	6.239	-0.014	98	42871	100.0	103.7	
17 Methylene Chloride	84	6.351	6.351	0.000	99	116970	10.0	10.4	
18 Acetone	43	6.421	6.421	0.000	100	24610	10.0	10.7	
19 trans-1,2-Dichloroethene	96	6.547	6.546	0.001	97	135303	10.0	10.2	
20 Methyl acetate	74	6.561	6.560	0.001	99	45999	50.0	50.3	
21 Hexane	86	6.630	6.630	0.000	93	47648	10.0	10.3	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	79	238417	10.0	10.2	
24 Acetonitrile	41	6.993	6.993	0.000	98	79700	100.0	102.8	
23 2-Methyl-2-propanol	59	7.105	7.105	0.000	34	44194	100.0	99.8	
25 Isopropyl ether	45	7.105	7.105	0.000	95	408043	10.0	10.1	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	92	244585	10.0	10.1	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	95	247606	10.0	10.3	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
29 Acrylonitrile	53	7.343	7.343	0.000	100	248127	100.0	101.9	
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	329554	10.0	10.0	
31 Vinyl acetate	43	7.524	7.524	0.000	97	185395	10.0	10.0	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	134576	10.0	10.2	
33 2,2-Dichloropropane	77	7.971	7.971	0.000	92	208800	10.0	10.3	
35 Chlorobromomethane	128	8.055	8.069	-0.014	94	50464	10.0	10.4	
34 Cyclohexane	84	8.069	8.069	0.000	93	238169	10.0	10.3	
36 Chloroform	83	8.111	8.111	0.000	94	209325	10.0	10.2	
39 Ethyl acetate	45	8.209	8.208	0.001	99	19837	20.0	20.7	
37 Carbon tetrachloride	117	8.278	8.278	0.000	97	185899	10.0	10.3	
38 Tetrahydrofuran	71	8.292	8.292	0.000	95	13450	20.0	20.0	
$ 41 Dibromofluoromethane (Surr	113	8.306	8.306	0.000	95	91944	10.0	9.83	
40 1,1,1-Trichloroethane	97	8.348	8.348	0.000	98	208474	10.0	10.2	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	97	32044	10.0	10.4	
42 1,1-Dichloropropene	75	8.460	8.460	0.000	97	191227	10.0	10.4	
125 Isooctane	57	8.544	8.544	0.000	100	700395	10.0	10.4	
117 n-Heptane	43	8.614	8.613	0.001	96	310945	10.0	10.6	
44 Benzene	78	8.697	8.697	0.000	98	525624	10.0	10.4	
45 Propionitrile	54	8.725	8.725	0.000	95	93376	100.0	102.5	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	476943	100.0	102.9	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	97	253330	10.0	10.1	
50 Isobutyl alcohol	42	8.823	8.823	0.000	94	44622	250.0	239.4	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.837	8.837	0.000	92	96318	10.0	10.0	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	96	129634	10.0	10.1	
* 51 Fluorobenzene	96	9.088	9.088	0.000	99	2332391	50.0	50.0	
52 Methylcyclohexane	55	9.242	9.242	0.000	93	248154	10.0	10.6	
53 Trichloroethene	95	9.242	9.242	0.000	66	141520	10.0	10.6	
54 n-Butanol	56	9.465	9.465	0.000	91	43263	250.0	235.4	
55 Dibromomethane	93	9.647	9.647	0.000	94	49216	10.0	10.1	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	94	124202	10.0	10.2	
57 Dichlorobromomethane	83	9.773	9.773	0.000	99	138426	10.0	10.2	
124 Ethyl acrylate	55	9.857	9.856	0.001	96	9798	10.0	10.4	
58 Methyl methacrylate	69	9.857	9.856	0.001	95	91066	20.0	19.2	
59 1,4-Dioxane	88	9.954	9.954	0.000	96	12504	200.0	198.9	
60 2-Chloroethyl vinyl ether	63	10.248	10.248	0.000	93	29736	10.0	9.79	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	93	169724	10.0	9.99	
$ 62 Toluene-d8 (Surr)	98	10.513	10.513	0.000	93	447283	10.0	9.95	
63 Toluene	92	10.555	10.555	0.000	99	348300	10.0	10.2	
64 2-Nitropropane	43	10.764	10.778	-0.014	99	37831	20.0	19.2	
66 4-Methyl-2-pentanone (MIBK	43	10.862	10.862	0.000	96	64465	10.0	9.55	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	89	134984	10.0	9.70	
65 Tetrachloroethene	164	10.904	10.918	-0.014	97	124717	10.0	10.3	
69 Ethyl methacrylate	69	10.988	10.988	0.000	92	89226	10.0	9.22	
68 1,1,2-Trichloroethane	83	11.058	11.058	0.000	91	61916	10.0	9.97	
70 Chlorodibromomethane	129	11.239	11.239	0.000	90	88908	10.0	9.56	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	94	138331	10.0	10.0	
119 n-Butyl acetate	43	11.477	11.477	0.000	95	116581	10.0	9.51	
72 Ethylene Dibromide	107	11.491	11.491	0.001	99	67732	10.0	9.70	
74 2-Hexanone	43	11.602	11.602	0.000	96	46502	10.0	9.88	
S 73 1,3-Dichloropropene, Total	75				0			19.7	
75 1-Chlorohexane	91	11.868	11.868	0.000	97	199638	10.0	10.4	
* 76 Chlorobenzene-d5	117	11.924	11.923	0.001	87	1629555	50.0	50.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
78 Ethylbenzene	91	11.924	11.923	0.001	98	641109	10.0	10.4	
77 Chlorobenzene	112	11.938	11.937	0.001	95	354898	10.0	10.4	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	94	115847	10.0	9.98	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	98	249766	10.0	10.4	
82 o-Xylene	106	12.454	12.454	0.000	98	236174	10.0	10.4	
83 Styrene	104	12.510	12.510	0.000	95	350731	10.0	9.87	
84 Bromoform	173	12.566	12.566	0.000	96	44670	10.0	9.12	
85 Isopropylbenzene	105	12.734	12.734	0.000	96	629663	10.0	10.5	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	89	151985	10.0	9.80	
88 N-Propylbenzene	91	13.125	13.125	0.000	98	731736	10.0	10.6	
87 Bromobenzene	156	13.153	13.152	0.001	94	141040	10.0	10.1	
89 1,1,2,2-Tetrachloroethane	83	13.181	13.180	0.000	96	77883	10.0	9.89	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	95	508139	10.0	10.5	
90 2-Chlorotoluene	91	13.306	13.306	0.000	97	474450	10.0	10.4	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	84	25846	10.0	9.50	
92 1,2,3-Trichloropropane	110	13.334	13.348	-0.014	84	25277	10.0	9.88	
94 Cyclohexanone	55	13.418	13.418	0.000	88	20455	100.0	127.2	
95 4-Chlorotoluene	91	13.460	13.460	0.000	97	435476	10.0	10.4	
96 tert-Butylbenzene	119	13.613	13.613	0.000	91	476801	10.0	10.5	
97 1,2,4-Trimethylbenzene	105	13.669	13.669	0.000	97	505522	10.0	10.4	
98 sec-Butylbenzene	105	13.781	13.781	0.000	93	698423	10.0	10.7	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	603903	10.0	10.7	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	99	291526	10.0	10.4	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	93	486775	10.0	10.4	
* 101 1,4-Dichlorobenzene-d4	152	14.102	14.102	0.000	94	836878	50.0	50.0	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	96	284142	10.0	10.4	
103 n-Butylbenzene	134	14.312	14.312	0.000	95	152488	10.0	10.7	
121 Benzyl chloride	126	14.340	14.340	0.000	96	36984	10.0	9.62	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	98	252041	10.0	10.2	
106 n-Nonyl Aldehyde	57	15.261	15.261	0.000	90	52275	10.0	8.43	
105 1,2-Dibromo-3-Chloropropan	157	15.317	15.331	-0.014	84	16913	10.0	9.80	
107 1,3,5-Trichlorobenzene	180	15.345	15.345	0.000	98	216643	10.0	10.4	
108 Hexachlorobutadiene	225	15.932	15.932	0.000	98	114399	10.0	10.9	
109 1,2,4-Trichlorobenzene	180	16.002	16.002	0.000	94	184678	10.0	10.3	
110 Naphthalene	128	16.351	16.351	0.000	97	256689	10.0	9.56	
S 112 Xylenes, Total	106				0			20.8	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	97	160915	10.0	10.2	
S 113 Trihalomethanes, Total	1				0			39.1	

QC Flag Legend

Review Flags

M - Manually Integrated

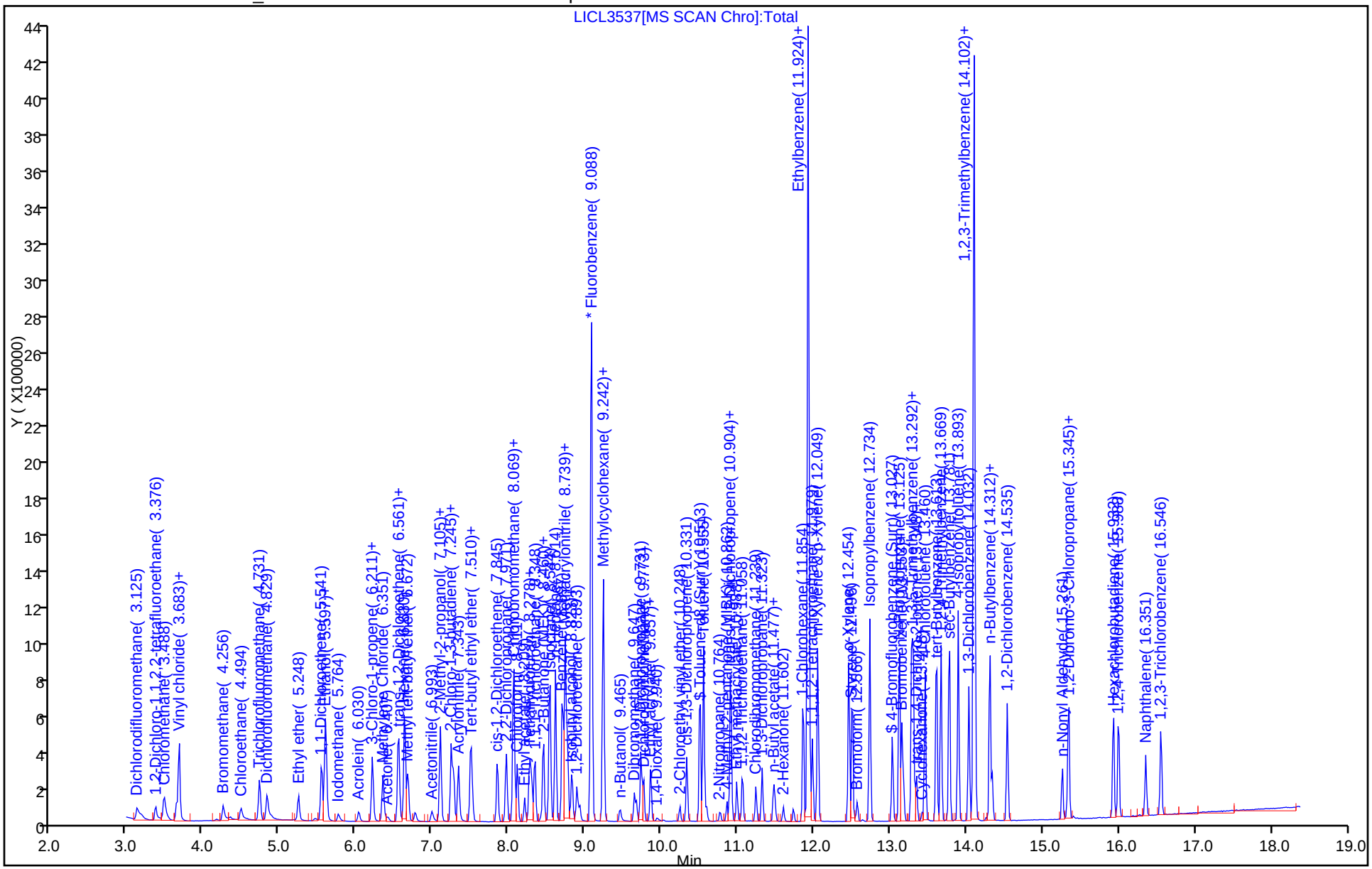
Reagents:

8260 NewWkMix_00174	Amount Added: 2.00	Units: uL	
8260 Surr 25_00063	Amount Added: 2.00	Units: uL	
I.S. Working_00133	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 13-Jul-2016 08:35:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3537.D				
Injection Date:	11-Jul-2016 10:21:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	6
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

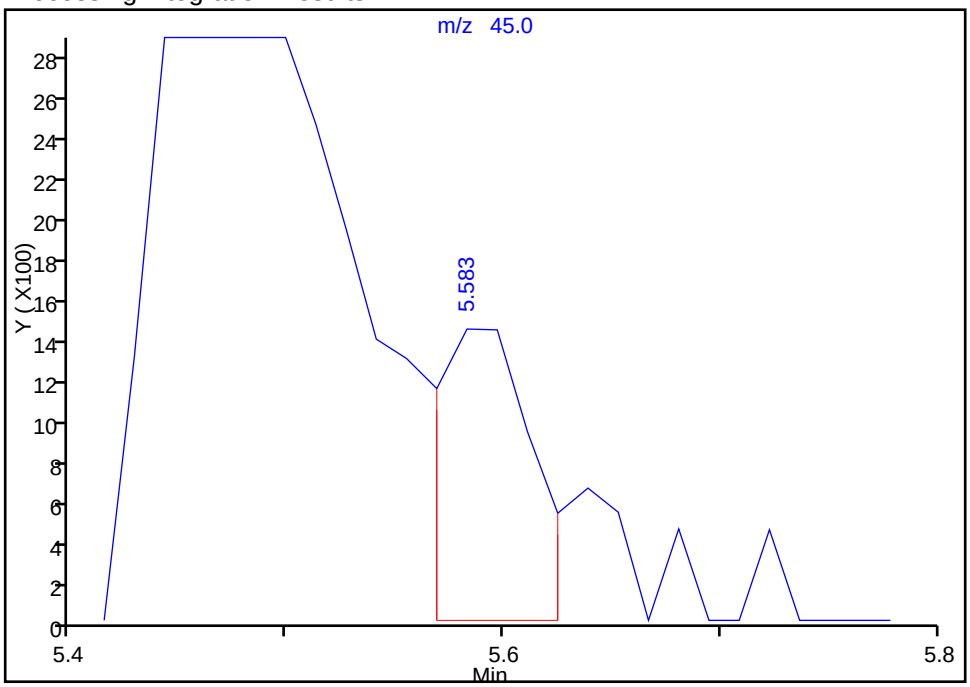
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3537.D				
Injection Date:	11-Jul-2016 10:21:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	5	Worklist Smp#:	6
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

11 Ethanol, CAS: 64-17-5

Signal: 1

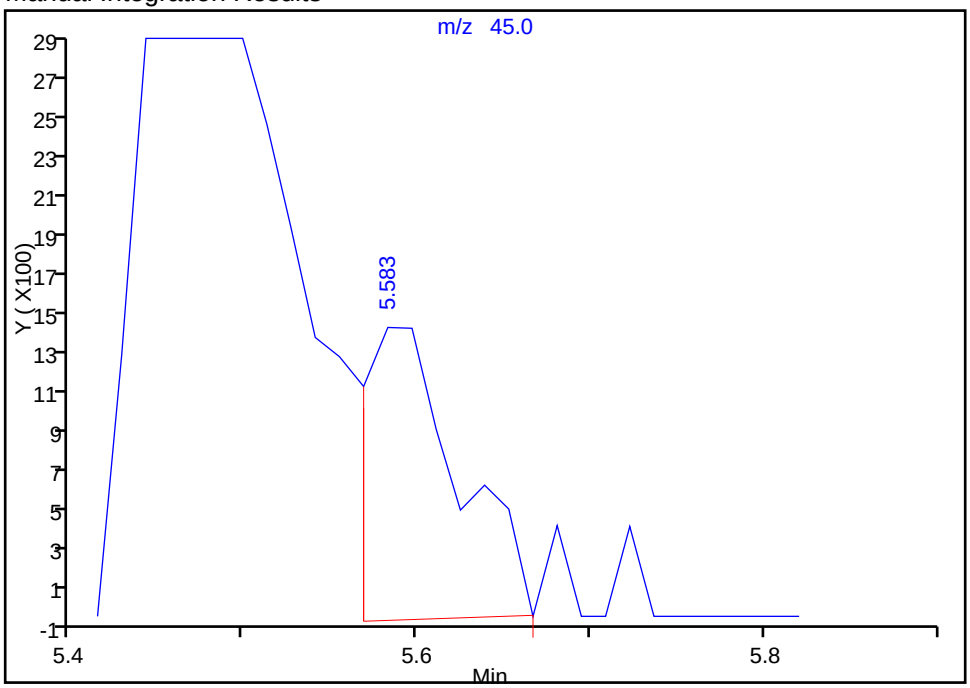
Processing Integration Results

RT: 5.58
Area: 4512
Amount: 488.0943
Amount Units: ug/l



Manual Integration Results

RT: 5.58
Area: 5553
Amount: 414.7118
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:52:59

Audit Action: Manually Integrated Audit Reason: Peak Tail

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3538.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 11-Jul-2016 10:46:30 ALS Bottle#: 6 Worklist Smp#: 7
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 40
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-5mL-8260_VMSL*sub1

Method: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 13-Jul-2016 08:35:16 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK053

First Level Reviewer: rhoadess Date: 13-Jul-2016 08:34:37

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	305649	20.0	19.7	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	97	137211	20.0	18.8	M
3 Chloromethane	50	3.488	3.488	0.000	99	404691	20.0	19.5	
4 Vinyl chloride	62	3.642	3.641	0.001	98	339272	20.0	20.0	
122 Butadiene	39	3.683	3.683	0.000	89	332601	20.0	19.7	
5 Bromomethane	94	4.256	4.256	0.000	91	135155	20.0	19.5	
6 Chloroethane	64	4.493	4.479	0.014	99	174742	20.0	19.6	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	359720	20.0	19.5	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	99	418000	20.0	19.5	
8 Ethyl ether	74	5.248	5.248	0.000	96	95731	20.0	19.1	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	96	245031	20.0	19.7	
11 Ethanol	45	5.597	5.597	0.000	100	12082	800.0	893.6	M
10 Carbon disulfide	76	5.597	5.597	0.000	100	869278	20.0	20.1	
12 1,1,2-Trichloro-1,2,2-trif	151	5.611	5.611	0.000	91	226515	20.0	19.9	
13 Iodomethane	142	5.764	5.764	0.000	98	160307	20.0	18.6	
S 26 1,2-Dichloroethene, Total	96				0			39.5	
14 Acrolein	56	6.030	6.030	0.000	99	98954	100.0	95.3	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	92	296119	20.0	19.7	
16 Isopropyl alcohol	45	6.225	6.239	-0.014	98	81639	200.0	195.5	
17 Methylene Chloride	84	6.351	6.351	0.000	99	223261	20.0	19.6	
18 Acetone	43	6.421	6.421	0.000	100	41473	20.0	20.4	
19 trans-1,2-Dichloroethene	96	6.547	6.546	0.001	97	267560	20.0	20.0	
20 Methyl acetate	74	6.561	6.560	0.000	99	90502	100.0	98.0	
21 Hexane	86	6.644	6.630	0.014	92	94464	20.0	20.2	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	85	458007	20.0	19.3	
24 Acetonitrile	41	6.993	6.993	0.000	99	150539	200.0	192.3	
23 2-Methyl-2-propanol	59	7.105	7.105	0.000	34	86132	200.0	192.6	
25 Isopropyl ether	45	7.105	7.105	0.000	95	799807	20.0	19.5	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	92	487011	20.0	19.9	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	97	483330	20.0	19.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
29 Acrylonitrile	53	7.343	7.343	0.000	99	477229	200.0	194.1	
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	645096	20.0	19.5	
31 Vinyl acetate	43	7.524	7.524	0.000	97	370122	20.0	19.9	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	261566	20.0	19.5	
33 2,2-Dichloropropane	77	7.971	7.971	0.000	92	403531	20.0	19.6	
35 Chlorobromomethane	128	8.055	8.069	-0.014	94	96435	20.0	19.6	
34 Cyclohexane	84	8.069	8.069	0.000	93	466649	20.0	20.0	
36 Chloroform	83	8.111	8.111	0.000	94	402594	20.0	19.5	
39 Ethyl acetate	45	8.209	8.208	0.001	99	37334	40.0	38.5	
37 Carbon tetrachloride	117	8.278	8.278	0.000	97	369050	20.0	20.2	
38 Tetrahydrofuran	71	8.292	8.292	0.000	90	26873	40.0	39.6	
$ 41 Dibromofluoromethane (Surr	113	8.306	8.306	0.000	96	185107	20.0	19.6	
40 1,1,1-Trichloroethane	97	8.348	8.348	0.000	98	409888	20.0	19.9	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	99	61929	20.0	19.9	
42 1,1-Dichloropropene	75	8.460	8.460	0.000	94	377538	20.0	20.2	
125 Isooctane	57	8.544	8.544	0.000	100	1380256	20.0	20.2	
117 n-Heptane	43	8.614	8.613	0.001	96	617462	20.0	20.8	
44 Benzene	78	8.697	8.697	0.000	98	1039382	20.0	20.4	
45 Propionitrile	54	8.725	8.725	0.000	96	180546	200.0	196.3	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	930593	200.0	198.9	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	96	489263	20.0	19.2	
50 Isobutyl alcohol	42	8.823	8.823	0.000	95	89312	500.0	474.5	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.837	8.837	0.000	93	191086	20.0	19.7	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	97	249784	20.0	19.2	
* 51 Fluorobenzene	96	9.088	9.088	0.000	99	2355103	50.0	50.0	
52 Methylcyclohexane	55	9.242	9.242	0.000	93	484883	20.0	20.5	
53 Trichloroethene	95	9.242	9.242	0.000	64	277597	20.0	20.6	
54 n-Butanol	56	9.465	9.465	0.000	88	87170	500.0	469.8	
55 Dibromomethane	93	9.647	9.647	0.000	94	96253	20.0	19.5	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	95	243708	20.0	19.9	
57 Dichlorobromomethane	83	9.773	9.773	0.000	99	268920	20.0	19.6	
124 Ethyl acrylate	55	9.857	9.856	0.001	96	18057	20.0	19.0	
58 Methyl methacrylate	69	9.857	9.856	0.001	96	184974	40.0	38.5	
59 1,4-Dioxane	88	9.954	9.954	0.000	97	24969	400.0	393.3	
60 2-Chloroethyl vinyl ether	63	10.248	10.248	0.000	93	60689	20.0	19.8	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	94	336959	20.0	19.6	
$ 62 Toluene-d8 (Surr)	98	10.513	10.513	0.000	93	901297	20.0	19.9	
63 Toluene	92	10.555	10.555	0.000	99	690071	20.0	20.1	
64 2-Nitropropane	43	10.764	10.778	-0.014	99	71055	40.0	35.8	
66 4-Methyl-2-pentanone (MIBK	43	10.862	10.862	0.000	98	126132	20.0	18.6	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	95	270158	20.0	19.3	
65 Tetrachloroethene	164	10.918	10.918	0.000	97	253220	20.0	20.9	
69 Ethyl methacrylate	69	10.988	10.988	0.000	92	179454	20.0	18.4	
68 1,1,2-Trichloroethane	83	11.058	11.058	0.000	92	119027	20.0	19.0	
70 Chlorodibromomethane	129	11.239	11.239	0.000	90	179451	20.0	19.2	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	94	265892	20.0	19.1	
119 n-Butyl acetate	43	11.477	11.477	0.000	95	228509	20.0	18.5	
72 Ethylene Dibromide	107	11.491	11.491	0.001	99	132845	20.0	18.9	
74 2-Hexanone	43	11.602	11.602	0.000	96	87837	20.0	18.5	
S 73 1,3-Dichloropropene, Total	75				0			38.9	
75 1-Chlorohexane	91	11.868	11.868	0.000	97	414970	20.0	21.5	
* 76 Chlorobenzene-d5	117	11.924	11.923	0.001	87	1639831	50.0	50.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
78 Ethylbenzene	91	11.924	11.923	0.001	97	1287848	20.0	20.8	
77 Chlorobenzene	112	11.938	11.937	0.001	95	702443	20.0	20.5	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	96	228844	20.0	19.6	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	97	513289	20.0	21.3	
82 o-Xylene	106	12.454	12.454	0.000	98	477761	20.0	20.9	
83 Styrene	104	12.510	12.510	0.000	95	724026	20.0	20.3	
84 Bromoform	173	12.566	12.566	0.000	98	91774	20.0	18.3	
85 Isopropylbenzene	105	12.734	12.734	0.000	96	1308508	20.0	21.2	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	87	309788	20.0	19.4	
88 N-Propylbenzene	91	13.125	13.125	0.000	98	1550032	20.0	21.9	
87 Bromobenzene	156	13.153	13.152	0.001	95	281465	20.0	19.7	
89 1,1,2,2-Tetrachloroethane	83	13.180	13.180	0.000	96	152462	20.0	18.9	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	96	1070837	20.0	21.5	
90 2-Chlorotoluene	91	13.306	13.306	0.000	97	984007	20.0	21.0	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	84	51534	20.0	18.4	
92 1,2,3-Trichloropropane	110	13.348	13.348	0.000	84	48151	20.0	18.3	
94 Cyclohexanone	55	13.418	13.418	0.000	88	41917	200.0	204.9	
95 4-Chlorotoluene	91	13.460	13.460	0.000	97	903881	20.0	21.0	
96 tert-Butylbenzene	119	13.613	13.613	0.000	92	1009921	20.0	21.7	
97 1,2,4-Trimethylbenzene	105	13.669	13.669	0.000	97	1063331	20.0	21.3	
98 sec-Butylbenzene	105	13.781	13.781	0.000	94	1489482	20.0	22.3	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	1303149	20.0	22.5	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	98	590573	20.0	20.5	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	87	995861	20.0	20.8	
* 101 1,4-Dichlorobenzene-d4	152	14.102	14.102	0.000	95	859186	50.0	50.0	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	97	580606	20.0	20.7	
103 n-Butylbenzene	134	14.312	14.312	0.000	95	337784	20.0	23.0	
121 Benzyl chloride	126	14.340	14.340	0.000	82	72407	20.0	18.3	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	99	509141	20.0	20.1	
106 n-Nonyl Aldehyde	57	15.261	15.261	0.000	90	113787	20.0	17.9	
105 1,2-Dibromo-3-Chloropropan	157	15.331	15.331	0.000	85	32626	20.0	18.4	
107 1,3,5-Trichlorobenzene	180	15.345	15.345	0.000	98	459493	20.0	21.5	
108 Hexachlorobutadiene	225	15.932	15.932	0.000	97	253923	20.0	23.6	
109 1,2,4-Trichlorobenzene	180	16.002	16.002	0.000	94	374250	20.0	20.4	
110 Naphthalene	128	16.351	16.351	0.000	97	519817	20.0	18.9	
S 112 Xylenes, Total	106				0			42.2	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	97	321658	20.0	19.9	
S 113 Trihalomethanes, Total	1				0			76.6	

QC Flag Legend

Review Flags

M - Manually Integrated

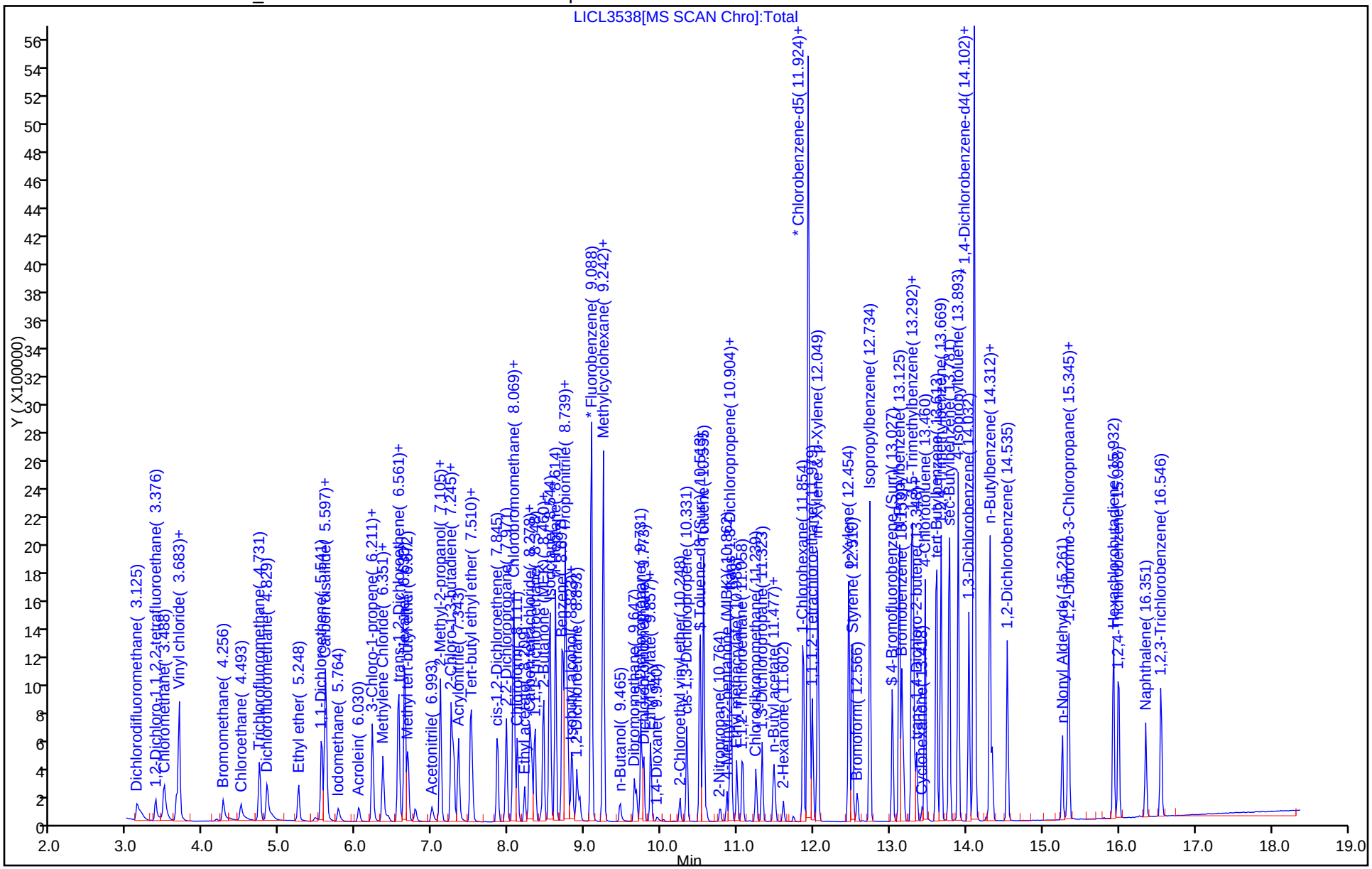
Reagents:

8260 NewWkMix_00174	Amount Added: 4.00	Units: uL	
8260 Surr 25_00063	Amount Added: 4.00	Units: uL	
I.S. Working_00133	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 13-Jul-2016 08:35:17 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3538.D				
Injection Date:	11-Jul-2016 10:46:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	7
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

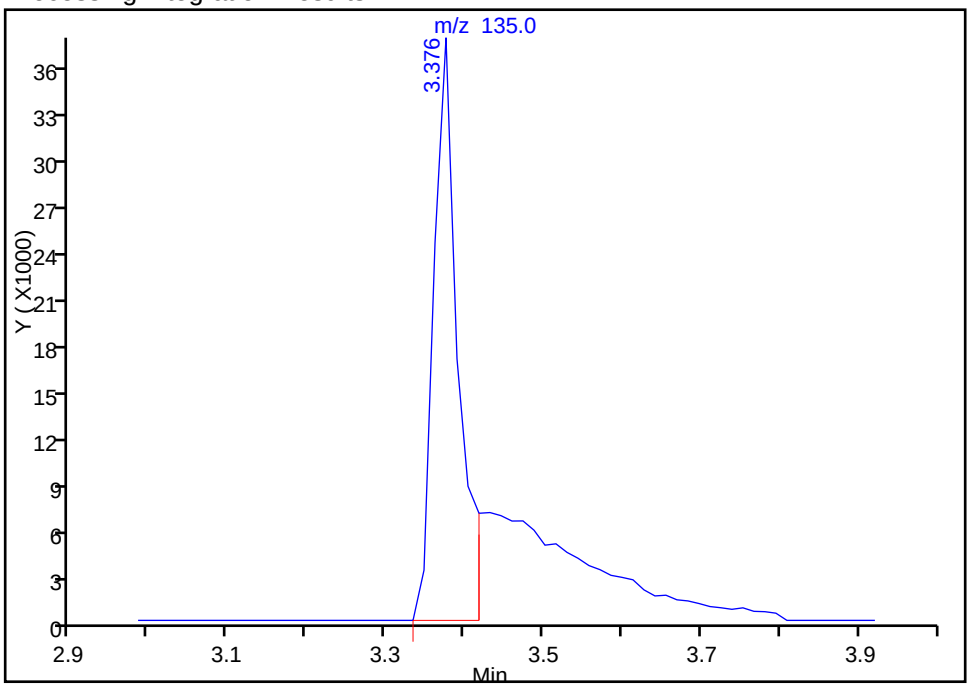
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3538.D				
Injection Date:	11-Jul-2016 10:46:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

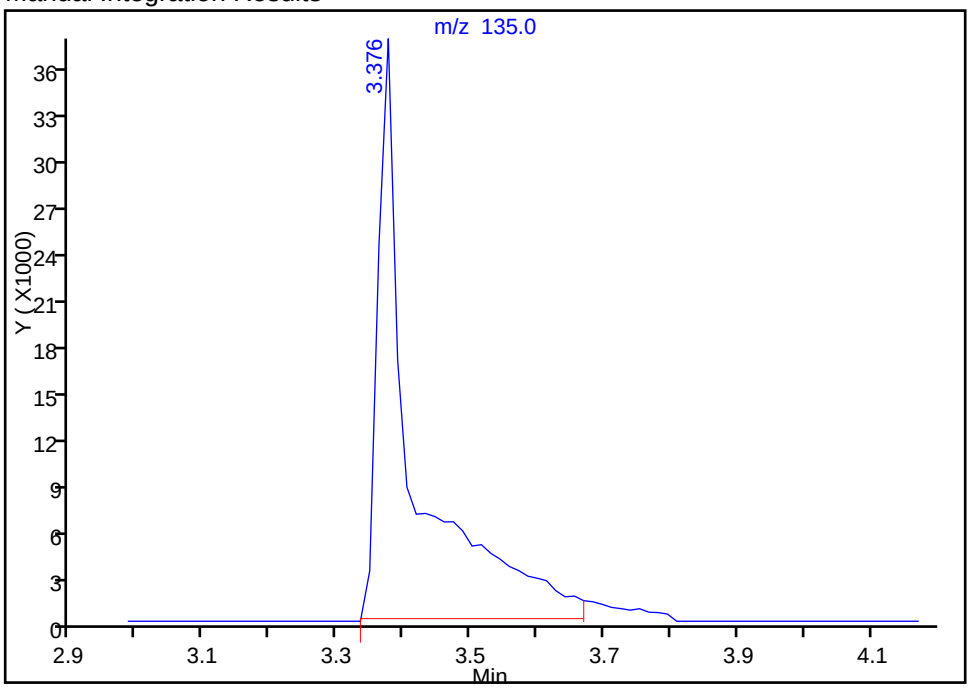
Processing Integration Results

RT: 3.38
Area: 80886
Amount: 13.720490
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 137211
Amount: 18.812825
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:35:01

Audit Action: Manually Integrated Audit Reason: Peak Tail

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

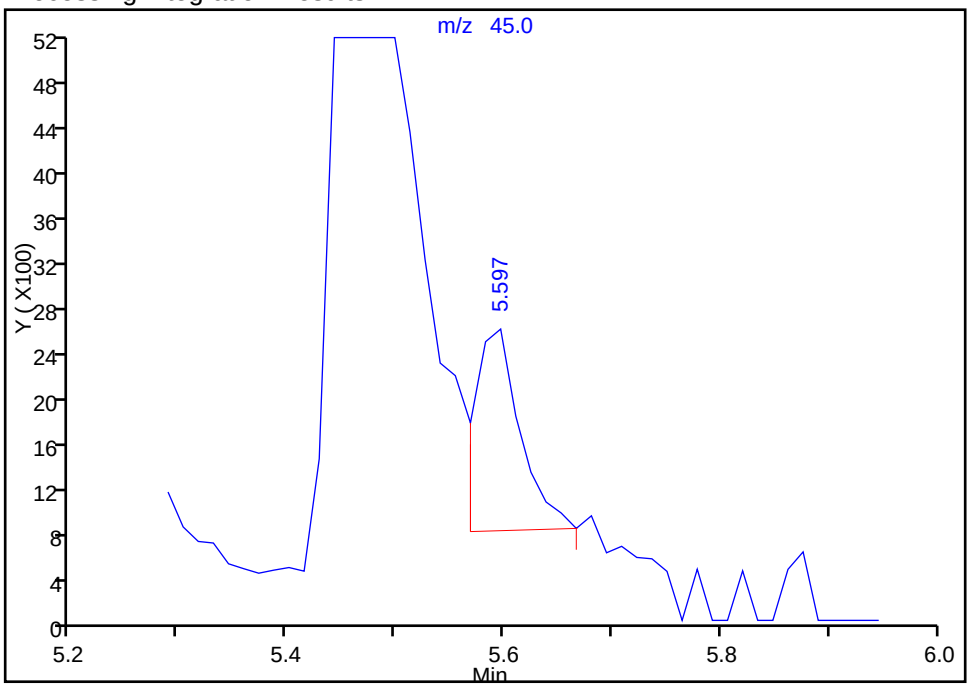
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3538.D				
Injection Date:	11-Jul-2016 10:46:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

11 Ethanol, CAS: 64-17-5

Signal: 1

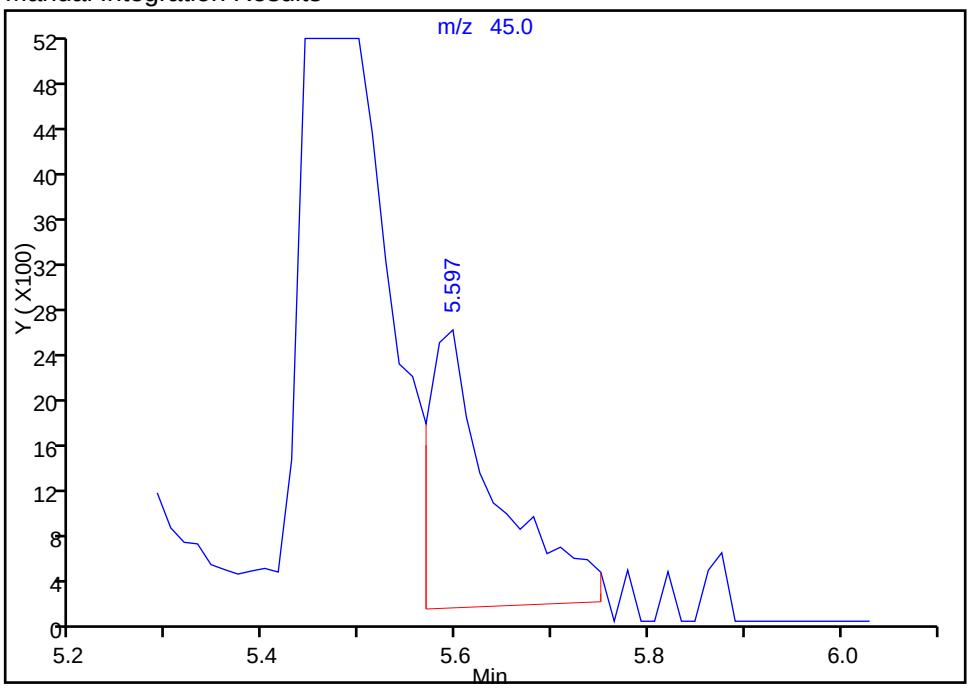
Processing Integration Results

RT: 5.60
Area: 5280
Amount: 522.1744
Amount Units: ug/l



Manual Integration Results

RT: 5.60
Area: 12082
Amount: 893.6119
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:54:14

Audit Action: Manually Integrated Audit Reason: Peak Tail

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3539.D
Lims ID: icis
Client ID:
Sample Type: ICIS Calib Level: 6
Inject. Date: 11-Jul-2016 11:11:30 ALS Bottle#: 7 Worklist Smp#: 8
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ICIS
Misc. Info.: 50
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-5mL-8260_VMSL*sub1

Method: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 13-Jul-2016 08:35:20 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK053

First Level Reviewer: rhoadess Date: 11-Jul-2016 11:37:23

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	761630	50.0	47.5	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	373166	50.0	49.6	
3 Chloromethane	50	3.488	3.488	0.000	99	982121	50.0	45.9	
4 Vinyl chloride	62	3.641	3.641	0.000	98	851496	50.0	48.7	
122 Butadiene	39	3.683	3.683	0.000	89	828849	50.0	47.5	
5 Bromomethane	94	4.256	4.256	0.000	90	311885	50.0	43.6	
6 Chloroethane	64	4.479	4.479	0.000	99	424113	50.0	46.1	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	895833	50.0	47.0	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	99	1031917	50.0	46.7	
8 Ethyl ether	74	5.248	5.248	0.000	96	239474	50.0	46.4	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	96	613776	50.0	47.7	
11 Ethanol	45	5.597	5.597	0.000	100	20391	2000.0	1461.9	
10 Carbon disulfide	76	5.597	5.597	0.000	100	2141452	50.0	47.9	
12 1,1,2-Trichloro-1,2,2-trif	151	5.611	5.611	0.000	89	557569	50.0	47.5	
13 Iodomethane	142	5.764	5.764	0.000	98	469865	50.0	52.7	
14 Acrolein	56	6.030	6.030	0.000	100	259625	250.0	242.2	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	92	756800	50.0	48.8	
16 Isopropyl alcohol	45	6.239	6.239	0.000	98	200576	500.0	465.6	
17 Methylene Chloride	84	6.351	6.351	0.000	98	548541	50.0	46.7	
18 Acetone	43	6.421	6.421	0.000	99	89410	50.0	46.8	
19 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	662609	50.0	47.9	
20 Methyl acetate	74	6.560	6.560	0.000	99	229756	250.0	241.1	
21 Hexane	86	6.630	6.630	0.000	92	235576	50.0	48.8	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	79	1154703	50.0	47.2	
24 Acetonitrile	41	6.993	6.993	0.000	99	375760	500.0	465.4	
23 2-Methyl-2-propanol	59	7.105	7.105	0.000	34	218091	500.0	472.8	
25 Isopropyl ether	45	7.105	7.105	0.000	96	2023696	50.0	47.9	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	92	1239138	50.0	49.1	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	95	1197243	50.0	47.6	
29 Acrylonitrile	53	7.343	7.343	0.000	99	1204461	500.0	475.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	1637894	50.0	47.9	
31 Vinyl acetate	43	7.524	7.524	0.000	97	929050	50.0	48.3	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	656797	50.0	47.6	
33 2,2-Dichloropropane	77	7.971	7.971	0.000	92	1014711	50.0	47.9	
35 Chlorobromomethane	128	8.069	8.069	0.000	95	241249	50.0	47.5	
34 Cyclohexane	84	8.069	8.069	0.000	92	1174513	50.0	48.8	
36 Chloroform	83	8.111	8.111	0.000	95	1004837	50.0	47.2	
39 Ethyl acetate	45	8.208	8.208	0.000	99	95123	100.0	95.2	
37 Carbon tetrachloride	117	8.278	8.278	0.000	97	917563	50.0	48.7	
38 Tetrahydrofuran	71	8.292	8.292	0.000	93	66843	100.0	95.4	
$ 41 Dibromofluoromethane (Surr	113	8.306	8.306	0.000	96	487477	50.0	50.0	
40 1,1,1-Trichloroethane	97	8.348	8.348	0.000	98	1028642	50.0	48.5	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	98	148920	50.0	46.4	
42 1,1-Dichloropropene	75	8.460	8.460	0.000	95	949010	50.0	49.3	
125 Isooctane	57	8.544	8.544	0.000	100	3437250	50.0	48.8	
117 n-Heptane	43	8.613	8.613	0.000	96	1523231	50.0	49.8	
44 Benzene	78	8.697	8.697	0.000	98	2552014	50.0	48.5	
45 Propionitrile	54	8.725	8.725	0.000	96	452647	500.0	477.0	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	2327568	500.0	482.1	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	96	1251166	50.0	47.7	
50 Isobutyl alcohol	42	8.823	8.823	0.000	95	232977	1250.0	1199.8	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.837	8.837	0.000	92	498674	50.0	49.8	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	96	624911	50.0	46.7	
* 51 Fluorobenzene	96	9.088	9.088	0.000	99	2429687	50.0	50.0	
52 Methylcyclohexane	55	9.242	9.242	0.000	93	1204673	50.0	49.4	
53 Trichloroethene	95	9.242	9.242	0.000	65	686863	50.0	49.3	
54 n-Butanol	56	9.465	9.465	0.000	87	232109	1250.0	1212.5	
55 Dibromomethane	93	9.647	9.647	0.000	95	243477	50.0	47.8	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	95	608683	50.0	48.1	
57 Dichlorobromomethane	83	9.773	9.773	0.000	99	680821	50.0	48.2	
124 Ethyl acrylate	55	9.856	9.856	0.000	96	44999	50.0	45.9	
58 Methyl methacrylate	69	9.856	9.856	0.000	96	480480	100.0	97.0	
59 1,4-Dioxane	88	9.954	9.954	0.000	98	64587	1000.0	986.2	
60 2-Chloroethyl vinyl ether	63	10.248	10.248	0.000	92	155595	50.0	49.2	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	94	872045	50.0	49.3	
$ 62 Toluene-d8 (Surr)	98	10.513	10.513	0.000	93	2352739	50.0	51.1	
63 Toluene	92	10.555	10.555	0.000	99	1700320	50.0	48.7	
64 2-Nitropropane	43	10.778	10.778	0.000	98	185114	100.0	91.6	
66 4-Methyl-2-pentanone (MIBK	43	10.862	10.862	0.000	97	327138	50.0	47.3	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	89	688315	50.0	48.3	
65 Tetrachloroethene	164	10.918	10.918	0.000	98	611801	50.0	49.5	
69 Ethyl methacrylate	69	10.988	10.988	0.000	92	476697	50.0	48.1	
68 1,1,2-Trichloroethane	83	11.058	11.058	0.000	91	300325	50.0	47.2	
70 Chlorodibromomethane	129	11.239	11.239	0.000	90	460800	50.0	48.4	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	94	672188	50.0	47.4	
119 n-Butyl acetate	43	11.477	11.477	0.000	95	589910	50.0	47.0	
72 Ethylene Dibromide	107	11.491	11.491	0.000	98	343417	50.0	48.0	
74 2-Hexanone	43	11.602	11.602	0.000	96	223981	50.0	46.4	
75 1-Chlorohexane	91	11.868	11.868	0.000	98	1026594	50.0	52.2	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	85	1668953	50.0	50.0	
78 Ethylbenzene	91	11.923	11.923	0.000	97	3139338	50.0	49.8	
77 Chlorobenzene	112	11.937	11.937	0.000	91	1714685	50.0	49.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	96	579232	50.0	48.7	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	97	1267886	50.0	51.7	
82 o-Xylene	106	12.454	12.454	0.000	98	1194933	50.0	51.3	
83 Styrene	104	12.510	12.510	0.000	95	1849034	50.0	50.8	
84 Bromoform	173	12.566	12.566	0.000	97	245133	50.0	47.8	
85 Isopropylbenzene	105	12.734	12.734	0.000	96	3221819	50.0	51.2	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	88	822825	50.0	50.6	
88 N-Propylbenzene	91	13.125	13.125	0.000	98	3790936	50.0	52.4	
87 Bromobenzene	156	13.152	13.152	0.000	95	708264	50.0	48.5	
89 1,1,2,2-Tetrachloroethane	83	13.180	13.180	0.000	96	382491	50.0	46.3	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	96	2629208	50.0	51.8	
90 2-Chlorotoluene	91	13.306	13.306	0.000	97	2412342	50.0	50.3	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	83	136857	50.0	48.0	
92 1,2,3-Trichloropropane	110	13.348	13.348	0.000	83	125953	50.0	47.0	
94 Cyclohexanone	55	13.418	13.418	0.000	88	105561	500.0	433.4	
95 4-Chlorotoluene	91	13.460	13.460	0.000	97	2221627	50.0	50.5	
96 tert-Butylbenzene	119	13.613	13.613	0.000	92	2465809	50.0	51.9	
97 1,2,4-Trimethylbenzene	105	13.669	13.669	0.000	97	2639345	50.0	51.7	
98 sec-Butylbenzene	105	13.781	13.781	0.000	94	3619877	50.0	53.2	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	3170088	50.0	53.7	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	99	1466889	50.0	50.0	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	97	2470377	50.0	50.5	
* 101 1,4-Dichlorobenzene-d4	152	14.102	14.102	0.000	96	877092	50.0	50.0	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	96	1426405	50.0	49.8	
103 n-Butylbenzene	134	14.312	14.312	0.000	95	818808	50.0	54.6	
121 Benzyl chloride	126	14.340	14.340	0.000	95	192920	50.0	47.9	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	98	1273380	50.0	49.2	
106 n-Nonyl Aldehyde	57	15.261	15.261	0.000	91	319987	50.0	49.2	
105 1,2-Dibromo-3-Chloropropan	157	15.331	15.331	0.000	85	83887	50.0	46.4	
107 1,3,5-Trichlorobenzene	180	15.345	15.345	0.000	98	1111873	50.0	51.0	
108 Hexachlorobutadiene	225	15.932	15.932	0.000	96	606825	50.0	55.2	
109 1,2,4-Trichlorobenzene	180	16.002	16.002	0.000	94	925454	50.0	49.4	
110 Naphthalene	128	16.351	16.351	0.000	97	1345321	50.0	47.8	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	96	805627	50.0	48.9	

Reagents:

8260 NewWkMix_00174	Amount Added: 10.00	Units: uL	
8260 Surr 25_00063	Amount Added: 10.00	Units: uL	
I.S. Working_00133	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 13-Jul-2016 08:35:21 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3539.D

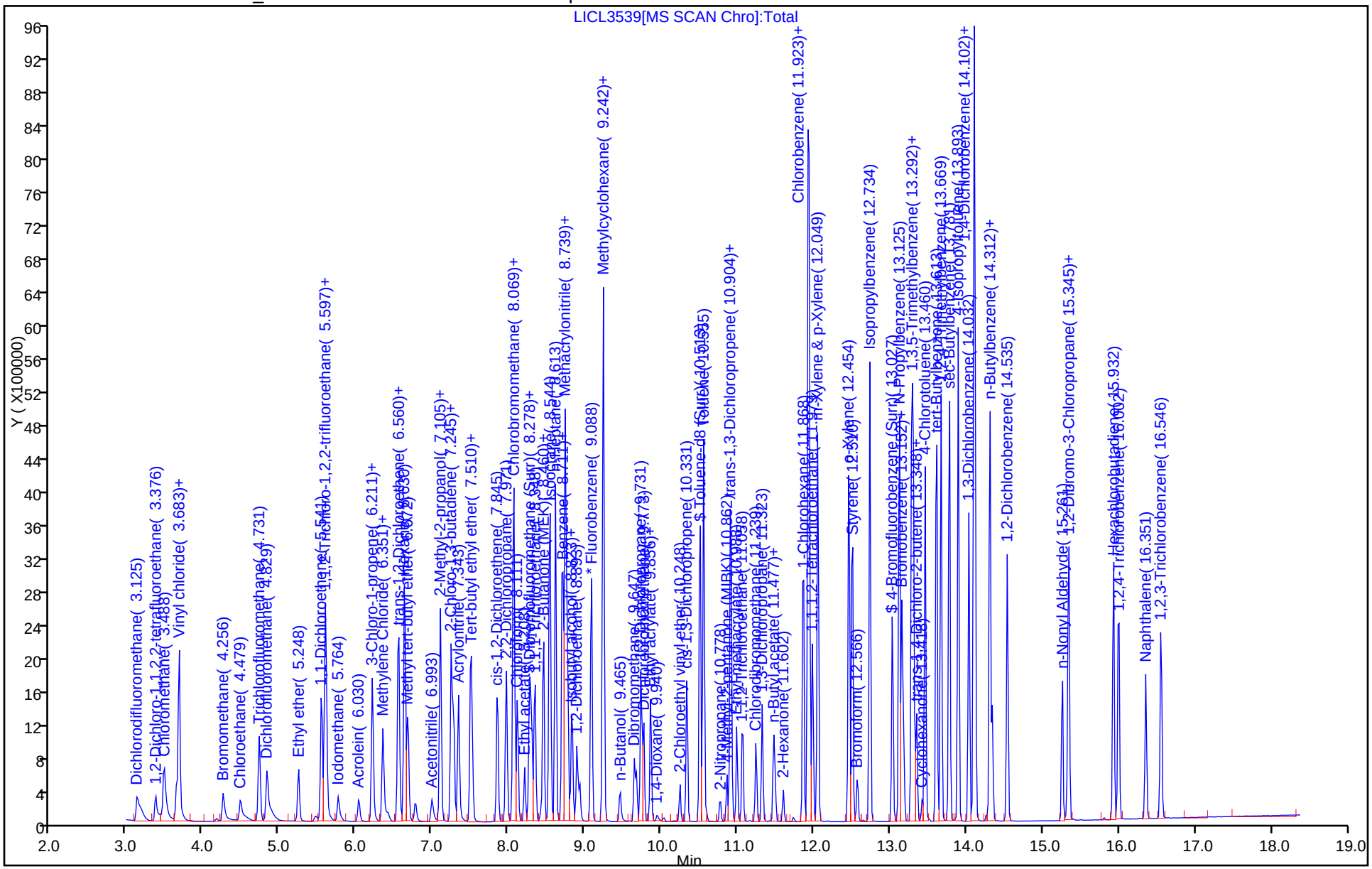
Injection Date: 11-Jul-2016 11:11:30 Instrument ID: VMSL Operator ID: SMCR

Lims ID: icis Worklist Smp#: 8

Client ID:

Purge Vol: 5.000 mL Dil. Factor: 1.0000 ALS Bottle#: 7

Method: 5mL-8260_VMSL Limit Group: MSV-8260



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3540.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 11-Jul-2016 11:36:30 ALS Bottle#: 8 Worklist Smp#: 9
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 100
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-5mL-8260_VMSL*sub1

Method: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 13-Jul-2016 08:35:23 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK053

First Level Reviewer: rhoadess Date: 11-Jul-2016 13:37:43

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	1593351	100.0	98.4	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	733263	100.0	96.5	M
3 Chloromethane	50	3.488	3.488	0.000	99	2202442	100.0	101.9	
4 Vinyl chloride	62	3.641	3.641	0.000	98	1853026	100.0	104.9	
122 Butadiene	39	3.683	3.683	0.000	90	1814289	100.0	102.9	
5 Bromomethane	94	4.256	4.256	0.000	90	696284	100.0	96.3	
6 Chloroethane	64	4.479	4.479	0.000	100	896892	100.0	96.5	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	1842754	100.0	95.6	
123 Dichlorofluoromethane	67	4.829	4.829	-0.001	100	2189504	100.0	98.0	
8 Ethyl ether	74	5.247	5.248	-0.001	95	528346	100.0	101.3	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	96	1265661	100.0	97.4	
11 Ethanol	45	5.583	5.597	-0.014	100	59232	4000.0	4203.2	
10 Carbon disulfide	76	5.597	5.597	0.000	100	4375493	100.0	96.9	
12 1,1,2-Trichloro-1,2,2-trif	151	5.611	5.611	0.000	89	1142906	100.0	96.3	
13 Iodomethane	142	5.764	5.764	0.000	98	1074384	100.0	119.4	
S 26 1,2-Dichloroethene, Total	96				0			191.5	
14 Acrolein	56	6.030	6.030	0.000	100	556576	500.0	514.0	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	92	1554195	100.0	99.2	
16 Isopropyl alcohol	45	6.239	6.239	0.000	98	435532	1000.0	1000.7	
17 Methylene Chloride	84	6.351	6.351	0.000	99	1148676	100.0	96.7	
18 Acetone	43	6.421	6.421	0.000	100	178669	100.0	96.4	
19 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	1330848	100.0	95.3	
20 Methyl acetate	74	6.560	6.560	0.000	99	480688	500.0	499.4	
21 Hexane	86	6.644	6.630	0.014	91	475975	100.0	97.7	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	86	2482021	100.0	100.5	
24 Acetonitrile	41	6.993	6.993	0.000	99	788502	1000.0	966.6	
23 2-Methyl-2-propanol	59	7.105	7.105	0.000	34	467508	1000.0	1003.2	
25 Isopropyl ether	45	7.105	7.105	0.000	95	4250040	100.0	99.6	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	92	2534620	100.0	99.4	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	95	2464244	100.0	97.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
29 Acrylonitrile	53	7.342	7.343	-0.001	99	2554941	1000.0	997.2	
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	3488060	100.0	100.9	
31 Vinyl acetate	43	7.524	7.524	0.000	97	1934208	100.0	99.6	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	1343080	100.0	96.3	
33 2,2-Dichloropropane	77	7.971	7.971	0.000	91	2089734	100.0	97.5	
35 Chlorobromomethane	128	8.069	8.069	0.000	96	497110	100.0	96.9	
34 Cyclohexane	84	8.069	8.069	0.000	92	2347466	100.0	96.6	
36 Chloroform	83	8.111	8.111	0.000	95	2061064	100.0	95.9	
39 Ethyl acetate	45	8.208	8.208	0.000	99	205375	200.0	203.4	
37 Carbon tetrachloride	117	8.278	8.278	0.000	97	1840269	100.0	96.8	
38 Tetrahydrofuran	71	8.292	8.292	0.000	90	145545	200.0	205.7	
$ 41 Dibromofluoromethane (Surr	113	8.306	8.306	0.000	96	985780	100.0	100.2	
40 1,1,1-Trichloroethane	97	8.348	8.348	0.000	98	2079138	100.0	96.9	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	99	306787	100.0	94.5	
42 1,1-Dichloropropene	75	8.460	8.460	0.000	96	1854746	100.0	95.4	
125 Isooctane	57	8.544	8.544	0.000	100	6910825	100.0	97.2	
117 n-Heptane	43	8.613	8.613	0.000	96	2899569	100.0	93.9	
44 Benzene	78	8.711	8.697	0.014	97	5109725	100.0	96.1	
45 Propionitrile	54	8.725	8.725	0.000	96	957713	1000.0	999.0	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	4838758	1000.0	992.1	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	96	2680366	100.0	101.1	
50 Isobutyl alcohol	42	8.823	8.823	0.000	96	514666	2500.0	2623.5	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.837	8.837	0.000	91	1003089	100.0	99.1	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	96	1295543	100.0	95.8	
* 51 Fluorobenzene	96	9.088	9.088	0.000	99	2454682	50.0	50.0	
52 Methylcyclohexane	55	9.242	9.242	0.000	93	2312921	100.0	93.8	
53 Trichloroethene	95	9.242	9.242	0.000	65	1307377	100.0	92.9	
54 n-Butanol	56	9.465	9.465	0.000	87	516671	2500.0	2671.6	
55 Dibromomethane	93	9.647	9.647	0.000	94	509672	100.0	99.1	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	95	1255627	100.0	98.2	
57 Dichlorobromomethane	83	9.773	9.773	0.000	99	1417463	100.0	99.3	
124 Ethyl acrylate	55	9.856	9.856	0.000	96	102656	100.0	103.5	
58 Methyl methacrylate	69	9.856	9.856	0.000	96	1041774	200.0	208.2	
59 1,4-Dioxane	88	9.940	9.954	-0.014	98	136905	2000.0	2069.1	
60 2-Chloroethyl vinyl ether	63	10.247	10.248	-0.001	92	338270	100.0	105.8	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	94	1778272	100.0	99.4	
$ 62 Toluene-d8 (Surr)	98	10.513	10.513	0.000	93	4576786	100.0	102.4	
63 Toluene	92	10.555	10.555	0.000	99	3251217	100.0	96.0	
64 2-Nitropropane	43	10.778	10.778	0.000	96	422274	200.0	215.3	
66 4-Methyl-2-pentanone (MIBK	43	10.862	10.862	0.000	97	704424	100.0	105.0	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	95	1422096	100.0	102.9	
65 Tetrachloroethene	164	10.918	10.918	0.000	97	1101511	100.0	91.9	
69 Ethyl methacrylate	69	10.988	10.988	0.000	92	1042117	100.0	108.3	
68 1,1,2-Trichloroethane	83	11.071	11.058	0.013	91	627666	100.0	101.7	
70 Chlorodibromomethane	129	11.239	11.239	0.000	91	965009	100.0	104.4	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	94	1398496	100.0	101.7	
119 n-Butyl acetate	43	11.476	11.477	-0.001	95	1287060	100.0	105.6	
72 Ethylene Dibromide	107	11.490	11.491	0.000	99	713265	100.0	102.8	
74 2-Hexanone	43	11.602	11.602	0.000	96	484931	100.0	103.6	
S 73 1,3-Dichloropropene, Total	75				0			202.3	
75 1-Chlorohexane	91	11.867	11.868	-0.001	98	1758709	100.0	92.1	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	87	1619549	50.0	50.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
78 Ethylbenzene	91	11.923	11.923	0.000	98	5578531	100.0	91.1	
77 Chlorobenzene	112	11.937	11.937	0.000	91	3178814	100.0	94.0	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	95	1155584	100.0	100.2	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	97	2258746	100.0	94.9	
82 o-Xylene	106	12.454	12.454	0.000	98	2180085	100.0	96.5	
83 Styrene	104	12.510	12.510	0.000	95	3488147	100.0	98.8	
84 Bromoform	173	12.566	12.566	0.000	97	521731	100.0	107.4	
85 Isopropylbenzene	105	12.733	12.734	-0.001	96	5423751	100.0	91.0	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	88	1578872	100.0	102.5	
88 N-Propylbenzene	91	13.124	13.125	-0.001	97	6082165	100.0	88.8	
87 Bromobenzene	156	13.152	13.152	0.000	96	1333208	100.0	96.3	
89 1,1,2,2-Tetrachloroethane	83	13.180	13.180	0.000	96	798246	100.0	102.1	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	95	4364665	100.0	90.8	
90 2-Chlorotoluene	91	13.306	13.306	0.000	97	4143845	100.0	91.3	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	84	286906	100.0	106.2	
92 1,2,3-Trichloropropane	110	13.348	13.348	0.000	84	259104	100.0	102.0	
94 Cyclohexanone	55	13.418	13.418	0.000	88	236753	1000.0	959.5	
95 4-Chlorotoluene	91	13.460	13.460	0.000	97	3863364	100.0	92.7	
96 tert-Butylbenzene	119	13.613	13.613	0.000	92	4052873	100.0	90.2	
97 1,2,4-Trimethylbenzene	105	13.669	13.669	0.000	97	4452923	100.0	92.2	
98 sec-Butylbenzene	105	13.781	13.781	0.000	94	5635664	100.0	87.4	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	4896646	100.0	87.6	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	99	2591105	100.0	93.2	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	96	4361365	100.0	94.1	
* 101 1,4-Dichlorobenzene-d4	152	14.102	14.102	0.000	61	830461	50.0	50.0	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	94	2509591	100.0	92.6	
103 n-Butylbenzene	134	14.312	14.312	0.000	94	1245950	100.0	87.8	
121 Benzyl chloride	126	14.340	14.340	0.000	96	406580	100.0	106.6	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	98	2350898	100.0	95.9	
106 n-Nonyl Aldehyde	57	15.261	15.261	0.000	91	709628	100.0	115.3	
105 1,2-Dibromo-3-Chloropropan	157	15.331	15.331	0.000	86	179561	100.0	104.9	
107 1,3,5-Trichlorobenzene	180	15.345	15.345	0.000	98	1907994	100.0	92.4	
108 Hexachlorobutadiene	225	15.932	15.932	0.000	96	886639	100.0	85.1	
109 1,2,4-Trichlorobenzene	180	16.001	16.002	-0.001	95	1688897	100.0	95.1	
110 Naphthalene	128	16.351	16.351	0.000	97	2811660	100.0	105.5	
S 112 Xylenes, Total	106				0			191.5	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	97	1526475	100.0	97.9	
S 113 Trihalomethanes, Total	1				0			406.9	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260NewHiWrk_00152	Amount Added: 4.00	Units: uL	
8260 Surr 25_00063	Amount Added: 20.00	Units: uL	
I.S. Working_00133	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 13-Jul-2016 08:35:23 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3540.D

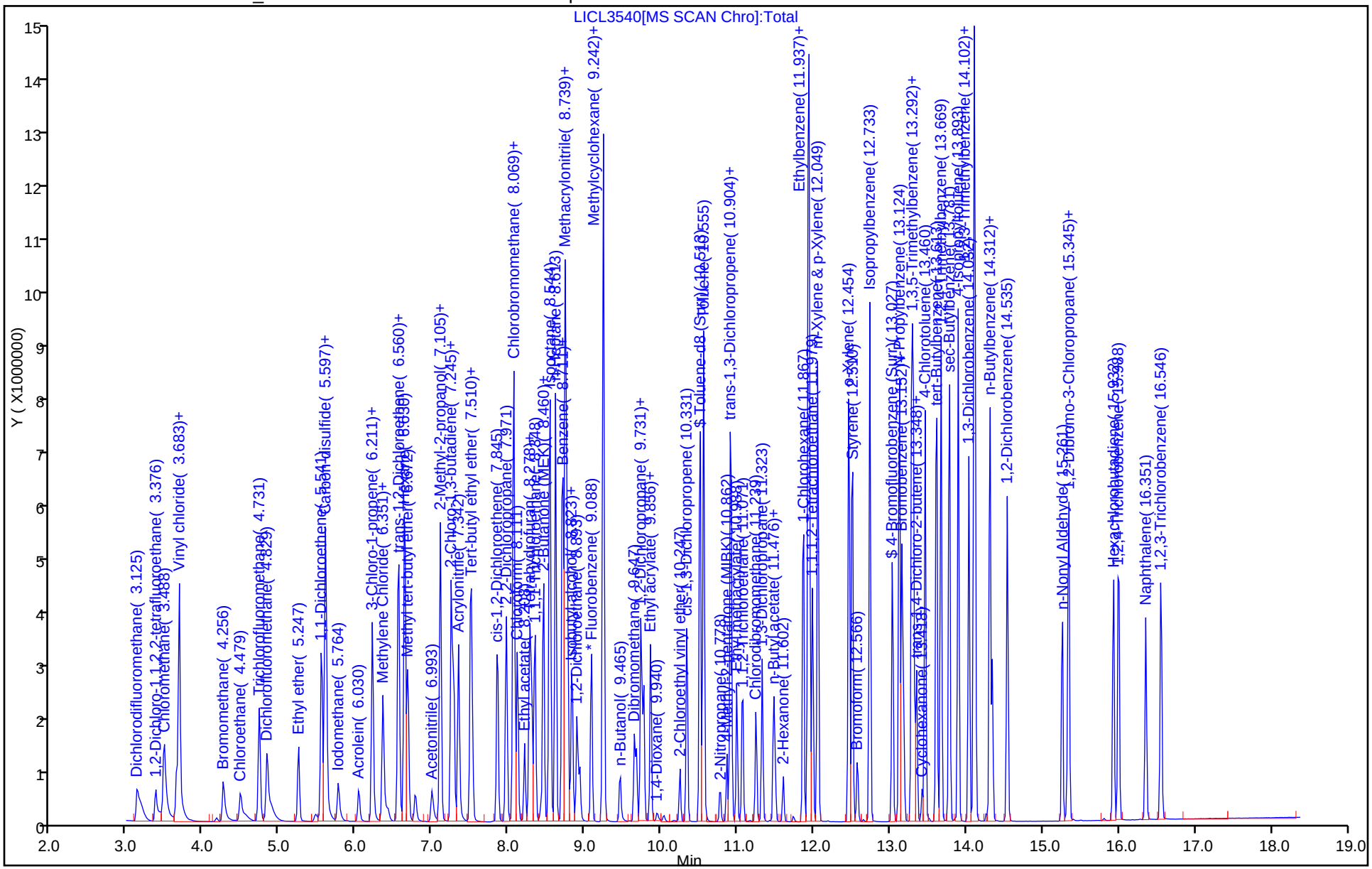
Injection Date: 11-Jul-2016 11:36:30 Instrument ID: VMSL Operator ID: SMCR

Lims ID: ic Worklist Smp#: 9

Client ID:

Purge Vol: 5.000 mL Dil. Factor: 1.0000 ALS Bottle#: 8

Method: 5mL-8260_VMSL Limit Group: MSV-8260



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

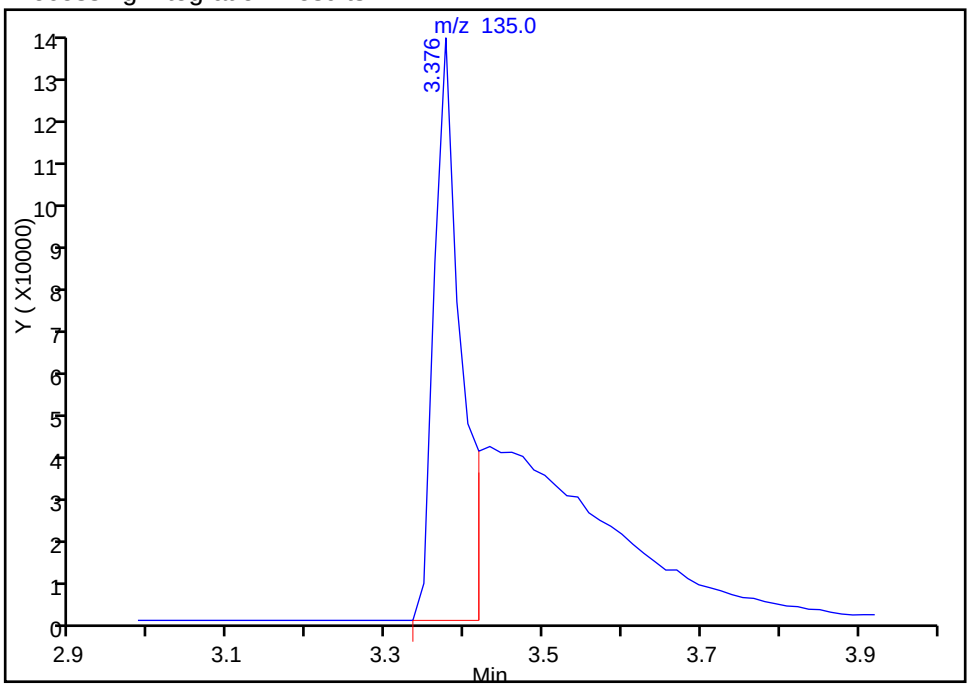
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3540.D				
Injection Date:	11-Jul-2016 11:36:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	8	Worklist Smp#:	9
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

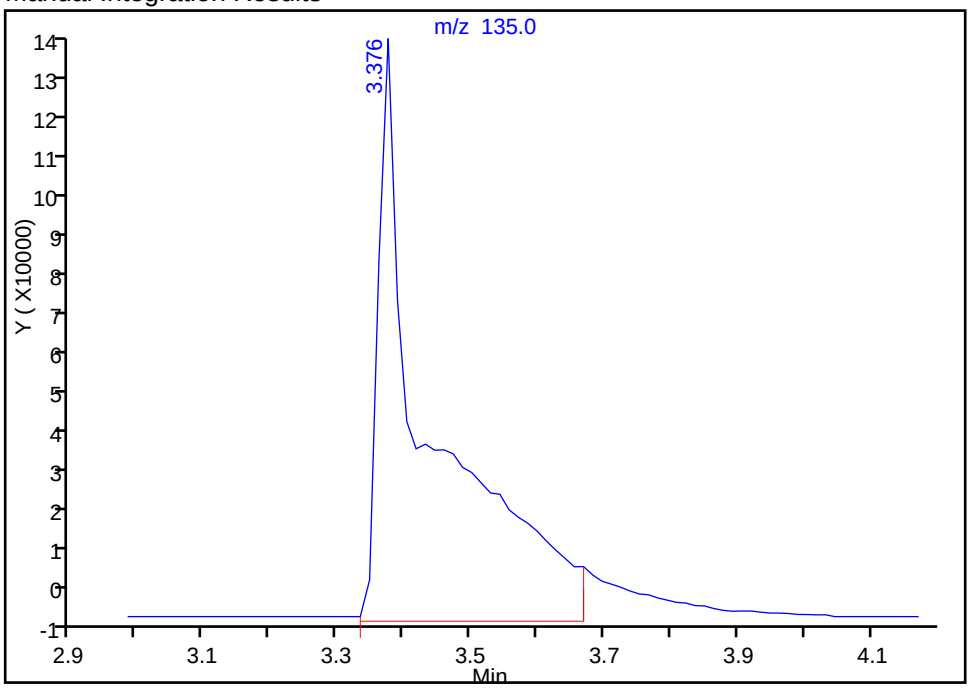
Processing Integration Results

RT: 3.38
Area: 318895
Amount: 48.974486
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 733263
Amount: 96.458280
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:37:43

Audit Action: Manually Integrated Audit Reason: Peak Tail

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 11-Jul-2016 12:00:30 ALS Bottle#: 9 Worklist Smp#: 10
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 200
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-5mL-8260_VMSL*sub1

Method: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 13-Jul-2016 08:35:25 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK053

First Level Reviewer: rhoadess Date: 11-Jul-2016 13:38:37

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	3208669	200.0	194.0	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	1563145	200.0	201.3	
3 Chloromethane	50	3.488	3.488	0.000	99	4470763	200.0	202.5	
4 Vinyl chloride	62	3.641	3.641	0.000	98	3727493	200.0	206.6	
122 Butadiene	39	3.683	3.683	0.000	89	3565778	200.0	197.9	
5 Bromomethane	94	4.256	4.256	0.000	90	1486584	200.0	201.2	
6 Chloroethane	64	4.493	4.479	0.014	100	1909249	200.0	201.0	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	3879418	200.0	197.1	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	100	4457523	200.0	195.3	
8 Ethyl ether	74	5.248	5.248	0.000	95	1096262	200.0	205.9	
9 1,1-Dichloroethene	96	5.555	5.541	0.014	96	2552547	200.0	192.4	
11 Ethanol	45	5.583	5.597	-0.014	100	107637	8000.0	7478.0	
10 Carbon disulfide	76	5.597	5.597	0.000	100	8746107	200.0	189.6	
12 1,1,2-Trichloro-1,2,2-trif	151	5.611	5.611	0.000	89	2286542	200.0	188.7	
13 Iodomethane	142	5.764	5.764	0.000	98	2232044	200.0	242.8	
S 26 1,2-Dichloroethene, Total	96				0			378.9	
14 Acrolein	56	6.030	6.030	0.000	100	1199035	1000.0	1084.2	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	93	3070789	200.0	192.0	
16 Isopropyl alcohol	45	6.225	6.239	-0.014	98	875417	2000.0	1969.2	
17 Methylene Chloride	84	6.351	6.351	0.000	99	2351310	200.0	193.8	
18 Acetone	43	6.421	6.421	0.000	100	381838	200.0	205.8	
19 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	2664120	200.0	186.7	
20 Methyl acetate	74	6.560	6.560	0.000	99	993567	1000.0	1010.6	
21 Hexane	86	6.644	6.630	0.014	94	958899	200.0	192.6	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	82	5070940	200.0	201.0	
24 Acetonitrile	41	6.993	6.993	0.000	99	1643309	2000.0	1972.2	
23 2-Methyl-2-propanol	59	7.105	7.105	0.000	35	962705	2000.0	2022.4	
25 Isopropyl ether	45	7.105	7.105	0.000	95	8574912	200.0	196.7	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	92	5046190	200.0	193.7	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	97	4972809	200.0	191.5	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
29 Acrylonitrile	53	7.342	7.343	-0.001	99	5206067	2000.0	1989.4	
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	7089715	200.0	200.8	
31 Vinyl acetate	43	7.524	7.524	0.000	97	3936544	200.0	198.5	
32 cis-1,2-Dichloroethene	96	7.859	7.845	0.014	80	2739530	200.0	192.2	
33 2,2-Dichloropropane	77	7.971	7.971	0.000	91	4211182	200.0	192.5	
35 Chlorobromomethane	128	8.069	8.069	0.000	95	986199	200.0	188.3	
34 Cyclohexane	84	8.069	8.069	0.000	92	4625170	200.0	186.4	
36 Chloroform	83	8.111	8.111	0.000	95	4153207	200.0	189.1	
39 Ethyl acetate	45	8.208	8.208	0.000	99	428474	400.0	415.4	
37 Carbon tetrachloride	117	8.278	8.278	0.000	97	3626933	200.0	186.7	
38 Tetrahydrofuran	71	8.292	8.292	0.000	92	296718	400.0	410.5	
$ 41 Dibromofluoromethane (Surr	113	8.306	8.306	0.000	95	2039434	200.0	202.9	
40 1,1,1-Trichloroethane	97	8.348	8.348	0.000	98	4134865	200.0	188.7	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	99	635647	200.0	191.7	
42 1,1-Dichloropropene	75	8.460	8.460	0.000	95	3686493	200.0	185.7	
125 Isooctane	57	8.544	8.544	0.000	99	13324022	200.0	183.4	
117 n-Heptane	43	8.613	8.613	0.000	96	5585414	200.0	177.0	
44 Benzene	78	8.711	8.697	0.014	98	9973910	200.0	183.7	
45 Propionitrile	54	8.725	8.725	0.000	94	1923854	2000.0	1964.7	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	9375499	2000.0	1881.9	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	97	5485317	200.0	202.5	
50 Isobutyl alcohol	42	8.823	8.823	0.000	95	1047842	5000.0	5229.4	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.837	8.837	0.000	91	2089798	200.0	202.1	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	96	2630393	200.0	190.4	
* 51 Fluorobenzene	96	9.088	9.088	0.000	99	2507250	50.0	50.0	
52 Methylcyclohexane	55	9.242	9.242	0.000	93	4474317	200.0	177.7	
53 Trichloroethene	95	9.242	9.242	0.000	66	2526759	200.0	175.8	
54 n-Butanol	56	9.465	9.465	0.000	87	1098018	5000.0	5558.6	
55 Dibromomethane	93	9.647	9.647	0.000	94	1034870	200.0	197.0	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	96	2546414	200.0	194.9	
57 Dichlorobromomethane	83	9.773	9.773	0.000	99	2860712	200.0	196.1	
124 Ethyl acrylate	55	9.856	9.856	0.000	97	209886	200.0	207.2	
58 Methyl methacrylate	69	9.856	9.856	0.000	95	2164579	400.0	423.6	
59 1,4-Dioxane	88	9.940	9.954	-0.014	98	282347	4000.0	4177.7	
60 2-Chloroethyl vinyl ether	63	10.247	10.248	-0.001	92	665976	200.0	203.9	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	95	3625045	200.0	198.5	
$ 62 Toluene-d8 (Surr)	98	10.513	10.513	0.000	93	8444363	200.0	193.7	
63 Toluene	92	10.555	10.555	0.000	98	6328573	200.0	191.6	
64 2-Nitropropane	43	10.778	10.778	0.000	96	882785	400.0	461.4	
66 4-Methyl-2-pentanone (MIBK	43	10.862	10.862	0.000	96	1452858	200.0	221.9	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	95	2835347	200.0	210.2	
65 Tetrachloroethene	164	10.918	10.918	0.000	97	2071919	200.0	177.1	
69 Ethyl methacrylate	69	10.988	10.988	0.000	92	2167808	200.0	230.9	
68 1,1,2-Trichloroethane	83	11.071	11.058	0.013	91	1276732	200.0	212.0	
70 Chlorodibromomethane	129	11.239	11.239	0.000	91	1981862	200.0	219.8	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	94	2842902	200.0	212.0	
119 n-Butyl acetate	43	11.476	11.477	-0.001	95	2652340	200.0	223.1	
72 Ethylene Dibromide	107	11.490	11.491	0.000	99	1458081	200.0	215.5	
74 2-Hexanone	43	11.602	11.602	0.000	96	1004983	200.0	220.1	
S 73 1,3-Dichloropropene, Total	75				0			408.7	
75 1-Chlorohexane	91	11.868	11.868	0.000	98	3249379	200.0	174.5	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	89	1579963	50.0	50.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
78 Ethylbenzene	91	11.937	11.923	0.014	98	10115151	200.0	169.4	
77 Chlorobenzene	112	11.937	11.937	0.000	91	6029897	200.0	182.8	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	96	2297835	200.0	204.1	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	98	4216299	200.0	181.6	
82 o-Xylene	106	12.454	12.454	0.000	98	4161260	200.0	188.9	
83 Styrene	104	12.510	12.510	0.000	95	6703082	200.0	194.6	
84 Bromoform	173	12.580	12.566	0.014	98	1083071	200.0	235.7	
85 Isopropylbenzene	105	12.733	12.734	-0.001	96	9680087	200.0	171.8	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	89	2993109	200.0	205.6	
88 N-Propylbenzene	91	13.124	13.125	-0.001	97	10588220	200.0	163.5	
87 Bromobenzene	156	13.152	13.152	0.000	96	2610264	200.0	199.5	
89 1,1,2,2-Tetrachloroethane	83	13.180	13.180	0.000	95	1631946	200.0	220.8	
91 1,3,5-Trimethylbenzene	105	13.292	13.278	0.014	94	7875940	200.0	173.2	
90 2-Chlorotoluene	91	13.306	13.306	0.000	97	7690782	200.0	179.2	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	84	582084	200.0	227.9	
92 1,2,3-Trichloropropane	110	13.348	13.348	0.000	87	519866	200.0	216.5	
94 Cyclohexanone	55	13.418	13.418	0.000	89	488174	2000.0	2034.0	
95 4-Chlorotoluene	91	13.460	13.460	0.000	98	7107432	200.0	180.3	
96 tert-Butylbenzene	119	13.613	13.613	0.000	93	7113248	200.0	167.4	
97 1,2,4-Trimethylbenzene	105	13.669	13.669	0.000	97	7990736	200.0	174.9	
98 sec-Butylbenzene	105	13.781	13.781	0.000	94	9548043	200.0	156.6	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	8310644	200.0	157.2	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	98	4802173	200.0	182.6	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	91	7894061	200.0	180.1	
* 101 1,4-Dichlorobenzene-d4	152	14.102	14.102	0.000	53	785336	50.0	50.0	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	94	4606691	200.0	179.8	
103 n-Butylbenzene	134	14.312	14.312	0.000	94	2082048	200.0	155.1	
121 Benzyl chloride	126	14.340	14.340	0.000	57	832130	200.0	230.7	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	98	4421898	200.0	190.7	
106 n-Nonyl Aldehyde	57	15.261	15.261	0.000	92	1474097	200.0	253.2	
105 1,2-Dibromo-3-Chloropropan	157	15.331	15.331	0.000	86	364211	200.0	224.9	
107 1,3,5-Trichlorobenzene	180	15.345	15.345	0.000	98	3384467	200.0	173.3	
108 Hexachlorobutadiene	225	15.932	15.932	0.000	96	1375802	200.0	139.7	
109 1,2,4-Trichlorobenzene	180	16.002	16.002	0.000	94	3169872	200.0	188.8	
110 Naphthalene	128	16.351	16.351	0.000	97	5667361	200.0	224.9	
S 112 Xylenes, Total	106				0			370.5	
111 1,2,3-Trichlorobenzene	180	16.560	16.546	0.014	96	2878963	200.0	195.3	
S 113 Trihalomethanes, Total	1				0			840.8	

Reagents:

8260NewHiWrk_00152	Amount Added: 8.00	Units: uL	
8260_Surr_00037	Amount Added: 0.40	Units: uL	
I.S. Working_00133	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 13-Jul-2016 08:35:26 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

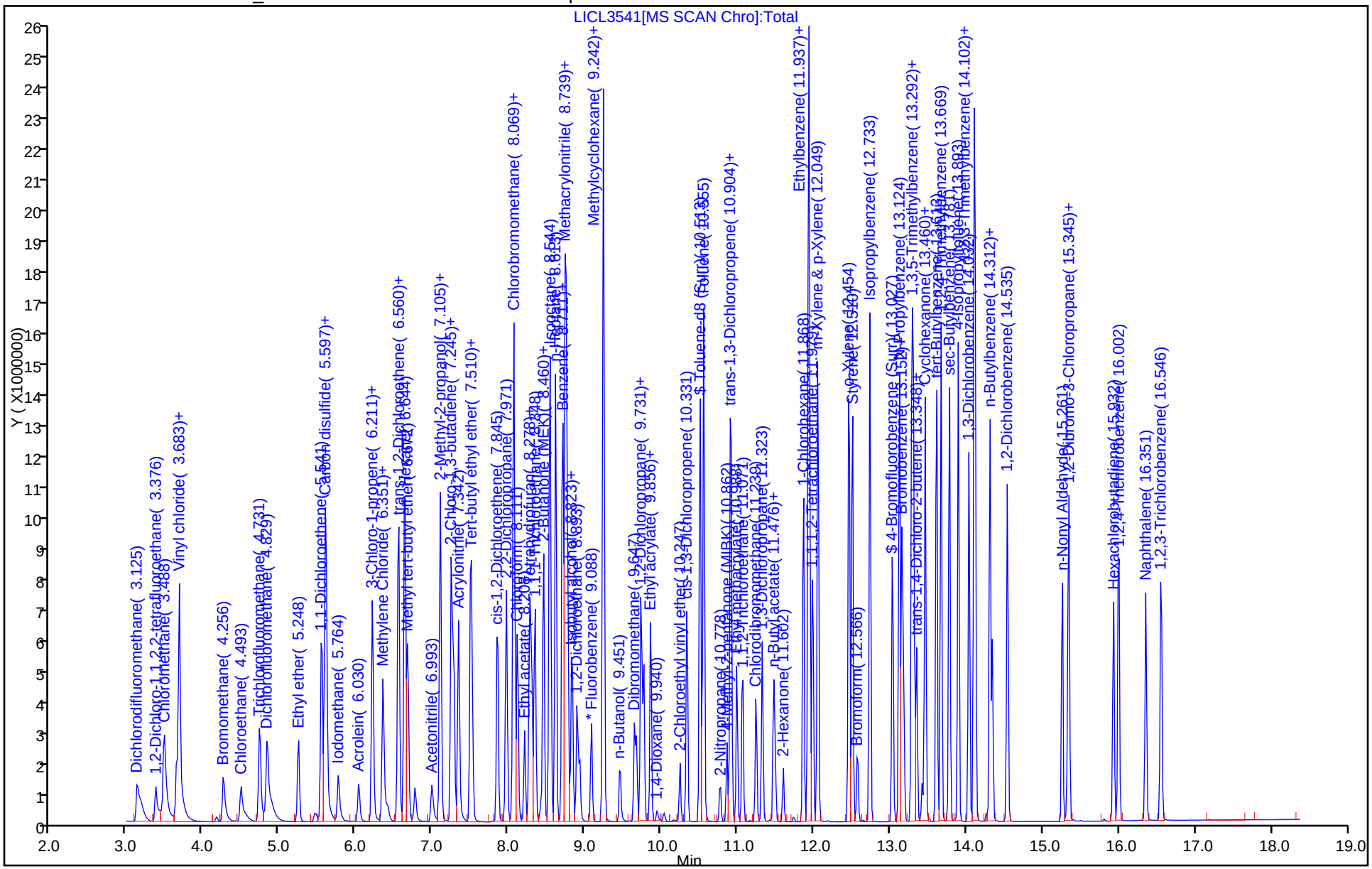
Injection Date: 11-Jul-2016 12:00:30 Instrument ID: VMSL Operator ID: SMCR

Lims ID: ic Worklist Smp#: 10

Client ID:

Purge Vol: 5.000 mL Dil. Factor: 1.0000 ALS Bottle#: 9

Method: 5mL-8260_VMSL Limit Group: MSV-8260



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-259855/12 Calibration Date: 07/11/2016 12:50

Instrument ID: VMSL Calib Start Date: 07/11/2016 09:07

GC Column: RTXVMS30 ID: 0.25(mm) Calib End Date: 07/11/2016 12:00

Lab File ID: LICV3543.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.3298	0.3368	0.1000	51.1	50.0	2.1	30.0
1,2-Dichloro-1,1,2,2-tetrafl uoroethane	Ave	0.1548	0.1508	0.0100	48.7	50.0	-2.6	30.0
Chloromethane	Ave	0.4403	0.4490	0.1000	51.0	50.0	2.0	30.0
Vinyl chloride	Ave	0.3598	0.3896	0.1000	54.2	50.0	8.3	30.0
Butadiene	Ave	0.3592	0.3636	0.0100	50.6	50.0	1.2	30.0
Bromomethane	Ave	0.1473	0.1482	0.1000	50.3	50.0	0.6	30.0
Chloroethane	Ave	0.1894	0.1931	0.1000	51.0	50.0	2.0	30.0
Trichlorofluoromethane	Ave	0.3925	0.3947	0.1000	50.3	50.0	0.6	30.0
Dichlorofluoromethane	Ave	0.4550	0.4452	0.0100	48.9	50.0	-2.2	30.0
Ethyl ether	Ave	0.1062	0.1058	0.0100	49.8	50.0	-0.4	30.0
1,1-Dichloroethene	Ave	0.2646	0.2625	0.1000	49.6	50.0	-0.8	30.0
Carbon disulfide	Ave	0.9199	0.9045	0.1000	49.2	50.0	-1.7	30.0
Ethanol	Ave	0.0003	0.0002*	0.0010	1320	2000	-34.2*	30.0
1,1,2-Trichloro-1,2,2-triflu oroethane	Ave	0.2416	0.2358	0.1000	48.8	50.0	-2.4	30.0
Iodomethane	Ave	0.1833	0.2241	0.0100	61.1	50.0	22.2	30.0
Acrolein	Ave	0.0221	0.0246	0.0010	279	250	11.6	30.0
Allyl chloride	Ave	0.3190	0.3160	0.0100	49.5	50.0	-0.9	30.0
Isopropyl alcohol	Ave	0.0089	0.0092*	0.0100	521	500	4.2	30.0
Methylene Chloride	Ave	0.2419	0.2362	0.1000	48.8	50.0	-2.4	30.0
Acetone	Lin1		0.0436*	0.1000	56.1	50.0	12.3	30.0
trans-1,2-Dichloroethene	Ave	0.2846	0.2878	0.1000	50.6	50.0	1.1	30.0
Methyl acetate	Ave	0.0196	0.0200*	0.1000	255	250	2.1	30.0
n-Hexane	Ave	0.0993	0.1020	0.0100	51.4	50.0	2.7	30.0
Methyl tert-butyl ether	Ave	0.5030	0.5049	0.1000	50.2	50.0	0.4	30.0
Acetonitrile	Ave	0.0166	0.0164	0.0010	494	500	-1.1	30.0
Isopropyl ether	Ave	0.8693	0.8936	0.0100	51.4	50.0	2.8	30.0
tert-Butyl alcohol	Ave	0.0095	0.0098*	0.0100	516	500	3.3	30.0
2-Chloro-1,3-butadiene	Ave	0.5194	0.5197	0.0100	50.0	50.0	0.0	30.0
1,1-Dichloroethane	Ave	0.5177	0.4940	0.2000	47.7	50.0	-4.6	30.0
Acrylonitrile	Ave	0.0522	0.0533	0.0100	511	500	2.2	30.0
Tert-butyl ethyl ether	Ave	0.7040	0.7146	0.0100	50.8	50.0	1.5	30.0
Vinyl acetate	Ave	0.3955	0.3975	0.0100	50.2	50.0	0.5	30.0
cis-1,2-Dichloroethene	Ave	0.2842	0.2829	0.1000	49.8	50.0	-0.5	30.0
2,2-Dichloropropane	Ave	0.4364	0.4145	0.0100	47.5	50.0	-5.0	30.0
Bromochloromethane	Ave	0.1045	0.1028	0.0100	49.2	50.0	-1.6	30.0
Cyclohexane	Ave	0.4950	0.5001	0.1000	50.5	50.0	1.0	30.0
Chloroform	Ave	0.4379	0.4235	0.2000	48.4	50.0	-3.3	30.0
Ethyl acetate	Ave	0.0206	0.0209	0.0100	102	100	1.6	30.0
Carbon tetrachloride	Ave	0.3874	0.3890	0.1000	50.2	50.0	0.4	30.0
Tetrahydrofuran	Ave	0.0144	0.0147	0.0010	102	100	1.7	30.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-259855/12 Calibration Date: 07/11/2016 12:50

Instrument ID: VMSL Calib Start Date: 07/11/2016 09:07

GC Column: RTXVMS30 ID: 0.25(mm) Calib End Date: 07/11/2016 12:00

Lab File ID: LICV3543.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,1,1-Trichloroethane	Ave	0.4369	0.4252	0.1000	48.7	50.0	-2.7	30.0
2-Butanone (MEK)	Ave	0.0661	0.0651*	0.1000	49.2	50.0	-1.6	30.0
1,1-Dichloropropene	Ave	0.3959	0.3917	0.0100	49.5	50.0	-1.1	30.0
Isooctane	Ave	1.449	1.467	0.0100	50.6	50.0	1.3	30.0
n-Heptane	Ave	0.6291	0.6313	0.0100	50.2	50.0	0.3	30.0
Benzene	Ave	1.083	1.084	0.5000	50.0	50.0	0.0	30.0
Propionitrile	Ave	0.0195	0.0206	0.0010	527	500	5.4	30.0
Methacrylonitrile	Ave	0.0994	0.1012	0.0100	509	500	1.8	30.0
Tert-amyl methyl ether	Ave	0.5403	0.5521	0.0100	51.1	50.0	2.2	30.0
Isobutanol	Ave	0.0040	0.0042	0.0010	1300	1250	3.9	30.0
1,2-Dichloroethane	Ave	0.2755	0.2610	0.1000	47.4	50.0	-5.3	30.0
Methylcyclohexane	Ave	0.5023	0.5038	0.1000	50.2	50.0	0.3	30.0
Trichloroethene	Ave	0.2867	0.2915	0.2000	50.8	50.0	1.7	30.0
1-Butanol	Ave	0.0039	0.0042*	0.0100	1320	1250	5.7	30.0
Dibromomethane	Ave	0.1048	0.1030	0.0100	49.1	50.0	-1.7	30.0
1,2-Dichloropropane	Ave	0.2605	0.2666	0.1000	51.2	50.0	2.3	30.0
Bromodichloromethane	Ave	0.2909	0.2876	0.2000	49.4	50.0	-1.1	30.0
Ethyl acrylate	Ave	0.0202	0.0205	0.0100	50.8	50.0	1.7	30.0
Methyl methacrylate	Ave	0.1019	0.1057	0.0100	104	100	3.7	30.0
1,4-Dioxane	Ave	0.0013	0.0015	0.0010	1070	1000	7.3	30.0
2-Chloroethyl vinyl ether	Ave	0.0651	0.0694	0.0100	53.3	50.0	6.6	30.0
cis-1,3-Dichloropropene	Ave	0.3642	0.3702	0.2000	50.8	50.0	1.6	30.0
Toluene	Ave	1.045	1.054	0.4000	50.4	50.0	0.8	30.0
2-Nitropropane	Ave	0.0605	0.0597	0.0100	98.7	100	-1.3	30.0
4-Methyl-2-pentanone (MIBK)	Ave	0.2072	0.2210	0.1000	53.3	50.0	6.6	30.0
trans-1,3-Dichloropropene	Ave	0.4269	0.4244	0.1000	49.7	50.0	-0.6	30.0
Tetrachloroethene	Ave	0.3702	0.3748	0.2000	50.6	50.0	1.2	30.0
Ethyl methacrylate	Ave	0.2970	0.3119	0.0100	52.5	50.0	5.0	30.0
1,1,2-Trichloroethane	Ave	0.1906	0.1910	0.1000	50.1	50.0	0.2	30.0
Dibromochloromethane	Ave	0.2854	0.2826	0.1000	49.5	50.0	-1.0	30.0
1,3-Dichloropropane	Ave	0.4244	0.4191	0.0100	49.4	50.0	-1.3	30.0
n-Butyl acetate	Ave	0.3762	0.3804	0.0100	50.6	50.0	1.1	30.0
1,2-Dibromoethane (EDB)	Ave	0.2142	0.2217	0.1000	51.7	50.0	3.5	30.0
2-Hexanone	Ave	0.1445	0.1501	0.1000	51.9	50.0	3.9	30.0
1-Chlorohexane	Ave	0.5892	0.6418	0.0100	54.5	50.0	8.9	30.0
Ethylbenzene	Ave	1.890	1.914	0.1000	50.6	50.0	1.3	30.0
Chlorobenzene	Ave	1.044	1.048	0.5000	50.2	50.0	0.4	30.0
1,1,1,2-Tetrachloroethane	Ave	0.3562	0.3555	0.0100	49.9	50.0	-0.2	30.0
m-Xylene & p-Xylene	Ave	0.7346	0.7738	0.1000	52.7	50.0	5.3	30.0
o-Xylene	Ave	0.6972	0.7229	0.3000	51.8	50.0	3.7	30.0
Styrene	Ave	1.090	1.124	0.3000	51.5	50.0	3.1	30.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-259855/12 Calibration Date: 07/11/2016 12:50

Instrument ID: VMSL Calib Start Date: 07/11/2016 09:07

GC Column: RTXVMS30 ID: 0.25(mm) Calib End Date: 07/11/2016 12:00

Lab File ID: LICV3543.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Bromoform	Ave	0.2925	0.3155	0.1000	53.9	50.0	7.9	30.0
Isopropylbenzene	Ave	3.587	3.831	0.1000	53.4	50.0	6.8	30.0
N-Propylbenzene	Ave	4.123	4.446	0.0100	53.9	50.0	7.9	30.0
Bromobenzene	Ave	0.8331	0.8425	0.0100	50.6	50.0	1.1	30.0
1,1,2,2-Tetrachloroethane	Ave	0.4705	0.4728	0.3000	50.2	50.0	0.5	30.0
1,3,5-Trimethylbenzene	Ave	2.895	3.087	0.0100	53.3	50.0	6.6	30.0
2-Chlorotoluene	Ave	2.732	2.853	0.0100	52.2	50.0	4.4	30.0
1,2,3-Trichloropropane	Ave	0.1529	0.1568	0.0100	51.3	50.0	2.5	30.0
trans-1,4-Dichloro-2-butene	Ave	0.1626	0.1601	0.0100	49.2	50.0	-1.6	30.0
Cyclohexanone	Lin		0.0138	0.0010	491	500	-1.8	30.0
4-Chlorotoluene	Ave	2.510	2.607	0.0100	51.9	50.0	3.9	30.0
tert-Butylbenzene	Ave	2.706	2.910	0.0100	53.8	50.0	7.5	30.0
1,2,4-Trimethylbenzene	Ave	2.908	3.074	0.0100	52.9	50.0	5.7	30.0
sec-Butylbenzene	Ave	3.882	4.248	0.0100	54.7	50.0	9.4	30.0
4-Isopropyltoluene	Ave	3.367	3.682	0.0100	54.7	50.0	9.4	30.0
1,3-Dichlorobenzene	Ave	1.674	1.716	0.6000	51.3	50.0	2.5	30.0
1,2,3-Trimethylbenzene	Ave	2.791	2.938	0.0100	52.6	50.0	5.2	30.0
1,4-Dichlorobenzene	Ave	1.631	1.686	0.5000	51.7	50.0	3.3	30.0
n-Butylbenzene	Ave	0.8545	0.9595	0.0100	56.1	50.0	12.3	30.0
Benzyl chloride	Ave	0.2296	0.2272	0.0100	49.5	50.0	-1.1	30.0
1,2-Dichlorobenzene	Ave	1.476	1.511	0.4000	51.2	50.0	2.4	30.0
Nonanal	Ave	0.3706	0.4259	0.0100	57.5	50.0	14.9	30.0
1,2-Dibromo-3-Chloropropane	Ave	0.1031	0.1092	0.0500	52.9	50.0	5.9	30.0
1,3,5-Trichlorobenzene	Ave	1.243	1.309	0.0100	52.7	50.0	5.3	30.0
Hexachlorobutadiene	Ave	0.6271	0.7101	0.0100	56.6	50.0	13.2	30.0
1,2,4-Trichlorobenzene	Ave	1.069	1.090	0.2000	51.0	50.0	2.0	30.0
Naphthalene	Ave	1.604	1.619	0.0100	50.4	50.0	0.9	30.0
1,2,3-Trichlorobenzene	Ave	0.9384	0.9407	0.0100	50.1	50.0	0.2	30.0
Dibromofluoromethane (Surr)	Ave	0.2005	0.2030	0.0100	50.6	50.0	1.3	30.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.2062	0.2077	0.0100	50.4	50.0	0.7	30.0
Toluene-d8 (Surr)	Ave	1.380	1.435	0.0100	52.0	50.0	4.0	30.0
4-Bromofluorobenzene (Surr)	Ave	0.9270	0.9644	0.0100	52.0	50.0	4.0	30.0

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICV3543.D
Lims ID: icv
Client ID:
Sample Type: ICV
Inject. Date: 11-Jul-2016 12:50:30 ALS Bottle#: 11 Worklist Smp#: 12
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: ICV
Operator ID: SMCR Instrument ID: VMSL
Sublist:

Method: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 13-Jul-2016 08:35:28 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK053

First Level Reviewer: rhoadess Date: 11-Jul-2016 13:40:20

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	841558	50.0	51.1	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	376728	50.0	48.7	M
3 Chloromethane	50	3.488	3.488	0.000	99	1121955	50.0	51.0	
4 Vinyl chloride	62	3.641	3.641	0.000	98	973613	50.0	54.2	
122 Butadiene	39	3.683	3.683	0.000	90	908418	50.0	50.6	
5 Bromomethane	94	4.256	4.256	0.000	90	370391	50.0	50.3	
6 Chloroethane	64	4.479	4.479	0.000	100	482610	50.0	51.0	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	986269	50.0	50.3	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	100	1112541	50.0	48.9	
8 Ethyl ether	74	5.248	5.248	0.000	95	264309	50.0	49.8	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	97	655976	50.0	49.6	
11 Ethanol	45	5.597	5.597	0.000	100	18882	2000.0	1316.3	
10 Carbon disulfide	76	5.597	5.597	0.000	100	2260115	50.0	49.2	
12 1,1,2-Trichloro-1,2,2-trif	151	5.611	5.611	0.000	90	589294	50.0	48.8	
13 Iodomethane	142	5.764	5.764	0.000	98	559971	50.0	61.1	
14 Acrolein	56	6.030	6.030	0.000	99	307467	250.0	279.0	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	93	789516	50.0	49.5	
16 Isopropyl alcohol	45	6.225	6.239	-0.014	98	230828	500.0	521.0	
17 Methylene Chloride	84	6.351	6.351	0.000	99	590292	50.0	48.8	
18 Acetone	43	6.421	6.421	0.000	99	108875	50.0	56.1	
19 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	719031	50.0	50.6	
20 Methyl acetate	74	6.560	6.560	0.000	99	250225	250.0	255.4	
21 Hexane	86	6.644	6.630	0.014	91	254897	50.0	51.4	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	92	1261676	50.0	50.2	
24 Acetonitrile	41	6.993	6.993	0.000	99	410478	500.0	494.3	
23 2-Methyl-2-propanol	59	7.105	7.105	0.000	34	244965	500.0	516.4	
25 Isopropyl ether	45	7.105	7.105	0.000	96	2232969	50.0	51.4	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	92	1298524	50.0	50.0	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	95	1234392	50.0	47.7	
29 Acrylonitrile	53	7.342	7.343	-0.001	99	1332344	500.0	510.9	
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	1785596	50.0	50.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
31 Vinyl acetate	43	7.524	7.524	0.000	97	993264	50.0	50.2	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	80	706770	50.0	49.8	
33 2,2-Dichloropropane	77	7.971	7.971	0.000	91	1035823	50.0	47.5	
35 Chlorobromomethane	128	8.069	8.069	0.000	95	256747	50.0	49.2	
34 Cyclohexane	84	8.069	8.069	0.000	92	1249678	50.0	50.5	
36 Chloroform	83	8.111	8.111	0.000	94	1058185	50.0	48.4	
39 Ethyl acetate	45	8.208	8.208	0.000	99	104478	100.0	101.6	
37 Carbon tetrachloride	117	8.278	8.278	0.000	97	971961	50.0	50.2	
38 Tetrahydrofuran	71	8.292	8.292	0.000	92	73264	100.0	101.7	
$ 41 Dibromofluoromethane (Surr	113	8.306	8.306	0.000	96	507237	50.0	50.6	
40 1,1,1-Trichloroethane	97	8.348	8.348	0.000	98	1062566	50.0	48.7	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	99	162602	50.0	49.2	
42 1,1-Dichloropropene	75	8.460	8.460	0.000	96	978733	50.0	49.5	
125 Isooctane	57	8.544	8.544	0.000	100	3666393	50.0	50.6	
117 n-Heptane	43	8.613	8.613	0.000	96	1577337	50.0	50.2	
44 Benzene	78	8.711	8.697	0.014	97	2708416	50.0	50.0	
45 Propionitrile	54	8.725	8.725	0.000	97	514239	500.0	526.9	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	2527917	500.0	509.1	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	96	1379549	50.0	51.1	
50 Isobutyl alcohol	42	8.823	8.823	0.000	95	259229	1250.0	1298.1	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.837	8.837	0.000	92	519009	50.0	50.4	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	96	652273	50.0	47.4	
* 51 Fluorobenzene	96	9.088	9.088	0.000	99	2498731	50.0	50.0	
52 Methylcyclohexane	55	9.242	9.242	0.000	92	1258943	50.0	50.2	
53 Trichloroethene	95	9.242	9.242	0.000	65	728366	50.0	50.8	
54 n-Butanol	56	9.465	9.465	0.000	88	260092	1250.0	1321.2	
55 Dibromomethane	93	9.647	9.647	0.000	94	257271	50.0	49.1	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	96	666257	50.0	51.2	
57 Dichlorobromomethane	83	9.773	9.773	0.000	99	718573	50.0	49.4	
124 Ethyl acrylate	55	9.856	9.856	0.000	97	51304	50.0	50.8	
58 Methyl methacrylate	69	9.856	9.856	0.000	96	528291	100.0	103.7	
59 1,4-Dioxane	88	9.954	9.954	0.000	98	72289	1000.0	1073.3	
60 2-Chloroethyl vinyl ether	63	10.247	10.248	-0.001	92	173408	50.0	53.3	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	95	925025	50.0	50.8	
$ 62 Toluene-d8 (Surr)	98	10.513	10.513	0.000	93	2444767	50.0	52.0	
63 Toluene	92	10.555	10.555	0.000	99	1795719	50.0	50.4	
64 2-Nitropropane	43	10.778	10.778	0.000	97	203515	100.0	98.7	
66 4-Methyl-2-pentanone (MIBK	43	10.862	10.862	0.000	96	376378	50.0	53.3	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	90	722886	50.0	49.7	
65 Tetrachloroethene	164	10.918	10.918	0.000	97	638447	50.0	50.6	
69 Ethyl methacrylate	69	10.988	10.988	0.000	92	531331	50.0	52.5	
68 1,1,2-Trichloroethane	83	11.071	11.058	0.013	91	325280	50.0	50.1	
70 Chlorodibromomethane	129	11.239	11.239	0.000	91	481402	50.0	49.5	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	94	713797	50.0	49.4	
119 n-Butyl acetate	43	11.476	11.477	-0.001	95	647982	50.0	50.6	
72 Ethylene Dibromide	107	11.490	11.491	0.000	99	377562	50.0	51.7	
74 2-Hexanone	43	11.602	11.602	0.000	96	255610	50.0	51.9	
75 1-Chlorohexane	91	11.868	11.868	0.000	97	1093147	50.0	54.5	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	85	1703329	50.0	50.0	
78 Ethylbenzene	91	11.923	11.923	0.000	97	3259367	50.0	50.6	
77 Chlorobenzene	112	11.937	11.937	0.000	91	1785535	50.0	50.2	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	95	605476	50.0	49.9	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	97	1317960	50.0	52.7	
82 o-Xylene	106	12.454	12.454	0.000	98	1231289	50.0	51.8	
83 Styrene	104	12.510	12.510	0.000	95	1914094	50.0	51.5	
84 Bromoform	173	12.566	12.566	0.000	97	276516	50.0	53.9	
85 Isopropylbenzene	105	12.733	12.734	-0.001	96	3357908	50.0	53.4	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	88	845191	50.0	52.0	
88 N-Propylbenzene	91	13.124	13.125	-0.001	98	3896966	50.0	53.9	
87 Bromobenzene	156	13.152	13.152	0.000	95	738363	50.0	50.6	
89 1,1,2,2-Tetrachloroethane	83	13.180	13.180	0.000	96	414363	50.0	50.2	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	96	2705182	50.0	53.3	
90 2-Chlorotoluene	91	13.306	13.306	0.000	97	2500297	50.0	52.2	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	85	140272	50.0	49.2	
92 1,2,3-Trichloropropane	110	13.348	13.348	0.000	84	137395	50.0	51.3	
94 Cyclohexanone	55	13.418	13.418	0.000	88	121322	500.0	491.2	
95 4-Chlorotoluene	91	13.460	13.460	0.000	97	2284955	50.0	51.9	
96 tert-Butylbenzene	119	13.613	13.613	0.000	92	2550308	50.0	53.8	
97 1,2,4-Trimethylbenzene	105	13.669	13.669	0.000	97	2694111	50.0	52.9	
98 sec-Butylbenzene	105	13.781	13.781	0.000	94	3722908	50.0	54.7	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	3227316	50.0	54.7	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	99	1503872	50.0	51.3	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	97	2574691	50.0	52.6	
* 101 1,4-Dichlorobenzene-d4	152	14.102	14.102	0.000	98	876414	50.0	50.0	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	96	1477259	50.0	51.7	
103 n-Butylbenzene	134	14.312	14.312	0.000	95	840910	50.0	56.1	
121 Benzyl chloride	126	14.340	14.340	0.000	95	199128	50.0	49.5	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	99	1324428	50.0	51.2	
106 n-Nonyl Aldehyde	57	15.261	15.261	0.000	91	373267	50.0	57.5	
105 1,2-Dibromo-3-Chloropropan	157	15.331	15.331	0.000	85	95671	50.0	52.9	
107 1,3,5-Trichlorobenzene	180	15.345	15.345	0.000	98	1147445	50.0	52.7	
108 Hexachlorobutadiene	225	15.932	15.932	0.000	96	622353	50.0	56.6	
109 1,2,4-Trichlorobenzene	180	16.002	16.002	0.000	94	955135	50.0	51.0	
110 Naphthalene	128	16.351	16.351	0.000	97	1418511	50.0	50.4	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	95	824415	50.0	50.1	

QC Flag Legend

Review Flags

M - Manually Integrated

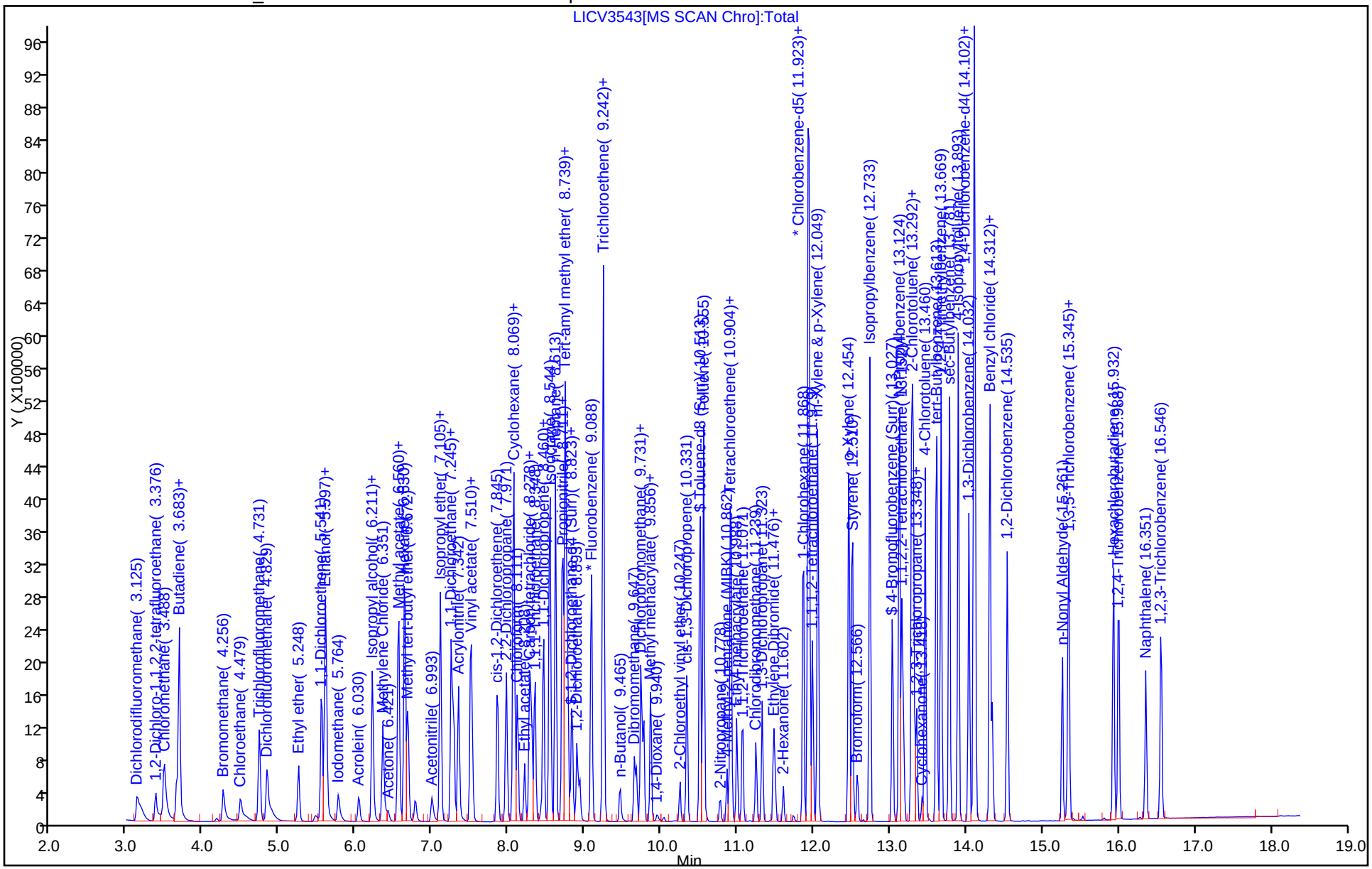
Reagents:

8260NewICVMix_00165	Amount Added: 10.00	Units: uL	
8260 Surr 25_00063	Amount Added: 10.00	Units: uL	
I.S. Working_00133	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 13-Jul-2016 08:35:31 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICV3543.D				
Injection Date:	11-Jul-2016 12:50:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	icv			Worklist Smp#:	12
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

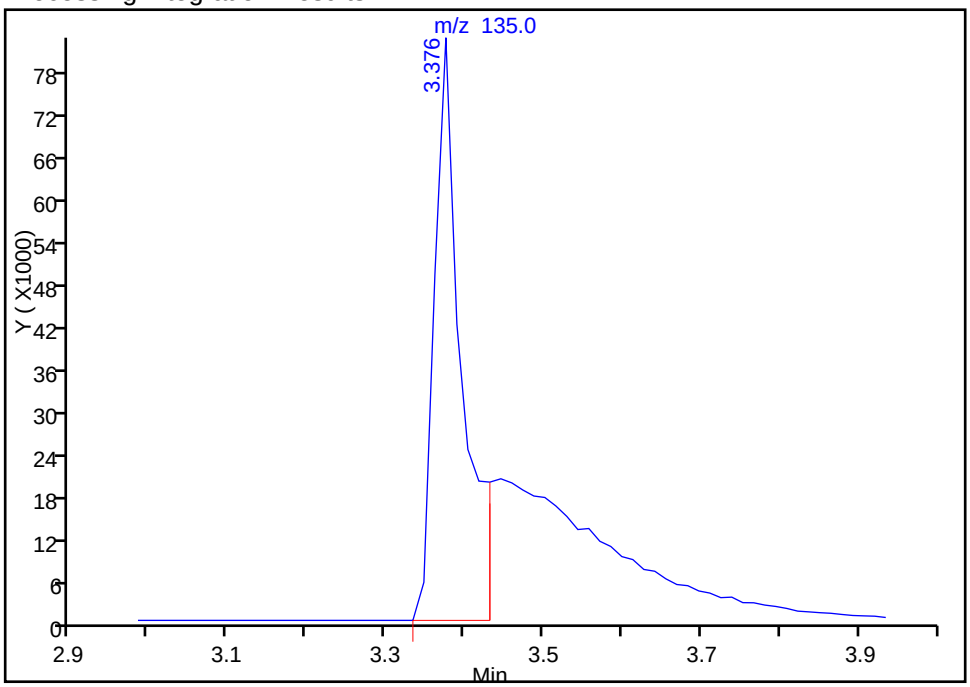
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICV3543.D				
Injection Date:	11-Jul-2016 12:50:30	Instrument ID:	VMSL		
Lims ID:	icv				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	11	Worklist Smp#:	12
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

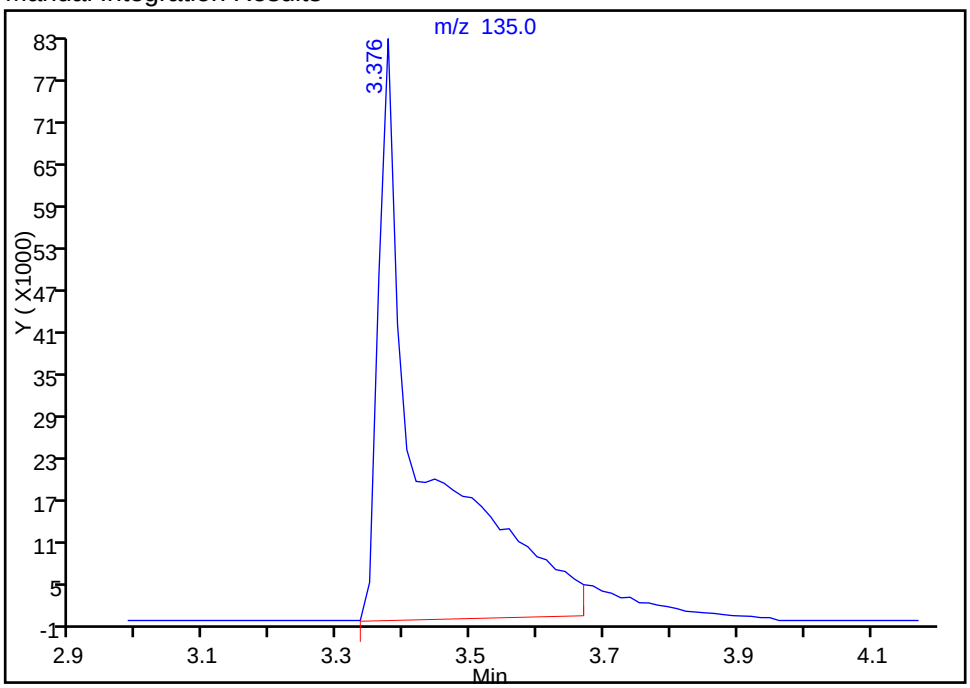
Processing Integration Results

RT: 3.38
Area: 203109
Amount: 28.384805
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 376728
Amount: 48.683678
Amount Units: ug/l



Reviewer: rhoadess, 11-Jul-2016 13:40:20

Audit Action: Manually Integrated Audit Reason: Peak Tail

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-264101/2 Calibration Date: 08/09/2016 18:00

Instrument ID: VMSL Calib Start Date: 07/11/2016 09:07

GC Column: RTXVMS30 ID: 0.25(mm) Calib End Date: 07/11/2016 12:00

Lab File ID: LCCV4339.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.3298	0.3364	0.1000	51.0	50.0	2.0	20.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	0.1548	0.1483	0.0100	47.9	50.0	-4.2	20.0
Chloromethane	Ave	0.4403	0.4655	0.1000	52.9	50.0	5.7	20.0
Vinyl chloride	Ave	0.3598	0.3877	0.1000	53.9	50.0	7.8	20.0
Butadiene	Ave	0.3592	0.3981	0.0100	55.4	50.0	10.8	20.0
Bromomethane	Ave	0.1473	0.1546	0.1000	52.5	50.0	5.0	20.0
Chloroethane	Ave	0.1894	0.1871	0.1000	49.4	50.0	-1.2	20.0
Trichlorofluoromethane	Ave	0.3925	0.4103	0.1000	52.3	50.0	4.5	20.0
Dichlorofluoromethane	Ave	0.4550	0.4659	0.0100	51.2	50.0	2.4	20.0
Ethyl ether	Ave	0.1062	0.1234	0.0100	58.1	50.0	16.2	20.0
Ethanol	Ave	0.0003	0.0021	0.0010	14300	2000	615.4*	20.0
1,1-Dichloroethene	Ave	0.2646	0.2491	0.1000	47.1	50.0	-5.9	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.2416	0.2304	0.1000	47.7	50.0	-4.7	20.0
Carbon disulfide	Ave	0.9199	0.8850	0.1000	48.1	50.0	-3.8	20.0
Iodomethane	Ave	0.1833	0.2144	0.0100	58.5	50.0	16.9	20.0
Acrolein	Ave	0.0221	0.0269	0.0010	305	250	22.1*	20.0
Allyl chloride	Ave	0.3190	0.3374	0.0100	52.9	50.0	5.8	20.0
Isopropyl alcohol	Ave	0.0089	0.0112	0.0100	633	500	26.6*	20.0
Methylene Chloride	Ave	0.2419	0.2339	0.1000	48.3	50.0	-3.3	20.0
Acetone	Lin1		0.0534*	0.1000	69.6	50.0	39.2*	20.0
trans-1,2-Dichloroethene	Ave	0.2846	0.2684	0.1000	47.2	50.0	-5.7	20.0
Methyl acetate	Ave	0.0196	0.0222*	0.1000	283	250	13.0	20.0
n-Hexane	Ave	0.0993	0.0924	0.0100	46.5	50.0	-6.9	20.0
Methyl tert-butyl ether	Ave	0.5030	0.5147	0.1000	51.2	50.0	2.3	20.0
Acetonitrile	Ave	0.0166	0.0207	0.0010	623	500	24.5*	20.0
Isopropyl ether	Ave	0.8693	0.9078	0.0100	52.2	50.0	4.4	20.0
tert-Butyl alcohol	Ave	0.0095	0.0094*	0.0100	497	500	-0.6	20.0
2-Chloro-1,3-butadiene	Ave	0.5194	0.5089	0.0100	49.0	50.0	-2.0	20.0
1,1-Dichloroethane	Ave	0.5177	0.4947	0.2000	47.8	50.0	-4.4	20.0
Acrylonitrile	Ave	0.0522	0.0603	0.0100	578	500	15.5	20.0
Tert-butyl ethyl ether	Ave	0.7040	0.7188	0.0100	51.1	50.0	2.1	20.0
Vinyl acetate	Ave	0.3955	0.5055	0.0100	63.9	50.0	27.8*	20.0
cis-1,2-Dichloroethene	Ave	0.2842	0.2756	0.1000	48.5	50.0	-3.0	20.0
2,2-Dichloropropane	Ave	0.4364	0.4211	0.0100	48.3	50.0	-3.5	20.0
Bromochloromethane	Ave	0.1045	0.1042	0.0100	49.9	50.0	-0.3	20.0
Cyclohexane	Ave	0.4950	0.4685	0.1000	47.3	50.0	-5.3	20.0
Chloroform	Ave	0.4379	0.4322	0.2000	49.3	50.0	-1.3	20.0
Ethyl acetate	Ave	0.0206	0.0245	0.0100	119	100	19.0	20.0
Carbon tetrachloride	Ave	0.3874	0.3730	0.1000	48.1	50.0	-3.7	20.0
Tetrahydrofuran	Ave	0.0144	0.0158	0.0010	109	100	9.3	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-264101/2 Calibration Date: 08/09/2016 18:00

Instrument ID: VMSL Calib Start Date: 07/11/2016 09:07

GC Column: RTXVMS30 ID: 0.25(mm) Calib End Date: 07/11/2016 12:00

Lab File ID: LCCV4339.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,1,1-Trichloroethane	Ave	0.4369	0.4226	0.1000	48.4	50.0	-3.3	20.0
2-Butanone (MEK)	Ave	0.0661	0.0762*	0.1000	57.6	50.0	15.2	20.0
1,1-Dichloropropene	Ave	0.3959	0.3775	0.0100	47.7	50.0	-4.6	20.0
Isooctane	Ave	1.449	1.398	0.0100	48.2	50.0	-3.5	20.0
n-Heptane	Ave	0.6291	0.6452	0.0100	51.3	50.0	2.6	20.0
Benzene	Ave	1.083	1.038	0.5000	47.9	50.0	-4.2	20.0
Propionitrile	Ave	0.0195	0.0229	0.0010	586	500	17.3	20.0
Methacrylonitrile	Ave	0.0994	0.1182	0.0100	595	500	19.0	20.0
Tert-amyl methyl ether	Ave	0.5403	0.5601	0.0100	51.8	50.0	3.7	20.0
Isobutanol	Ave	0.0040	0.0055	0.0010	1730	1250	38.3*	20.0
1,2-Dichloroethane	Ave	0.2755	0.2843	0.1000	51.6	50.0	3.2	20.0
Methylcyclohexane	Ave	0.5023	0.4988	0.1000	49.7	50.0	-0.7	20.0
Trichloroethene	Ave	0.2867	0.2820	0.2000	49.2	50.0	-1.6	20.0
1-Butanol	Ave	0.0039	0.0052*	0.0100	1640	1250	31.2*	20.0
Dibromomethane	Ave	0.1048	0.1108	0.0100	52.9	50.0	5.7	20.0
1,2-Dichloropropane	Ave	0.2605	0.2633	0.1000	50.5	50.0	1.1	20.0
Bromodichloromethane	Ave	0.2909	0.2947	0.2000	50.7	50.0	1.3	20.0
Ethyl acrylate	Ave	0.0202	0.0228	0.0100	56.3	50.0	12.6	20.0
Methyl methacrylate	Ave	0.1019	0.1115	0.0100	109	100	9.4	20.0
1,4-Dioxane	Ave	0.0013	0.0016	0.0010	1210	1000	21.0*	20.0
2-Chloroethyl vinyl ether	Ave	0.0651	0.0473	0.0100	36.3	50.0	-27.4*	20.0
cis-1,3-Dichloropropene	Ave	0.3642	0.3692	0.2000	50.7	50.0	1.3	20.0
Toluene	Ave	1.045	0.9800	0.4000	46.9	50.0	-6.3	20.0
2-Nitropropane	Ave	0.0605	0.0680	0.0100	112	100	12.2	20.0
4-Methyl-2-pentanone (MIBK)	Ave	0.2072	0.2367	0.1000	57.1	50.0	14.2	20.0
Tetrachloroethene	Ave	0.3702	0.3606	0.2000	48.7	50.0	-2.6	20.0
trans-1,3-Dichloropropene	Ave	0.4269	0.4375	0.1000	51.2	50.0	2.5	20.0
Ethyl methacrylate	Ave	0.2970	0.3145	0.0100	52.9	50.0	5.9	20.0
1,1,2-Trichloroethane	Ave	0.1906	0.1919	0.1000	50.3	50.0	0.7	20.0
Dibromochloromethane	Ave	0.2854	0.2835	0.1000	49.7	50.0	-0.7	20.0
1,3-Dichloropropane	Ave	0.4244	0.4232	0.0100	49.9	50.0	-0.3	20.0
n-Butyl acetate	Ave	0.3762	0.4123	0.0100	54.8	50.0	9.6	20.0
1,2-Dibromoethane (EDB)	Ave	0.2142	0.2194	0.1000	51.2	50.0	2.4	20.0
2-Hexanone	Ave	0.1445	0.1631	0.1000	56.5	50.0	12.9	20.0
1-Chlorohexane	Ave	0.5892	0.6012	0.0100	51.0	50.0	2.0	20.0
Ethylbenzene	Ave	1.890	1.857	0.1000	49.1	50.0	-1.7	20.0
Chlorobenzene	Ave	1.044	1.024	0.5000	49.1	50.0	-1.9	20.0
1,1,1,2-Tetrachloroethane	Ave	0.3562	0.3494	0.0100	49.0	50.0	-1.9	20.0
m-Xylene & p-Xylene	Ave	0.7346	0.7443	0.1000	50.7	50.0	1.3	20.0
o-Xylene	Ave	0.6972	0.6839	0.3000	49.0	50.0	-1.9	20.0
Styrene	Ave	1.090	1.072	0.3000	49.2	50.0	-1.6	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-264101/2 Calibration Date: 08/09/2016 18:00

Instrument ID: VMSL Calib Start Date: 07/11/2016 09:07

GC Column: RTXVMS30 ID: 0.25(mm) Calib End Date: 07/11/2016 12:00

Lab File ID: LCCV4339.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Bromoform	Ave	0.2925	0.3118	0.1000	53.3	50.0	6.6	20.0
Isopropylbenzene	Ave	3.587	3.535	0.1000	49.3	50.0	-1.4	20.0
N-Propylbenzene	Ave	4.123	4.220	0.0100	51.2	50.0	2.4	20.0
Bromobenzene	Ave	0.8331	0.8080	0.0100	48.5	50.0	-3.0	20.0
1,1,2,2-Tetrachloroethane	Ave	0.4705	0.4844	0.3000	51.5	50.0	3.0	20.0
1,3,5-Trimethylbenzene	Ave	2.895	2.876	0.0100	49.7	50.0	-0.7	20.0
2-Chlorotoluene	Ave	2.732	2.710	0.0100	49.6	50.0	-0.8	20.0
1,2,3-Trichloropropane	Ave	0.1529	0.1608	0.0100	52.6	50.0	5.2	20.0
trans-1,4-Dichloro-2-butene	Ave	0.1626	0.1737	0.0100	53.4	50.0	6.8	20.0
Cyclohexanone	Lin		0.0155	0.0010	545	500	9.1	20.0
4-Chlorotoluene	Ave	2.510	2.477	0.0100	49.3	50.0	-1.3	20.0
tert-Butylbenzene	Ave	2.706	2.744	0.0100	50.7	50.0	1.4	20.0
1,2,4-Trimethylbenzene	Ave	2.908	2.934	0.0100	50.5	50.0	0.9	20.0
sec-Butylbenzene	Ave	3.882	4.059	0.0100	52.3	50.0	4.6	20.0
4-Isopropyltoluene	Ave	3.367	3.518	0.0100	52.3	50.0	4.5	20.0
1,3-Dichlorobenzene	Ave	1.674	1.645	0.6000	49.1	50.0	-1.7	20.0
1,2,3-Trimethylbenzene	Ave	2.791	2.753	0.0100	49.3	50.0	-1.4	20.0
1,4-Dichlorobenzene	Ave	1.631	1.612	0.5000	49.4	50.0	-1.2	20.0
n-Butylbenzene	Ave	0.8545	0.9392	0.0100	55.0	50.0	9.9	20.0
Benzyl chloride	Ave	0.2296	0.2444	0.0100	53.2	50.0	6.4	20.0
1,2-Dichlorobenzene	Ave	1.476	1.441	0.4000	48.8	50.0	-2.4	20.0
Nonanal	Ave	0.3706	0.3938	0.0100	53.1	50.0	6.3	20.0
1,2-Dibromo-3-Chloropropane	Ave	0.1031	0.1080	0.0500	52.4	50.0	4.8	20.0
1,3,5-Trichlorobenzene	Ave	1.243	1.282	0.0100	51.6	50.0	3.1	20.0
Hexachlorobutadiene	Ave	0.6271	0.6863	0.0100	54.7	50.0	9.4	20.0
1,2,4-Trichlorobenzene	Ave	1.069	1.097	0.2000	51.3	50.0	2.6	20.0
Naphthalene	Ave	1.604	1.715	0.0100	53.4	50.0	6.9	20.0
1,2,3-Trichlorobenzene	Ave	0.9384	0.9504	0.0100	50.6	50.0	1.3	20.0
Dibromofluoromethane (Surr)	Ave	0.2005	0.1987	0.0100	49.6	50.0	-0.9	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.2062	0.2201	0.0100	53.4	50.0	6.8	20.0
Toluene-d8 (Surr)	Ave	1.380	1.329	0.0100	48.2	50.0	-3.7	20.0
4-Bromofluorobenzene (Surr)	Ave	0.9270	0.8863	0.0100	47.8	50.0	-4.4	20.0

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LCCV4339.D
Lims ID: CCVIS
Client ID:
Sample Type: CCVIS
Inject. Date: 09-Aug-2016 18:00:30 ALS Bottle#: 1 Worklist Smp#: 2
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-002
Misc. Info.: CCVIS
Operator ID: JDH Instrument ID: VMSL
Sublist: chrom-5mL-8260_VMSL*sub1

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 22:54:39 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 22:54:38

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	756945	50.0	51.0	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	97	333736	50.0	47.9	M
3 Chloromethane	50	3.488	3.488	0.000	99	1047542	50.0	52.9	
4 Vinyl chloride	62	3.641	3.641	0.000	98	872327	50.0	53.9	
122 Butadiene	39	3.683	3.683	0.000	90	895826	50.0	55.4	
5 Bromomethane	94	4.256	4.256	0.000	90	347954	50.0	52.5	
6 Chloroethane	64	4.479	4.479	0.000	99	421100	50.0	49.4	
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	923242	50.0	52.3	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	99	1048402	50.0	51.2	
8 Ethyl ether	74	5.248	5.248	0.000	96	277722	50.0	58.1	
11 Ethanol	45	5.471	5.471	0.000	22	184832	2000.0	14308	E
9 1,1-Dichloroethene	96	5.541	5.541	0.000	97	560456	50.0	47.1	
10 Carbon disulfide	76	5.597	5.597	0.000	100	1991427	50.0	48.1	
12 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	90	518349	50.0	47.7	
13 Iodomethane	142	5.764	5.764	0.000	98	482346	50.0	58.5	
14 Acrolein	56	6.030	6.030	0.000	100	303068	250.0	305.3	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	91	759199	50.0	52.9	
16 Isopropyl alcohol	45	6.225	6.225	0.000	98	252521	500.0	632.9	
17 Methylene Chloride	84	6.351	6.351	0.000	98	526316	50.0	48.3	
18 Acetone	43	6.407	6.407	0.000	99	120050	50.0	69.6	
19 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	603922	50.0	47.2	
20 Methyl acetate	74	6.560	6.560	0.000	99	249337	250.0	282.6	
21 Hexane	86	6.630	6.630	0.000	93	207933	50.0	46.5	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	91	1158103	50.0	51.2	
24 Acetonitrile	41	6.993	6.993	0.000	99	465574	500.0	622.6	
25 Isopropyl ether	45	7.091	7.091	0.000	96	2042620	50.0	52.2	
23 2-Methyl-2-propanol	59	7.091	7.091	0.000	34	212321	500.0	497.0	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	93	1145033	50.0	49.0	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	96	1113267	50.0	47.8	
29 Acrylonitrile	53	7.329	7.329	0.000	99	1356570	500.0	577.6	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	1617530	50.0	51.1	
31 Vinyl acetate	43	7.510	7.510	0.000	97	1137384	50.0	63.9	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	620189	50.0	48.5	
33 2,2-Dichloropropane	77	7.957	7.957	0.000	93	947546	50.0	48.3	
35 Chlorobromomethane	128	8.055	8.055	0.000	93	234400	50.0	49.9	
34 Cyclohexane	84	8.055	8.055	0.000	95	1054319	50.0	47.3	
36 Chloroform	83	8.111	8.111	0.000	94	972491	50.0	49.3	
39 Ethyl acetate	45	8.194	8.194	0.000	99	110196	100.0	119.0	
37 Carbon tetrachloride	117	8.264	8.264	0.000	98	839303	50.0	48.1	
38 Tetrahydrofuran	71	8.292	8.292	0.000	95	70904	100.0	109.3	
$ 41 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	447106	50.0	49.6	
40 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	950862	50.0	48.4	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	99	171346	50.0	57.6	
42 1,1-Dichloropropene	75	8.446	8.446	0.000	94	849507	50.0	47.7	
125 Isooctane	57	8.530	8.530	0.000	99	3145550	50.0	48.2	
117 n-Heptane	43	8.613	8.613	0.000	96	1451893	50.0	51.3	
44 Benzene	78	8.697	8.697	0.000	98	2334652	50.0	47.9	
45 Propionitrile	54	8.725	8.725	0.000	89	515254	500.0	586.3	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	2660681	500.0	595.1	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	95	1260365	50.0	51.8	
50 Isobutyl alcohol	42	8.823	8.823	0.000	94	310926	1250.0	1729.0	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	92	495364	50.0	53.4	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	97	639779	50.0	51.6	
* 51 Fluorobenzene	96	9.074	9.074	0.000	99	2250206	50.0	50.0	
53 Trichloroethene	95	9.228	9.228	0.000	94	634566	50.0	49.2	
52 Methylcyclohexane	55	9.228	9.228	0.000	97	1122367	50.0	49.7	
54 n-Butanol	56	9.451	9.451	0.000	91	290703	1250.0	1639.8	
55 Dibromomethane	93	9.647	9.647	0.000	94	249209	50.0	52.9	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	94	592443	50.0	50.5	
57 Dichlorobromomethane	83	9.759	9.759	0.000	98	663069	50.0	50.7	
124 Ethyl acrylate	55	9.856	9.856	0.000	95	51187	50.0	56.3	
58 Methyl methacrylate	69	9.856	9.856	0.000	96	501712	100.0	109.4	
59 1,4-Dioxane	88	9.940	9.940	0.000	98	73421	1000.0	1210.5	
60 2-Chloroethyl vinyl ether	63	10.233	10.233	0.000	93	106408	50.0	36.3	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	93	830673	50.0	50.7	
$ 62 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	2126544	50.0	48.2	
63 Toluene	92	10.555	10.555	0.000	98	1567901	50.0	46.9	
64 2-Nitropropane	43	10.764	10.764	0.000	97	217481	100.0	112.2	
66 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	98	378660	50.0	57.1	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	93	699998	50.0	51.2	
65 Tetrachloroethene	164	10.904	10.904	0.000	97	576901	50.0	48.7	
69 Ethyl methacrylate	69	10.988	10.988	0.000	93	503118	50.0	52.9	
68 1,1,2-Trichloroethane	83	11.058	11.058	0.000	91	306998	50.0	50.3	
70 Chlorodibromomethane	129	11.239	11.239	0.000	90	453606	50.0	49.7	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	96	677016	50.0	49.9	
119 n-Butyl acetate	43	11.463	11.463	0.000	96	659651	50.0	54.8	
72 Ethylene Dibromide	107	11.490	11.490	0.000	99	350995	50.0	51.2	
74 2-Hexanone	43	11.588	11.588	0.000	99	260991	50.0	56.5	
75 1-Chlorohexane	91	11.854	11.854	0.000	93	961799	50.0	51.0	
78 Ethylbenzene	91	11.923	11.923	0.000	98	2970759	50.0	49.1	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	88	1599937	50.0	50.0	
77 Chlorobenzene	112	11.937	11.937	0.000	96	1639089	50.0	49.1	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	95	558960	50.0	49.0	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	98	1190764	50.0	50.7	
82 o-Xylene	106	12.454	12.454	0.000	97	1094208	50.0	49.0	
83 Styrene	104	12.496	12.496	0.000	95	1715777	50.0	49.2	
84 Bromoform	173	12.566	12.566	0.000	97	266865	50.0	53.3	
85 Isopropylbenzene	105	12.733	12.733	0.000	95	3025665	50.0	49.3	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	91	758519	50.0	47.8	
88 N-Propylbenzene	91	13.111	13.111	0.000	98	3611777	50.0	51.2	
87 Bromobenzene	156	13.152	13.152	0.000	88	691480	50.0	48.5	
89 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	95	414599	50.0	51.5	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	96	2461019	50.0	49.7	
90 2-Chlorotoluene	91	13.306	13.306	0.000	98	2318920	50.0	49.6	
92 1,2,3-Trichloropropane	110	13.334	13.334	0.000	88	137616	50.0	52.6	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	91	148628	50.0	53.4	
94 Cyclohexanone	55	13.418	13.418	0.000	92	133008	500.0	545.4	
95 4-Chlorotoluene	91	13.460	13.460	0.000	97	2119938	50.0	49.3	
96 tert-Butylbenzene	119	13.599	13.599	0.000	93	2348292	50.0	50.7	
97 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	2511417	50.0	50.5	
98 sec-Butylbenzene	105	13.767	13.767	0.000	94	3473947	50.0	52.3	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	3011257	50.0	52.3	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	99	1407837	50.0	49.1	
* 101 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	96	855849	50.0	50.0	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	97	2356171	50.0	49.3	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	97	1379625	50.0	49.4	
103 n-Butylbenzene	134	14.298	14.298	0.000	98	803782	50.0	55.0	
121 Benzyl chloride	126	14.340	14.340	0.000	78	209181	50.0	53.2	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	99	1233465	50.0	48.8	
106 n-Nonyl Aldehyde	57	15.247	15.247	0.000	87	337023	50.0	53.1	
105 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	84	92448	50.0	52.4	
107 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	1097554	50.0	51.6	
108 Hexachlorobutadiene	225	15.918	15.918	0.000	98	587401	50.0	54.7	
109 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	94	938592	50.0	51.3	
110 Naphthalene	128	16.351	16.351	0.000	97	1467542	50.0	53.4	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	97	813397	50.0	50.6	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Reagents:

8260 NewWkMix_00178	Amount Added: 10.00	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00064	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 16-Aug-2016 22:54:40 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LCCV4339.D

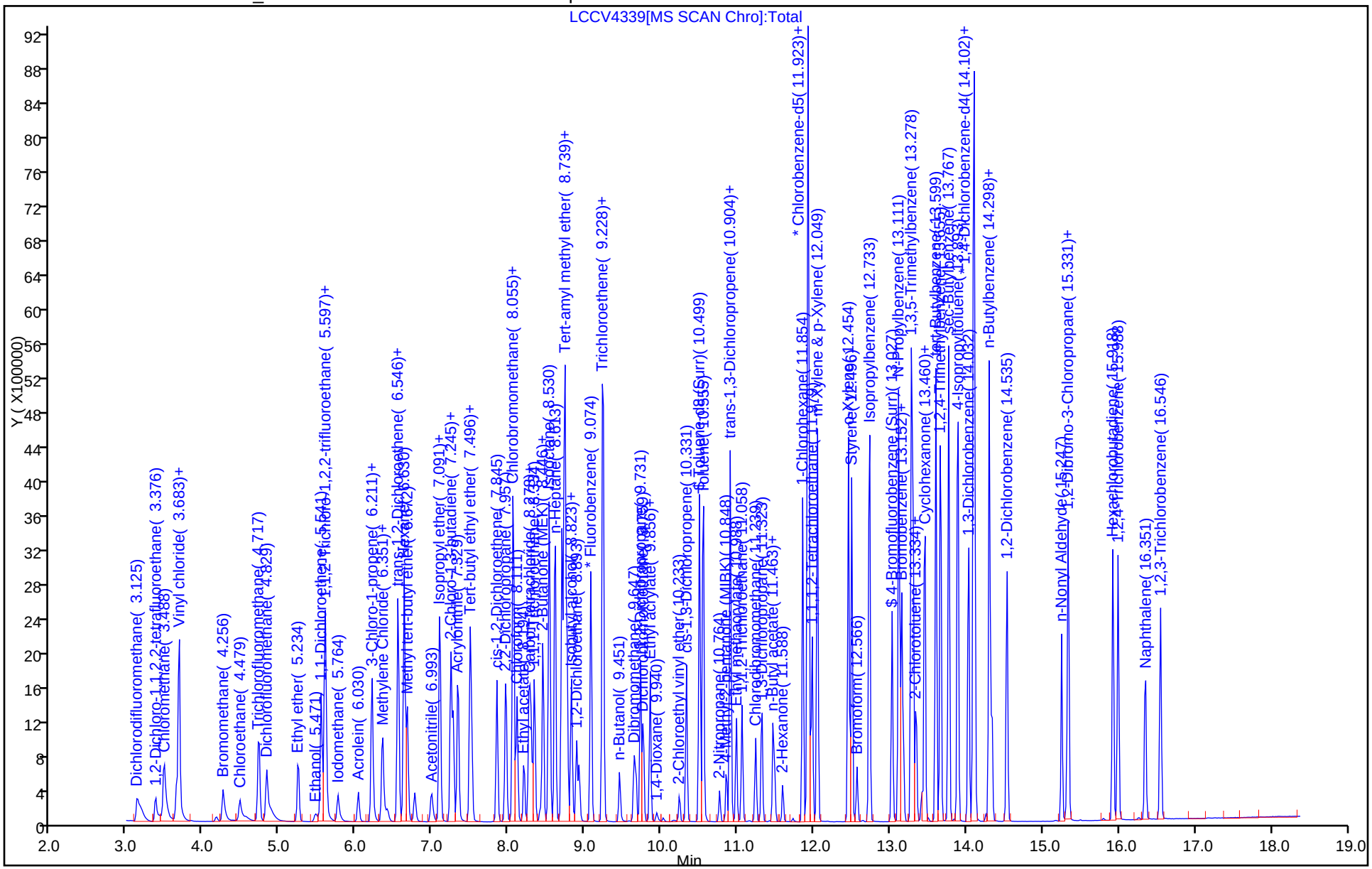
Injection Date: 09-Aug-2016 18:00:30 Instrument ID: VMSL Operator ID: JDH

Lims ID: CCVIS Worklist Smp#: 2

Client ID:

Purge Vol: 5.000 mL Dil. Factor: 1.0000 ALS Bottle#: 1

Method: 5mL-8260_VMSL Limit Group: MSV-8260



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

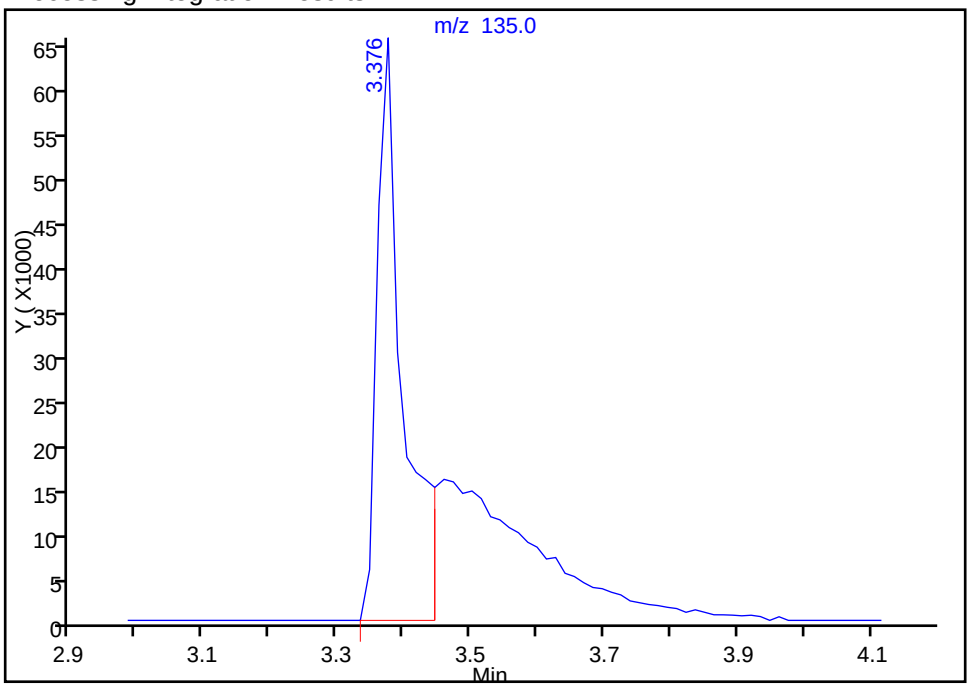
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LCCV4339.D				
Injection Date:	09-Aug-2016 18:00:30	Instrument ID:	VMSL		
Lims ID:	CCVIS				
Client ID:					
Operator ID:	JDH	ALS Bottle#:	1	Worklist Smp#:	2
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Column:		Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

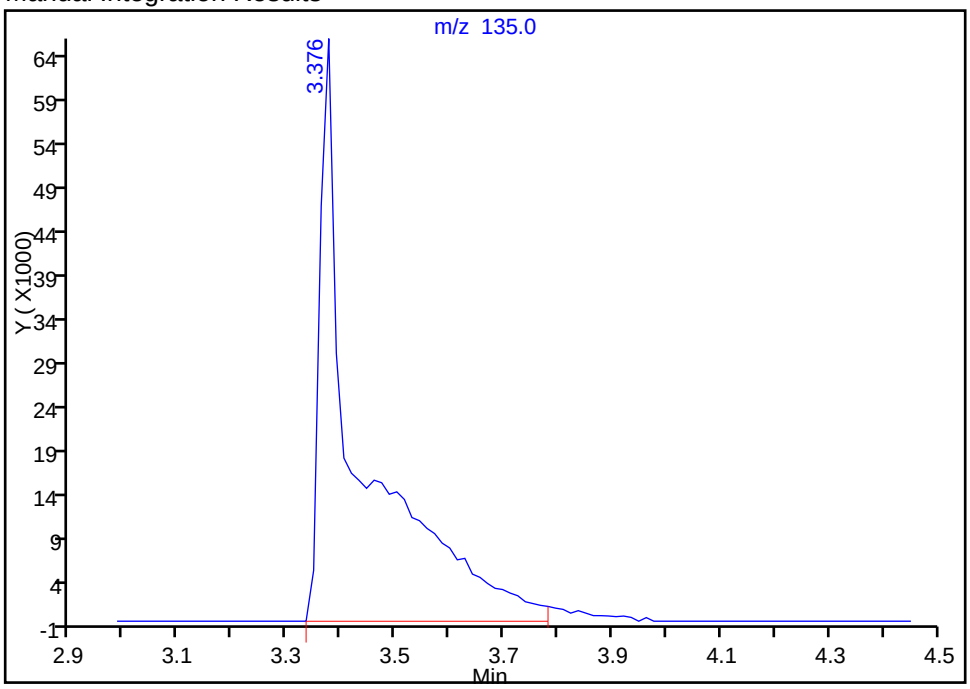
Processing Integration Results

RT: 3.38
Area: 179519
Amount: 25.761024
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 333736
Amount: 47.891205
Amount Units: ug/l



Reviewer: hannj, 16-Aug-2016 22:32:45

Audit Action: Assigned New Baseline Audit Reason: Peak Tail

TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LBFB3532.D				
Lims ID:	bfb				
Client ID:					
Sample Type:	BFB				
Inject. Date:	11-Jul-2016 08:18:30	ALS Bottle#:	1	Worklist Smp#:	1
Injection Vol:	2.0 uL	Dil. Factor:	1.0000		
Sample Info:	BFB				
Misc. Info.:	BFB				
Operator ID:	SMCR	Instrument ID:	VMSL		
Method:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\5mL-8260_VMSL.m				
Limit Group:	MSV-8260				
Last Update:	13-Jul-2016 08:35:28	Calib Date:	11-Jul-2016 12:00:30		
Integrator:	RTE	ID Type:	Deconvolution ID		
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D				
Column 1 :			Det: MS SCAN		
Process Host:	XAWRK053				

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 114 BFB	95	4.150	4.150	0.000	0	1049300	NR	NR	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Reagents:

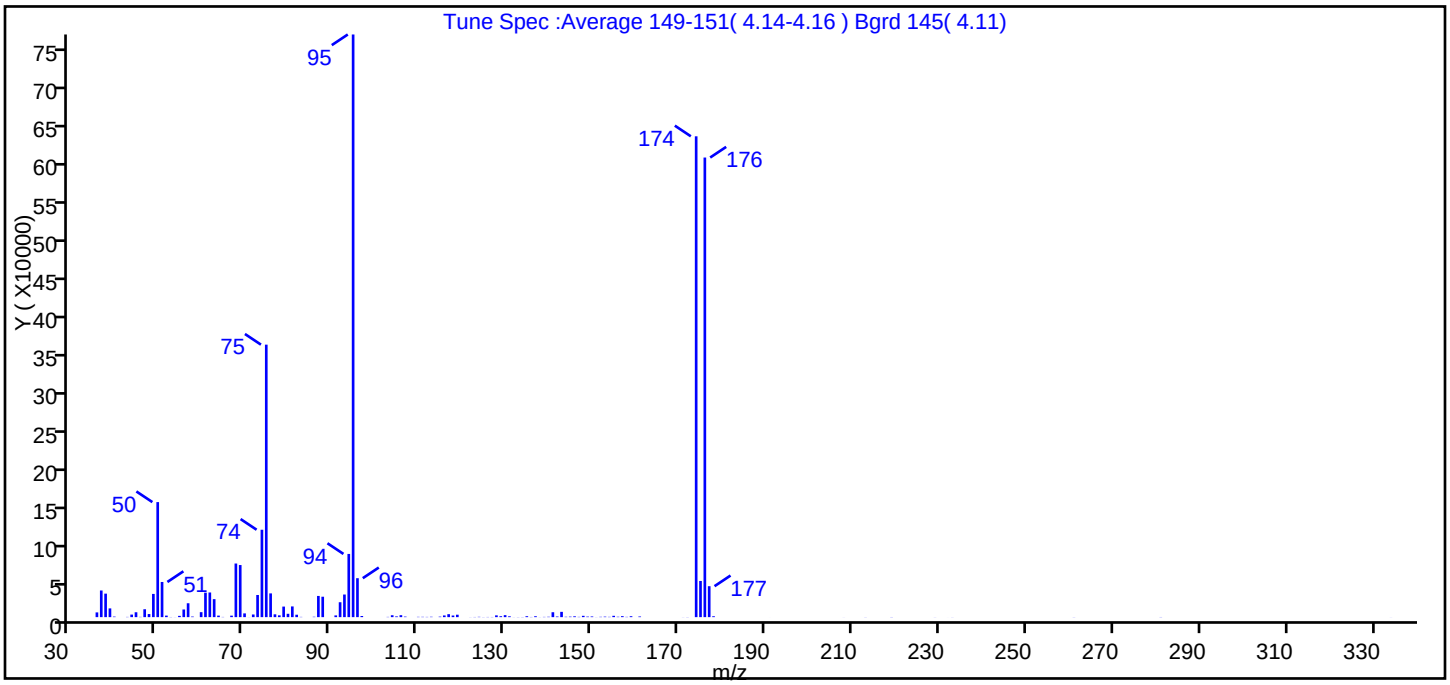
BFB_00060 Amount Added: 2.00 Units: uL

MS Tune Report

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LBFB3532.D				
Injection Date:	11-Jul-2016 08:18:30	Instrument ID:	VMSL		
Lims ID:	bfb				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	1	Worklist Smp#:	1
Injection Vol:	2.0 uL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Tune Method:	BFB Method 8260				

$ 114 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	19.7
75	30 to 60% of m/z 95	46.8
96	5 to 9% of m/z 95	6.7
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	82.5
175	5 to 9% of m/z 174	6.2 (7.5)
176	Greater than 95% but less than 101% of m/z 174	78.9 (95.6)
177	5 to 9% of m/z 176	5.3 (6.7)

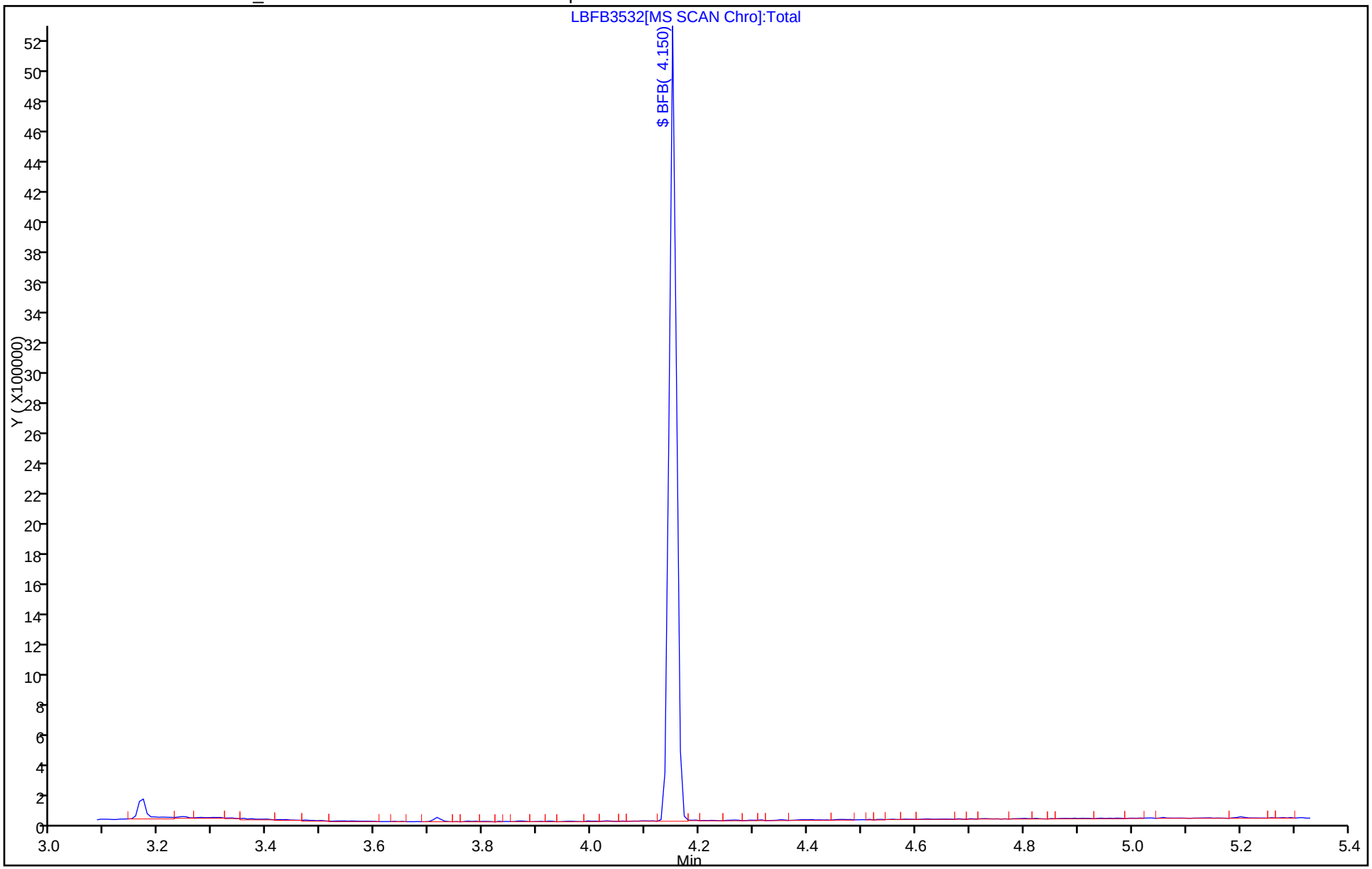
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LBFB3532.D\5mL-8260_VMSL.rslt\spectra.d
Injection Date: 11-Jul-2016 08:18:30
Spectrum: Tune Spec :Average 149-151(4.14-4.16) Bgrd 145(4.11)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 124

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	6205	71.00	94	113.00	498	147.00	354
37.00	34864	72.00	3490	115.00	657	148.00	1721
38.00	30736	73.00	28976	116.00	2218	149.00	702
39.00	11444	74.00	114320	117.00	3868	150.00	866
40.00	700	75.00	356416	118.00	2124	151.00	90
43.00	298	76.00	31064	119.00	3174	152.00	426
44.00	3347	77.00	3709	122.00	105	153.00	665
45.00	6391	78.00	2347	123.00	223	154.00	376
46.00	332	79.00	13816	124.00	404	155.00	1739
47.00	10332	80.00	4394	125.00	144	156.00	515
48.00	4056	81.00	14010	126.00	242	157.00	1274
49.00	30384	82.00	3158	127.00	217	158.00	354
50.00	150464	83.00	318	128.00	2325	159.00	1188
51.00	45992	86.00	496	129.00	1205	161.00	853
52.00	2016	87.00	27728	130.00	2595	171.00	91
53.00	196	88.00	26712	131.00	1090	172.00	152
54.00	84	91.00	2271	132.00	93	174.00	628928
55.00	1669	92.00	19496	133.00	163	175.00	47328
56.00	10034	93.00	29592	134.00	181	176.00	601152
57.00	18168	94.00	82680	135.00	1217	177.00	40480
58.00	763	95.00	762112	136.00	235	178.00	1147
60.00	6505	96.00	50944	137.00	1181	191.00	19
61.00	32024	97.00	1472	138.00	93	208.00	53
62.00	32256	103.00	320	139.00	323	213.00	121
63.00	23552	104.00	2489	140.00	481	219.00	198
64.00	2012	105.00	971	141.00	6426	229.00	91
65.00	266	106.00	2562	142.00	805	232.00	23
67.00	1948	107.00	698	143.00	6932	233.00	90
68.00	70136	110.00	384	144.00	479	261.00	130
69.00	68144	111.00	402	145.00	659	281.00	204
70.00	4906	112.00	309	146.00	1066	334.00	64

Report Date: 13-Jul-2016 08:35:29 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LBFB3532.D				
Injection Date:	11-Jul-2016 08:18:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	bfb			Worklist Smp#:	1
Client ID:					
Injection Vol:	2.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	1
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LBFB4338.D				
Lims ID:	BFB				
Client ID:					
Sample Type:	BFB				
Inject. Date:	09-Aug-2016 17:38:30	ALS Bottle#:	1	Worklist Smp#:	1
Injection Vol:	2.0 uL	Dil. Factor:	1.0000		
Sample Info:	160-0008158-001				
Misc. Info.:	BFB				
Operator ID:	JDH	Instrument ID:	VMSL		
Method:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m				
Limit Group:	MSV-8260				
Last Update:	09-Aug-2016 21:59:37	Calib Date:	11-Jul-2016 12:00:30		
Integrator:	RTE	ID Type:	Deconvolution ID		
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D				
Column 1 :			Det: MS SCAN		
Process Host:	XAWRK026				
First Level Reviewer: hannj		Date:	09-Aug-2016 21:59:37		

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 114 BFB	95	4.150	4.150	0.000	0	1798505	NR	NR	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Reagents:

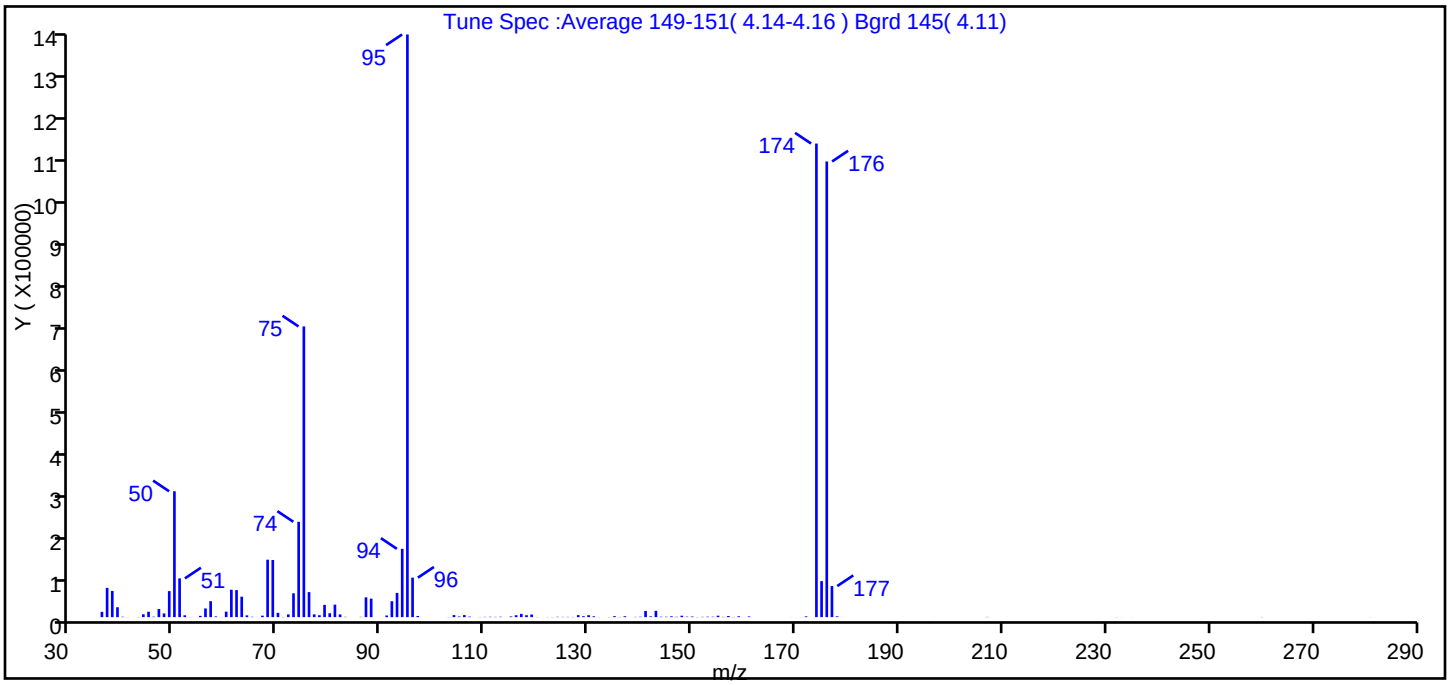
BFB_00061 Amount Added: 2.00 Units: uL

MS Tune Report

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LBFB4338.D				
Injection Date:	09-Aug-2016 17:38:30	Instrument ID:	VMSL		
Lims ID:	BFB				
Client ID:					
Operator ID:	JDH	ALS Bottle#:	1	Worklist Smp#:	1
Injection Vol:	2.0 uL	Dil. Factor:	1.0000		
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		
Tune Method:	BFB Method 8260				

$ 114 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	21.6
75	30 to 60% of m/z 95	49.9
96	5 to 9% of m/z 95	6.8
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	81.3
175	5 to 9% of m/z 174	6.2 (7.6)
176	Greater than 95% but less than 101% of m/z 174	78.2 (96.2)
177	5 to 9% of m/z 176	5.3 (6.8)

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LBFB4338.D\5mL-8260_VMSL.rslt\spectra.d
Injection Date: 09-Aug-2016 17:38:30
Spectrum: Tune Spec :Average 149-151(4.14-4.16) Bgrd 145(4.11)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 131

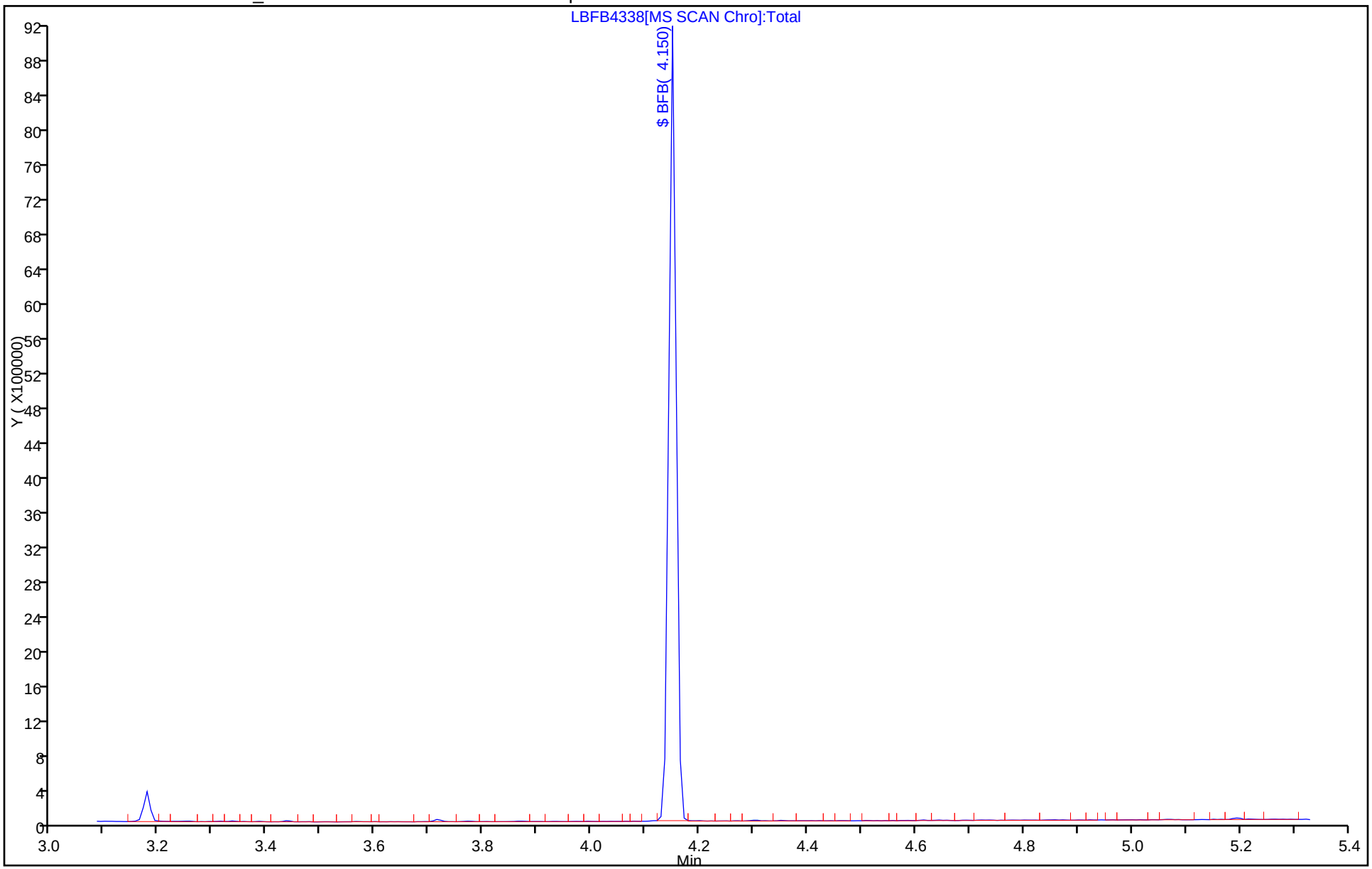
m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	11919	70.00	9623	113.00	884	150.00	1401
37.00	65416	71.00	302	115.00	1537	151.00	298
38.00	58512	72.00	6176	116.00	4290	152.00	616
39.00	22176	73.00	53280	117.00	7296	153.00	1023
40.00	891	74.00	213056	118.00	4349	154.00	851
41.00	225	75.00	649600	119.00	5876	155.00	3273
42.00	33	76.00	55984	120.00	299	156.00	551
43.00	421	77.00	6272	122.00	235	157.00	2520
44.00	6425	78.00	4290	123.00	329	158.00	352
45.00	12103	79.00	27360	124.00	731	159.00	1927
46.00	985	80.00	8692	125.00	533	160.00	87
47.00	18064	81.00	27928	126.00	593	161.00	1537
48.00	8317	82.00	6072	127.00	417	169.00	103
49.00	58136	83.00	658	128.00	4503	170.00	92
50.00	281280	86.00	626	129.00	2120	171.00	191
51.00	86616	87.00	44248	130.00	4398	172.00	1773
52.00	4123	88.00	41328	131.00	1854	174.00	1058304
53.00	238	91.00	3645	132.00	245	175.00	80480
55.00	2860	92.00	35584	134.00	324	176.00	1018240
56.00	19424	93.00	54176	135.00	2208	177.00	69480
57.00	35680	94.00	152640	136.00	398	178.00	1824
58.00	1641	95.00	1302016	137.00	2035	179.00	92
59.00	206	96.00	88232	139.00	545	193.00	16
60.00	12233	97.00	2621	140.00	875	197.00	87
61.00	61288	103.00	378	141.00	13820	207.00	490
62.00	60488	104.00	4585	142.00	1718	211.00	54
63.00	45736	105.00	1376	143.00	14192	232.00	254
64.00	4001	106.00	4615	144.00	910	233.00	73
65.00	756	107.00	1188	145.00	905	235.00	101
66.00	114	109.00	317	146.00	1822	260.00	348
67.00	3283	110.00	584	147.00	762	281.00	202
68.00	128368	111.00	800	148.00	3246	282.00	88
69.00	127648	112.00	580	149.00	1016		

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	11919	70.00	9623	113.00	884	150.00	1401
37.00	65416	71.00	302	115.00	1537	151.00	298
38.00	58512	72.00	6176	116.00	4290	152.00	616
39.00	22176	73.00	53280	117.00	7296	153.00	1023
40.00	891	74.00	213056	118.00	4349	154.00	851
41.00	225	75.00	649600	119.00	5876	155.00	3273
42.00	33	76.00	55984	120.00	299	156.00	551
43.00	421	77.00	6272	122.00	235	157.00	2520
44.00	6425	78.00	4290	123.00	329	158.00	352
45.00	12103	79.00	27360	124.00	731	159.00	1927
46.00	985	80.00	8692	125.00	533	160.00	87
47.00	18064	81.00	27928	126.00	593	161.00	1537
48.00	8317	82.00	6072	127.00	417	169.00	103
49.00	58136	83.00	658	128.00	4503	170.00	92
50.00	281280	86.00	626	129.00	2120	171.00	191
51.00	86616	87.00	44248	130.00	4398	172.00	1773
52.00	4123	88.00	41328	131.00	1854	174.00	1058304
53.00	238	91.00	3645	132.00	245	175.00	80480
55.00	2860	92.00	35584	134.00	324	176.00	1018240
56.00	19424	93.00	54176	135.00	2208	177.00	69480
57.00	35680	94.00	152640	136.00	398	178.00	1824
58.00	1641	95.00	1302016	137.00	2035	179.00	92
59.00	206	96.00	88232	139.00	545	193.00	16
60.00	12233	97.00	2621	140.00	875	197.00	87
61.00	61288	103.00	378	141.00	13820	207.00	490
62.00	60488	104.00	4585	142.00	1718	211.00	54
63.00	45736	105.00	1376	143.00	14192	232.00	254
64.00	4001	106.00	4615	144.00	910	233.00	73
65.00	756	107.00	1188	145.00	905	235.00	101
66.00	114	109.00	317	146.00	1822	260.00	348
67.00	3283	110.00	584	147.00	762	281.00	202
68.00	128368	111.00	800	148.00	3246	282.00	88
69.00	127648	112.00	580	149.00	1016		

Report Date: 09-Aug-2016 21:59:39 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LBFB4338.D				
Injection Date:	09-Aug-2016 17:38:30	Instrument ID:	VMSL	Operator ID:	JDH
Lims ID:	BFB			Worklist Smp#:	1
Client ID:					
Injection Vol:	2.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	1
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: | Lab Sample ID: LB 160-263916/1-A

Matrix: Solid (TCLP) | Lab File ID: LBLK4354.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 0.5(mL) | Date Analyzed: 08/10/2016 00:32

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTXVMS30 ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 264101 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	0.0037	U	0.050	0.0037
107-06-2	1,2-Dichloroethane	0.0037	U	0.050	0.0037
78-93-3	2-Butanone (MEK)	0.0039	U	0.050	0.0039
71-43-2	Benzene	0.0025	U	0.050	0.0025
56-23-5	Carbon tetrachloride	0.0036	U	0.050	0.0036
108-90-7	Chlorobenzene	0.0038	U	0.050	0.0038
67-66-3	Chloroform	0.00092	U	0.050	0.00092
127-18-4	Tetrachloroethene	0.0028	U	0.050	0.0028
79-01-6	Trichloroethene	0.0029	U	0.050	0.0029
75-01-4	Vinyl chloride	0.0043	U	0.10	0.0043

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		84-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	102		83-117
2037-26-5	Toluene-d8 (Surr)	97		85-115
1868-53-7	Dibromofluoromethane (Surr)	100		85-115

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LBLK4354.D
Lims ID: LB 160-263916/1-A
Client ID:
Sample Type: LB
Inject. Date: 10-Aug-2016 00:32:30 ALS Bottle#: 16 Worklist Smp#: 17
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-017
Misc. Info.: LB 160-263916/1-A
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:00:05 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:00:05

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85		3.125					ND	
2 1,2-Dichloro-1,1,2,2-tetra	135		3.376					ND	
3 Chloromethane	50		3.488					ND	
4 Vinyl chloride	62		3.641					ND	
122 Butadiene	39		3.683					ND	
5 Bromomethane	94		4.256					ND	
6 Chloroethane	64		4.479					ND	
7 Trichlorofluoromethane	101		4.731					ND	
123 Dichlorofluoromethane	67		4.829					ND	
8 Ethyl ether	74		5.248					ND	
11 Ethanol	45		5.471					ND	
9 1,1-Dichloroethene	96		5.541					ND	
10 Carbon disulfide	76		5.597					ND	
12 1,1,2-Trichloro-1,2,2-trif	151		5.597					ND	
13 Iodomethane	142		5.764					ND	
S 26 1,2-Dichloroethene, Total	96		5.816					ND	
14 Acrolein	56		6.030					ND	
15 3-Chloro-1-propene	39		6.211					ND	
16 Isopropyl alcohol	45		6.225					ND	
17 Methylene Chloride	84		6.351					ND	
18 Acetone	43		6.407					ND	
19 trans-1,2-Dichloroethene	96		6.546					ND	
20 Methyl acetate	74		6.560					ND	
21 Hexane	86		6.630					ND	
22 Methyl tert-butyl ether	73		6.672					ND	
24 Acetonitrile	41		6.993					ND	
25 Isopropyl ether	45		7.091					ND	
23 2-Methyl-2-propanol	59		7.091					ND	
27 2-Chloro-1,3-butadiene	53		7.245					ND	
28 1,1-Dichloroethane	63		7.273					ND	
29 Acrylonitrile	53		7.329					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
30 Tert-butyl ethyl ether	59		7.496					ND	
31 Vinyl acetate	43		7.510					ND	
32 cis-1,2-Dichloroethene	96		7.845					ND	
33 2,2-Dichloropropane	77		7.957					ND	
35 Chlorobromomethane	128		8.055					ND	
34 Cyclohexane	84		8.055					ND	
36 Chloroform	83		8.111					ND	
39 Ethyl acetate	45		8.194					ND	
37 Carbon tetrachloride	117		8.264					ND	
38 Tetrahydrofuran	71		8.292					ND	
$ 41 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	94	438015	50.0	49.9	
40 1,1,1-Trichloroethane	97		8.334					ND	
43 2-Butanone (MEK)	43		8.418					ND	
42 1,1-Dichloropropene	75		8.446					ND	
125 Isooctane	57		8.530					ND	
117 n-Heptane	43		8.613					ND	
44 Benzene	78		8.697					ND	
45 Propionitrile	54		8.725					ND	
46 Methacrylonitrile	41		8.739					ND	
48 Tert-amyl methyl ether	73		8.767					ND	
50 Isobutyl alcohol	42		8.823					ND	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	91	462461	50.0	51.2	
49 1,2-Dichloroethane	62		8.893					ND	
* 51 Fluorobenzene	96	9.074	9.074	0.000	99	2190498	50.0	50.0	
118 1,4-Difluorobenzene	114		9.130					ND	
53 Trichloroethene	95		9.228					ND	
52 Methylcyclohexane	55		9.228					ND	
54 n-Butanol	56		9.451					ND	
55 Dibromomethane	93		9.647					ND	
56 1,2-Dichloropropane	63		9.731					ND	
57 Dichlorobromomethane	83		9.759					ND	
124 Ethyl acrylate	55		9.856					ND	
58 Methyl methacrylate	69		9.856					ND	
59 1,4-Dioxane	88		9.940					ND	
60 2-Chloroethyl vinyl ether	63		10.233					ND	
128 2-Pentanone	43		10.253					ND	
61 cis-1,3-Dichloropropene	75		10.331					ND	
$ 62 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	2059548	50.0	48.3	
63 Toluene	92		10.555					ND	
64 2-Nitropropane	43		10.764					ND	
66 4-Methyl-2-pentanone (MIBK	43		10.848					ND	
67 trans-1,3-Dichloropropene	75		10.904					ND	
65 Tetrachloroethene	164		10.904					ND	
69 Ethyl methacrylate	69		10.988					ND	
68 1,1,2-Trichloroethane	83		11.058					ND	
70 Chlorodibromomethane	129		11.239					ND	
71 1,3-Dichloropropane	76		11.323					ND	
119 n-Butyl acetate	43	11.463	11.463	0.000	95	9548		0.8211	
72 Ethylene Dibromide	107		11.490					ND	
74 2-Hexanone	43		11.588					ND	
S 73 1,3-Dichloropropene, Total	75		11.620					ND	
75 1-Chlorohexane	91		11.854					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
78 Ethylbenzene	91		11.923					ND	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	86	1545515	50.0	50.0	
77 Chlorobenzene	112		11.937					ND	
79 1,1,1,2-Tetrachloroethane	131		11.979					ND	
80 m-Xylene & p-Xylene	106		12.049					ND	
82 o-Xylene	106		12.454					ND	
83 Styrene	104		12.496					ND	
84 Bromoform	173		12.566					ND	
85 Isopropylbenzene	105		12.733					ND	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	93	688155	50.0	48.7	
88 N-Propylbenzene	91		13.111					ND	
87 Bromobenzene	156		13.152					ND	
89 1,1,2,2-Tetrachloroethane	83		13.166					ND	
91 1,3,5-Trimethylbenzene	105		13.278					ND	
90 2-Chlorotoluene	91		13.306					ND	
92 1,2,3-Trichloropropane	110		13.334					ND	
93 trans-1,4-Dichloro-2-buten	53		13.348					ND	
94 Cyclohexanone	55		13.418					ND	
95 4-Chlorotoluene	91		13.460					ND	
96 tert-Butylbenzene	119		13.599					ND	
97 1,2,4-Trimethylbenzene	105		13.655					ND	
81 Pentachloroethane	167		13.655					ND	
98 sec-Butylbenzene	105		13.767					ND	
99 4-Isopropyltoluene	119		13.893					ND	
100 1,3-Dichlorobenzene	146		14.032					ND	
* 101 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	96	762846	50.0	50.0	
120 1,2,3-Trimethylbenzene	105		14.102					ND	
102 1,4-Dichlorobenzene	146		14.116					ND	
103 n-Butylbenzene	134		14.298					ND	
121 Benzyl chloride	126		14.340					ND	
104 1,2-Dichlorobenzene	146		14.535					ND	
106 n-Nonyl Aldehyde	57		15.247					ND	
105 1,2-Dibromo-3-Chloropropan	157		15.317					ND	
107 1,3,5-Trichlorobenzene	180		15.331					ND	
108 Hexachlorobutadiene	225		15.918					ND	
109 1,2,4-Trichlorobenzene	180		15.988					ND	
110 Naphthalene	128	16.337	16.351	-0.014	96	11781		0.4814	
S 112 Xylenes, Total	106		16.500					ND	
111 1,2,3-Trichlorobenzene	180		16.546					ND	
126 C6-C12	1		0.000					ND	
S 113 Trihalomethanes, Total	1		0.000					ND	
127 2-Methylpentane	1		0.000					ND	

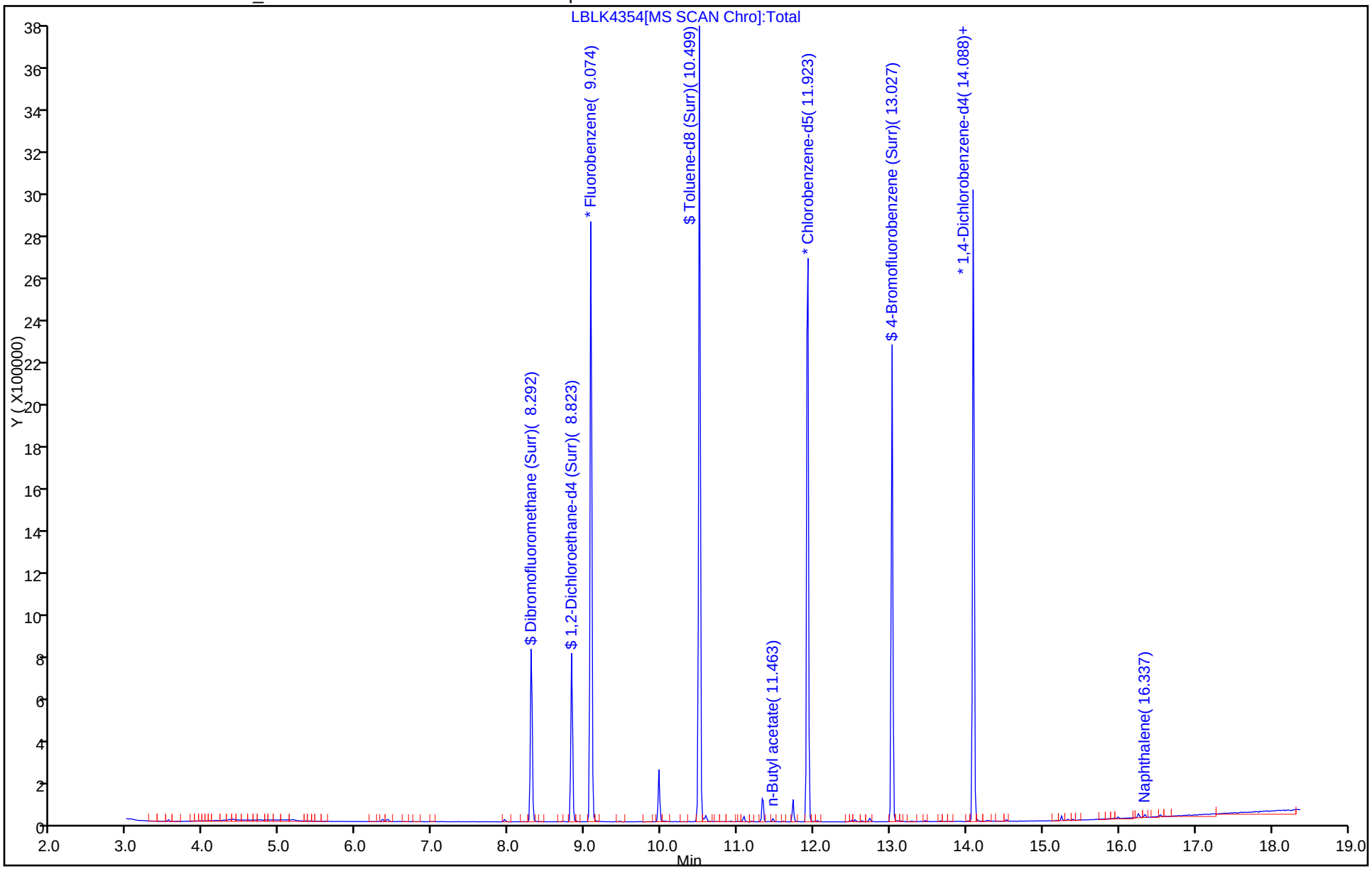
Reagents:

I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00064	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 16-Aug-2016 23:00:06 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LBLK4354.D				
Injection Date:	10-Aug-2016 00:32:30	Instrument ID:	VMSL	Operator ID:	JDH
Lims ID:	LB 160-263916/1-A			Worklist Smp#:	17
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	16
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LBLK4354.D
Lims ID: LB 160-263916/1-A
Client ID:
Sample Type: LB
Inject. Date: 10-Aug-2016 00:32:30 ALS Bottle#: 16 Worklist Smp#: 17
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-017
Misc. Info.: LB 160-263916/1-A
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:00:05 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:00:05

Compound	Amount Added	Amount Recovered	% Rec.
$ 41 Dibromofluoromethane (Surr)	50.0	49.9	99.74
$ 47 1,2-Dichloroethane-d4 (Surr)	50.0	51.2	102.39
$ 62 Toluene-d8 (Surr)	50.0	48.3	96.59
$ 86 4-Bromofluorobenzene (Surr)	50.0	48.7	97.31

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: | Lab Sample ID: LCS 160-264101/12

Matrix: Solid | Lab File ID: LLCS4349.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 0.5(mL) | Date Analyzed: 08/09/2016 22:27

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTXVMS30 ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 264101 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	0.487		0.050	0.0037
107-06-2	1,2-Dichloroethane	0.498		0.050	0.0037
78-93-3	2-Butanone (MEK)	0.495		0.050	0.0039
71-43-2	Benzene	0.482		0.050	0.0025
56-23-5	Carbon tetrachloride	0.494		0.050	0.0036
108-90-7	Chlorobenzene	0.496		0.050	0.0038
67-66-3	Chloroform	0.482		0.050	0.00092
127-18-4	Tetrachloroethene	0.495		0.050	0.0028
79-01-6	Trichloroethene	0.486		0.050	0.0029
75-01-4	Vinyl chloride	0.550		0.10	0.0043

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		84-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	102		83-117
2037-26-5	Toluene-d8 (Surr)	99		85-115
1868-53-7	Dibromofluoromethane (Surr)	100		85-115

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LLCS4349.D
Lims ID: LCS
Client ID:
Sample Type: LCS
Inject. Date: 09-Aug-2016 22:27:30 ALS Bottle#: 11 Worklist Smp#: 12
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-012
Misc. Info.: LCS
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 22:56:25 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 22:56:25

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.139	3.125	0.014	99	743444	50.0	51.2	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	327209	50.0	48.0	
3 Chloromethane	50	3.488	3.488	0.000	99	1055536	50.0	54.4	
4 Vinyl chloride	62	3.641	3.641	0.000	98	870771	50.0	55.0	
122 Butadiene	39	3.683	3.683	0.000	91	900432	50.0	56.9	
5 Bromomethane	94	4.256	4.256	0.000	91	320742	50.0	49.4	
6 Chloroethane	64	4.479	4.479	0.000	99	450949	50.0	54.1	M
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	915457	50.0	53.0	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	100	1038447	50.0	51.8	
8 Ethyl ether	74	5.248	5.248	0.000	97	256235	50.0	54.8	
11 Ethanol	45	5.583	5.471	0.112	99	16021	2000.0	1267.7	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	97	567257	50.0	48.7	
10 Carbon disulfide	76	5.597	5.597	0.000	100	1981866	50.0	48.9	
12 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	92	510898	50.0	48.0	
13 Iodomethane	142	5.764	5.764	0.000	98	401255	50.0	49.7	
14 Acrolein	56	6.030	6.030	0.000	99	276524	250.0	284.8	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	92	757874	50.0	54.0	
16 Isopropyl alcohol	45	6.225	6.225	0.000	98	205928	500.0	527.6	
17 Methylene Chloride	84	6.351	6.351	0.000	99	518214	50.0	48.6	
18 Acetone	43	6.407	6.407	0.000	99	94678	50.0	55.4	
19 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	604279	50.0	48.2	
20 Methyl acetate	74	6.560	6.560	0.000	99	217164	250.0	251.6	
21 Hexane	86	6.630	6.630	0.000	94	209544	50.0	47.9	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	90	1044566	50.0	47.2	
24 Acetonitrile	41	6.993	6.993	0.000	99	417101	500.0	570.1	
25 Isopropyl ether	45	7.091	7.091	0.000	96	1931321	50.0	50.5	
23 2-Methyl-2-propanol	59	7.091	7.091	0.000	34	201814	500.0	482.9	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	93	1141679	50.0	49.9	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	96	1099003	50.0	48.2	
29 Acrylonitrile	53	7.329	7.329	0.000	99	1202802	500.0	523.5	
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	1495051	50.0	48.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
31 Vinyl acetate	43	7.524	7.510	0.014	97	1048334	50.0	60.2	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	611906	50.0	48.9	
33 2,2-Dichloropropane	77	7.957	7.957	0.000	93	929130	50.0	48.4	
35 Chlorobromomethane	128	8.055	8.055	0.000	92	223168	50.0	48.5	
34 Cyclohexane	84	8.069	8.055	0.014	94	1049016	50.0	48.1	
36 Chloroform	83	8.111	8.111	0.000	94	929807	50.0	48.2	
39 Ethyl acetate	45	8.194	8.194	0.000	99	95258	100.0	105.2	
37 Carbon tetrachloride	117	8.264	8.264	0.000	97	842869	50.0	49.4	
38 Tetrahydrofuran	71	8.292	8.292	0.000	90	59640	100.0	94.0	
$ 41 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	442439	50.0	50.1	
40 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	945218	50.0	49.1	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	99	144177	50.0	49.5	
42 1,1-Dichloropropene	75	8.446	8.446	0.000	94	843751	50.0	48.4	
125 Isooctane	57	8.530	8.530	0.000	100	3135069	50.0	49.2	
117 n-Heptane	43	8.613	8.613	0.000	96	1470041	50.0	53.1	
44 Benzene	78	8.697	8.697	0.000	98	2297756	50.0	48.2	
45 Propionitrile	54	8.725	8.725	0.000	89	448501	500.0	521.6	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	2328756	500.0	532.4	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	95	1133076	50.0	47.6	
50 Isobutyl alcohol	42	8.823	8.823	0.000	94	244388	1250.0	1389.1	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	92	464198	50.0	51.1	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	96	604361	50.0	49.8	
* 51 Fluorobenzene	96	9.074	9.074	0.000	99	2201447	50.0	50.0	
53 Trichloroethene	95	9.228	9.228	0.000	66	613928	50.0	48.6	
52 Methylcyclohexane	55	9.228	9.228	0.000	97	1128556	50.0	51.0	
54 n-Butanol	56	9.451	9.451	0.000	92	225742	1250.0	1301.5	
55 Dibromomethane	93	9.647	9.647	0.000	94	229789	50.0	49.8	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	94	573158	50.0	50.0	
57 Dichlorobromomethane	83	9.759	9.759	0.000	98	630028	50.0	49.2	
124 Ethyl acrylate	55	9.856	9.856	0.000	95	44122	50.0	49.6	
58 Methyl methacrylate	69	9.856	9.856	0.000	96	438152	100.0	97.7	
59 1,4-Dioxane	88	9.940	9.940	0.000	94	61056	1000.0	1028.9	
60 2-Chloroethyl vinyl ether	63	10.234	10.233	0.001	92	86247	50.0	30.1	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	94	795782	50.0	49.6	
$ 62 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	2095488	50.0	49.3	
63 Toluene	92	10.555	10.555	0.000	98	1547915	50.0	48.1	
64 2-Nitropropane	43	10.764	10.764	0.000	97	186331	100.0	99.9	
66 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	98	315528	50.0	49.4	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	89	652854	50.0	49.6	
65 Tetrachloroethene	164	10.904	10.904	0.000	97	564174	50.0	49.5	
69 Ethyl methacrylate	69	10.988	10.988	0.000	92	449581	50.0	49.1	
68 1,1,2-Trichloroethane	83	11.058	11.058	0.000	92	284514	50.0	48.5	
70 Chlorodibromomethane	129	11.239	11.239	0.000	90	425851	50.0	48.4	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	96	628795	50.0	48.1	
119 n-Butyl acetate	43	11.463	11.463	0.000	96	577474	50.0	49.8	
72 Ethylene Dibromide	107	11.490	11.490	0.000	99	320975	50.0	48.7	
74 2-Hexanone	43	11.588	11.588	0.000	99	211318	50.0	47.5	
75 1-Chlorohexane	91	11.854	11.854	0.000	93	951206	50.0	52.4	
78 Ethylbenzene	91	11.923	11.923	0.000	98	2943216	50.0	50.6	
* 76 Chlorobenzene-d5	117	11.923	11.923	0.000	89	1540300	50.0	50.0	
77 Chlorobenzene	112	11.937	11.937	0.000	94	1596403	50.0	49.6	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	95	534129	50.0	48.7	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	98	1170460	50.0	51.7	
82 o-Xylene	106	12.454	12.454	0.000	97	1068449	50.0	49.7	
83 Styrene	104	12.496	12.496	0.000	95	1667318	50.0	49.6	
84 Bromoform	173	12.566	12.566	0.000	97	240635	50.0	50.9	
85 Isopropylbenzene	105	12.733	12.733	0.000	95	3001649	50.0	51.8	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	92	730136	50.0	48.7	
88 N-Propylbenzene	91	13.111	13.111	0.000	98	3562003	50.0	53.5	
87 Bromobenzene	156	13.152	13.152	0.000	88	661403	50.0	49.1	
89 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	96	379246	50.0	49.9	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	96	2405950	50.0	51.4	
90 2-Chlorotoluene	91	13.292	13.306	-0.014	97	2251958	50.0	51.0	
92 1,2,3-Trichloropropane	110	13.334	13.334	0.000	87	117732	50.0	47.6	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	92	128046	50.0	48.7	
94 Cyclohexanone	55	13.418	13.418	0.000	91	100469	500.0	446.1	
95 4-Chlorotoluene	91	13.446	13.460	-0.014	99	2063378	50.0	50.9	
96 tert-Butylbenzene	119	13.599	13.599	0.000	93	2310498	50.0	52.8	
97 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	2445178	50.0	52.0	
98 sec-Butylbenzene	105	13.767	13.767	0.000	94	3408230	50.0	54.3	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	2982136	50.0	54.8	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	99	1369521	50.0	50.6	
* 101 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	97	808077	50.0	50.0	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	96	2279376	50.0	50.5	
102 1,4-Dichlorobenzene	146	14.102	14.116	-0.014	96	1325132	50.0	50.3	
103 n-Butylbenzene	134	14.298	14.298	0.000	98	792316	50.0	57.4	
121 Benzyl chloride	126	14.340	14.340	0.000	95	185565	50.0	50.0	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	99	1178934	50.0	49.4	
106 n-Nonyl Aldehyde	57	15.247	15.247	0.000	88	285423	50.0	47.7	
105 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	84	77433	50.0	46.5	
107 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	1051125	50.0	52.3	
108 Hexachlorobutadiene	225	15.918	15.918	0.000	98	588670	50.0	58.1	
109 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	94	883926	50.0	51.2	
110 Naphthalene	128	16.351	16.351	0.000	97	1312925	50.0	50.6	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	96	743330	50.0	49.0	

QC Flag Legend

Review Flags

M - Manually Integrated

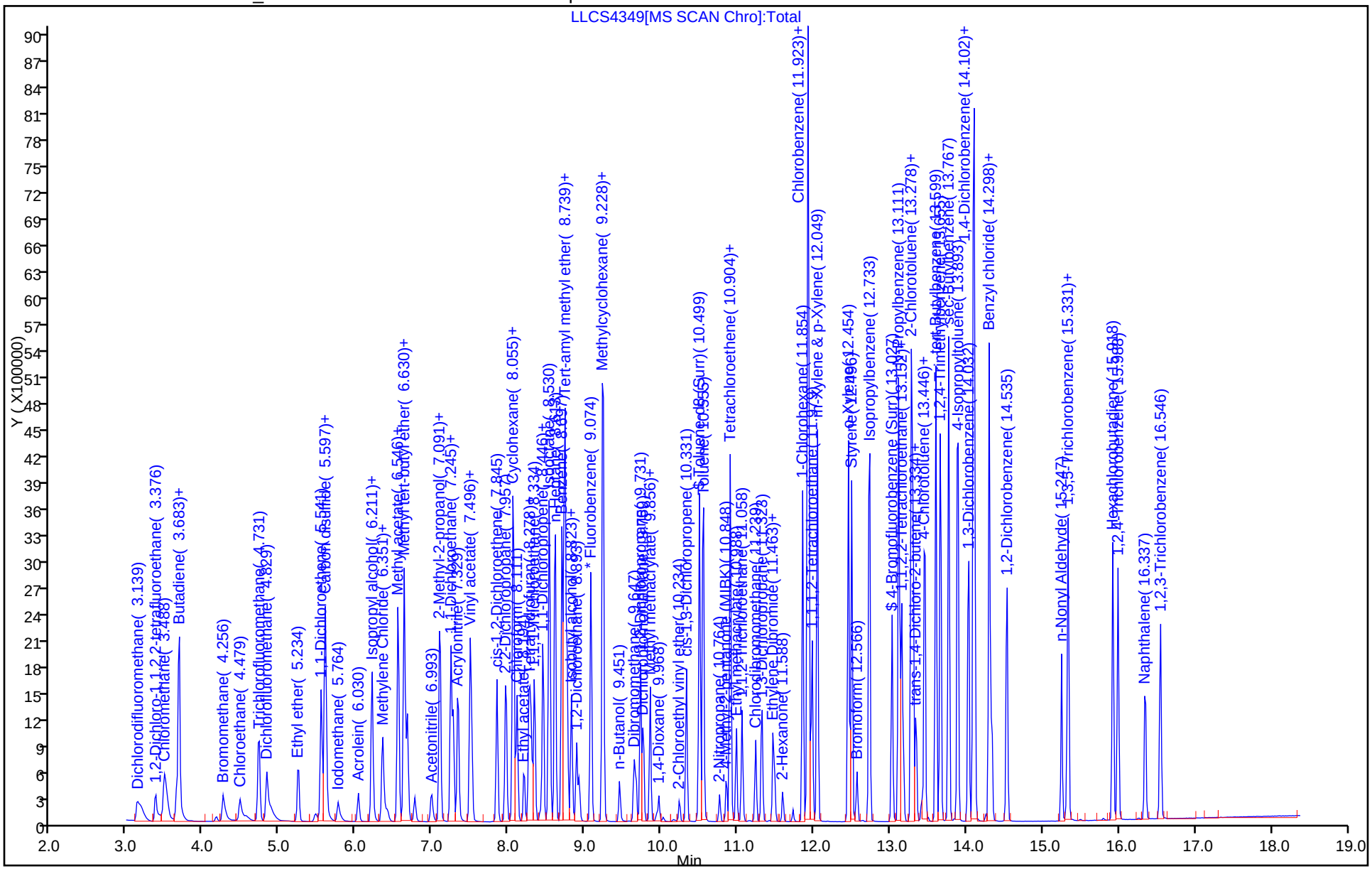
Reagents:

8260 NewWkMix_00178	Amount Added: 10.00	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00064	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 16-Aug-2016 22:56:27 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LLCS4349.D				
Injection Date:	09-Aug-2016 22:27:30	Instrument ID:	VMSL	Operator ID:	JDH
Lims ID:	LCS			Worklist Smp#:	12
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LLCS4349.D
Lims ID: LCS
Client ID:
Sample Type: LCS
Inject. Date: 09-Aug-2016 22:27:30 ALS Bottle#: 11 Worklist Smp#: 12
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-012
Misc. Info.: LCS
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 22:56:25 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 22:56:25

Compound	Amount Added	Amount Recovered	% Rec.
$ 41 Dibromofluoromethane (Surr)	50.0	50.1	100.25
$ 47 1,2-Dichloroethane-d4 (Surr)	50.0	51.1	102.26
$ 62 Toluene-d8 (Surr)	50.0	49.3	98.61
$ 86 4-Bromofluorobenzene (Surr)	50.0	48.7	97.47

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: YMTFA75SE001 MS | Lab Sample ID: 160-18521-2 MS

Matrix: Solid (TCLP) | Lab File ID: LSMP4363.D

Analysis Method: 8260C | Date Collected: 08/05/2016 09:25

Sample wt/vol: 0.5(mL) | Date Analyzed: 08/10/2016 04:18

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTXVMS30 ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 264101 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	0.475		0.050	0.0037
107-06-2	1,2-Dichloroethane	0.519		0.050	0.0037
78-93-3	2-Butanone (MEK)	0.505		0.050	0.0039
71-43-2	Benzene	0.484		0.050	0.0025
56-23-5	Carbon tetrachloride	0.500		0.050	0.0036
108-90-7	Chlorobenzene	0.488		0.050	0.0038
67-66-3	Chloroform	0.491		0.050	0.00092
127-18-4	Tetrachloroethene	0.487		0.050	0.0028
79-01-6	Trichloroethene	0.490		0.050	0.0029
75-01-4	Vinyl chloride	0.532		0.10	0.0043

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	96		84-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	106		83-117
2037-26-5	Toluene-d8 (Surr)	97		85-115
1868-53-7	Dibromofluoromethane (Surr)	102		85-115

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4363.D
Lims ID: 160-18521-D-2-A MS
Client ID:
Sample Type: MS
Inject. Date: 10-Aug-2016 04:18:30 ALS Bottle#: 25 Worklist Smp#: 26
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-026
Misc. Info.: 160-18521-D-2-A MS
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:05:31 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:05:31

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.153	3.125	0.028	99	668108		51.0	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	302777		49.2	
3 Chloromethane	50	3.516	3.488	0.028	99	939787		53.7	
4 Vinyl chloride	62	3.656	3.641	0.015	98	760088		53.2	
122 Butadiene	39	3.683	3.683	0.000	92	809724		56.7	
5 Bromomethane	94	4.256	4.256	0.000	91	309065		52.8	
6 Chloroethane	64	4.480	4.480	0.001	99	410562		54.5	M
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	855624		54.9	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	100	947178		52.4	
8 Ethyl ether	74	5.248	5.248	0.000	97	225994		53.6	
11 Ethanol	45	5.597	5.471	0.126	99	11359		995.8	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	97	499727		47.5	
10 Carbon disulfide	76	5.597	5.597	0.000	100	1768325		48.4	
12 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	90	465787		48.5	
13 Iodomethane	142	5.764	5.764	0.000	99	183556		25.2	
S 26 1,2-Dichloroethene, Total	96				0			95.6	
14 Acrolein	56	6.030	6.030	0.000	99	236586		269.9	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	91	688725		54.3	
16 Isopropyl alcohol	45	6.225	6.225	0.000	97	182989		519.4	
17 Methylene Chloride	84	6.351	6.351	0.000	98	469454		48.8	
18 Acetone	43	6.407	6.407	0.000	99	92193		60.0	
19 trans-1,2-Dichloroethene	96	6.547	6.546	0.000	96	535013		47.3	
20 Methyl acetate	74	6.560	6.560	0.000	99	192768		247.4	
21 Hexane	86	6.630	6.630	0.000	95	185139		46.9	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	90	949345		47.5	
24 Acetonitrile	41	6.993	6.993	0.000	99	375688		568.9	
25 Isopropyl ether	45	7.091	7.091	0.000	95	1739329		50.3	
23 2-Methyl-2-propanol	59	7.105	7.091	0.014	34	181090		480.0	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	94	1025691		49.7	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	96	992383		48.2	
29 Acrylonitrile	53	7.343	7.329	0.014	98	1078837		520.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	1348208		48.2	
31 Vinyl acetate	43	7.524	7.510	0.014	97	951596		60.5	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	545610		48.3	
33 2,2-Dichloropropane	77	7.957	7.957	0.000	93	792820		45.7	
35 Chlorobromomethane	128	8.055	8.055	0.000	93	206900		49.8	
34 Cyclohexane	84	8.069	8.055	0.014	94	922832		46.9	
36 Chloroform	83	8.111	8.111	0.000	95	854794		49.1	
39 Ethyl acetate	45	8.208	8.194	0.014	99	86115		105.3	
37 Carbon tetrachloride	117	8.264	8.264	0.000	98	769574		50.0	
38 Tetrahydrofuran	71	8.292	8.292	0.000	89	54608		95.3	
$ 41 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	407242	50.0	51.1	
40 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	883396		50.9	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	99	132776		50.5	
42 1,1-Dichloropropene	75	8.446	8.446	0.000	93	757896		48.2	
125 Isooctane	57	8.530	8.530	0.000	99	2799023		48.6	
117 n-Heptane	43	8.614	8.613	0.001	95	1313158		52.5	
44 Benzene	78	8.697	8.697	0.000	98	2081814		48.4	
45 Propionitrile	54	8.725	8.725	0.000	89	406961		524.4	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	2194189		555.8	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	94	1039764		48.4	
50 Isobutyl alcohol	42	8.823	8.823	0.000	94	211318		1330.8	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	436091	50.0	53.2	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	97	567793		51.9	
* 51 Fluorobenzene	96	9.074	9.074	0.000	98	1986978	50.0	50.0	
118 1,4-Difluorobenzene	114		9.130					ND	
53 Trichloroethene	95	9.228	9.228	0.000	88	558285		49.0	
52 Methylcyclohexane	55	9.242	9.228	0.014	95	1028265		51.5	
54 n-Butanol	56	9.451	9.451	0.000	93	198340		1267.0	
55 Dibromomethane	93	9.647	9.647	0.000	95	214763		51.6	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	93	517667		50.0	
57 Dichlorobromomethane	83	9.759	9.759	0.000	98	578023		50.0	
124 Ethyl acrylate	55	9.857	9.856	0.000	95	40095		50.0	
58 Methyl methacrylate	69	9.857	9.856	0.000	96	391698		96.7	
59 1,4-Dioxane	88	9.940	9.940	0.000	94	53708		1002.8	
60 2-Chloroethyl vinyl ether	63	10.234	10.233	0.001	92	86195		33.3	
128 2-Pentanone	43		10.253					ND	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	93	701050		48.4	
$ 62 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	1890016	50.0	48.3	
63 Toluene	92	10.555	10.555	0.000	98	1399079		47.2	
64 2-Nitropropane	43	10.764	10.764	0.000	99	170307		99.2	
66 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	288409		49.1	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	90	584213		48.3	
65 Tetrachloroethene	164	10.904	10.904	0.000	97	511616		48.7	
69 Ethyl methacrylate	69	10.988	10.988	0.000	93	397214		47.1	
68 1,1,2-Trichloroethane	83	11.058	11.058	0.000	92	262512		48.6	
70 Chlorodibromomethane	129	11.239	11.239	0.000	90	395724		48.9	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	97	574305		47.7	
119 n-Butyl acetate	43	11.463	11.463	0.000	96	508012		47.6	
72 Ethylene Dibromide	107	11.491	11.490	0.001	100	293960		48.4	
74 2-Hexanone	43	11.588	11.588	0.000	98	193896		47.3	
S 73 1,3-Dichloropropene, Total	75				0			96.7	
75 1-Chlorohexane	91	11.854	11.854	0.000	91	836931		50.1	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
78 Ethylbenzene	91	11.924	11.923	0.001	98	2670212		49.8	
* 76 Chlorobenzene-d5	117	11.924	11.923	0.001	87	1418055	50.0	50.0	
77 Chlorobenzene	112	11.937	11.937	0.000	95	1444533		48.8	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	95	501919		49.7	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	98	1055680		50.7	
82 o-Xylene	106	12.454	12.454	0.000	97	968909		49.0	
83 Styrene	104	12.496	12.496	0.000	95	1505953		48.7	
84 Bromoform	173	12.566	12.566	0.000	97	225193		51.5	
85 Isopropylbenzene	105	12.734	12.733	0.001	96	2728458		50.9	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	92	662768	50.0	47.9	
88 N-Propylbenzene	91	13.111	13.111	0.000	98	3237978		52.6	
87 Bromobenzene	156	13.153	13.152	0.001	89	607889		48.8	
89 1,1,2,2-Tetrachloroethane	83	13.167	13.166	0.000	96	357549		50.9	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	96	2219056		51.3	
90 2-Chlorotoluene	91	13.292	13.306	-0.014	98	2076512		50.9	
92 1,2,3-Trichloropropane	110	13.334	13.334	0.000	88	112915		49.4	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	93	115331		47.5	
94 Cyclohexanone	55	13.418	13.418	0.000	93	86225		417.7	
95 4-Chlorotoluene	91	13.460	13.460	0.000	97	1876623		50.0	
96 tert-Butylbenzene	119	13.599	13.599	0.000	94	2118141		52.4	
97 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	98	2235481		51.5	
81 Pentachloroethane	167		13.655					ND	
98 sec-Butylbenzene	105	13.767	13.767	0.000	94	3136750		54.1	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	2717285		54.0	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	99	1246499		49.8	
* 101 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	97	746924	50.0	50.0	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	96	2109711		50.6	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	97	1220322		50.1	
103 n-Butylbenzene	134	14.298	14.298	0.000	97	702232		55.0	
121 Benzyl chloride	126	14.340	14.340	0.000	95	146828		42.8	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	99	1088987		49.4	
106 n-Nonyl Aldehyde	57	15.247	15.247	0.000	87	235472		42.5	
105 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	84	73925		48.0	
107 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	958525		51.6	
108 Hexachlorobutadiene	225	15.918	15.918	0.000	98	543544		58.0	
109 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	94	803344		50.3	
110 Naphthalene	128	16.351	16.351	0.000	97	1172021		48.9	
S 112 Xylenes, Total	106				0			99.7	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	96	689431		49.2	
126 C6-C12	1		0.000					ND	
S 113 Trihalomethanes, Total	1				0			199.6	
127 2-Methylpentane	1		0.000					ND	

QC Flag Legend

Review Flags

M - Manually Integrated

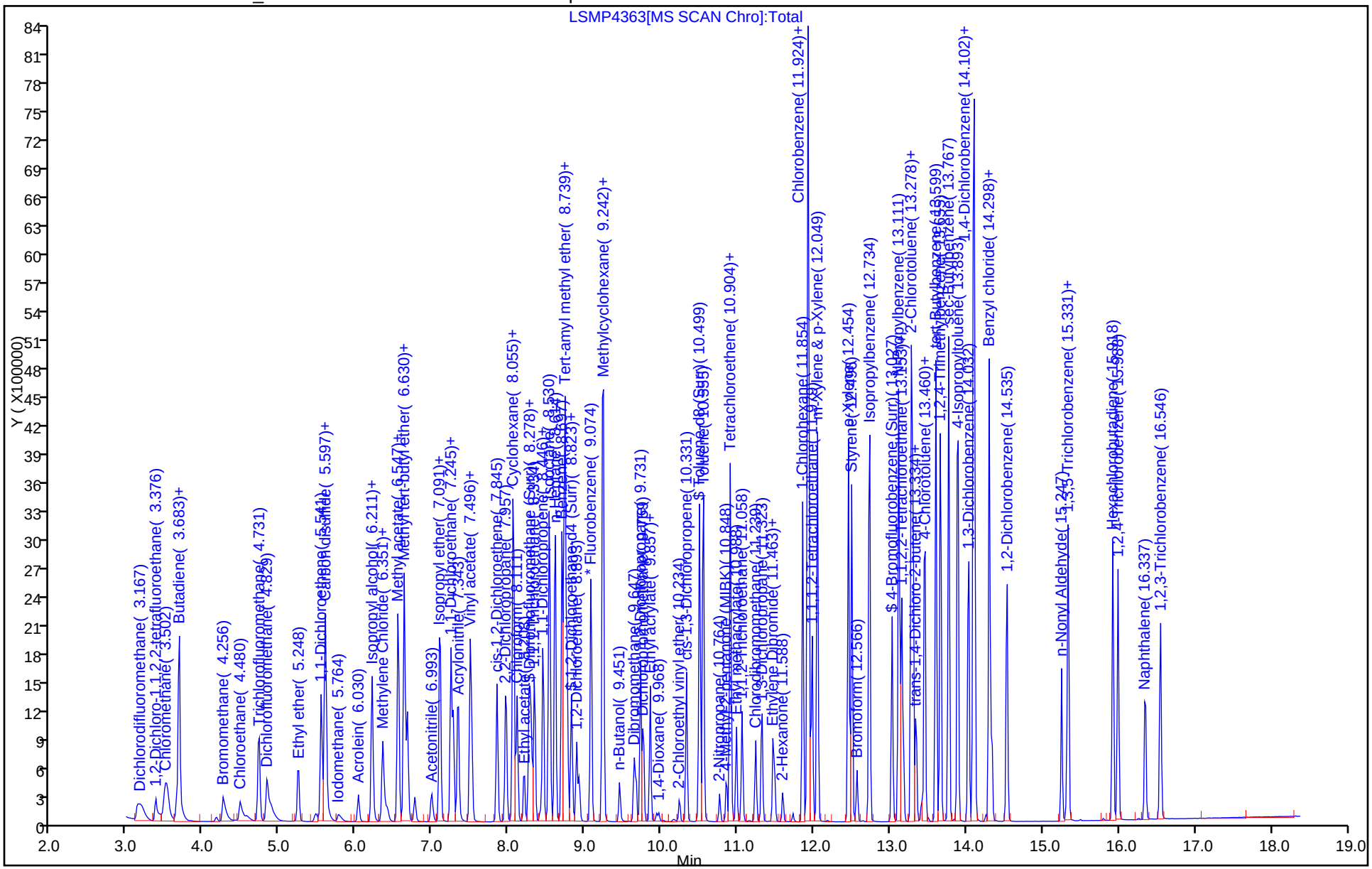
Reagents:

I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00064	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 16-Aug-2016 23:05:32 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4363.D				
Injection Date:	10-Aug-2016 04:18:30	Instrument ID:	VMSL	Operator ID:	JDH
Lims ID:	160-18521-D-2-A MS			Worklist Smp#:	26
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	25
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4363.D
Lims ID: 160-18521-D-2-A MS
Client ID:
Sample Type: MS
Inject. Date: 10-Aug-2016 04:18:30 ALS Bottle#: 25 Worklist Smp#: 26
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-026
Misc. Info.: 160-18521-D-2-A MS
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:05:31 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:05:31

Compound	Amount Added	Amount Recovered	% Rec.
$ 41 Dibromofluoromethane (Surr)	50.0	51.1	102.23
$ 47 1,2-Dichloroethane-d4 (Surr)	50.0	53.2	106.44
$ 62 Toluene-d8 (Surr)	50.0	48.3	96.61
$ 86 4-Bromofluorobenzene (Surr)	50.0	47.9	95.72

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID: YMTFA75SE001 MSD
Lab Sample ID: 160-18521-2 MSD
Matrix: Solid (TCLP)
Lab File ID: LSMP4364.D
Analysis Method: 8260C
Date Collected: 08/05/2016 09:25
Sample wt/vol: 0.5(mL)
Date Analyzed: 08/10/2016 04:43
Soil Aliquot Vol:
Dilution Factor: 1
Soil Extract Vol.:
GC Column: RTXVMS30 ID: 0.25(mm)
% Moisture:
Level: (low/med) Low
Analysis Batch No.: 264101
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	0.480		0.050	0.0037
107-06-2	1,2-Dichloroethane	0.498		0.050	0.0037
78-93-3	2-Butanone (MEK)	0.485		0.050	0.0039
71-43-2	Benzene	0.478		0.050	0.0025
56-23-5	Carbon tetrachloride	0.497		0.050	0.0036
108-90-7	Chlorobenzene	0.487		0.050	0.0038
67-66-3	Chloroform	0.484		0.050	0.00092
127-18-4	Tetrachloroethene	0.492		0.050	0.0028
79-01-6	Trichloroethene	0.486		0.050	0.0029
75-01-4	Vinyl chloride	0.545		0.10	0.0043

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	94		84-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	103		83-117
2037-26-5	Toluene-d8 (Surr)	97		85-115
1868-53-7	Dibromofluoromethane (Surr)	99		85-115

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4364.D
Lims ID: 160-18521-D-2-A MSD
Client ID:
Sample Type: MSD
Inject. Date: 10-Aug-2016 04:43:30 ALS Bottle#: 26 Worklist Smp#: 27
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-027
Misc. Info.: 160-18521-D-2-A MSD
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:06:25 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:06:25

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.139	3.125	0.014	99	721162	50.0	51.3	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	307624	50.0	46.6	
3 Chloromethane	50	3.488	3.488	0.000	99	1015994	50.0	54.2	
4 Vinyl chloride	62	3.656	3.641	0.015	98	834943	50.0	54.5	
122 Butadiene	39	3.683	3.683	0.000	91	873740	50.0	57.1	
5 Bromomethane	94	4.256	4.256	0.000	91	336152	50.0	53.6	
6 Chloroethane	64	4.480	4.480	0.001	99	432933	50.0	53.7	M
7 Trichlorofluoromethane	101	4.731	4.731	0.000	99	910133	50.0	54.4	
123 Dichlorofluoromethane	67	4.829	4.829	0.000	100	997163	50.0	51.4	
8 Ethyl ether	74	5.248	5.248	0.000	97	244180	50.0	54.0	
11 Ethanol	45	5.583	5.471	0.112	99	12166	2000.0	995.1	
9 1,1-Dichloroethene	96	5.541	5.541	0.000	96	541409	50.0	48.0	
10 Carbon disulfide	76	5.597	5.597	0.000	100	1893657	50.0	48.3	
12 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	91	502254	50.0	48.8	
13 Iodomethane	142	5.764	5.764	0.000	98	335874	50.0	43.0	
S 26 1,2-Dichloroethene, Total	96				0			95.6	
14 Acrolein	56	6.030	6.030	0.000	100	250552	250.0	266.7	
15 3-Chloro-1-propene	39	6.211	6.211	0.000	91	736510	50.0	54.2	
16 Isopropyl alcohol	45	6.225	6.225	0.000	97	191386	500.0	506.8	
17 Methylene Chloride	84	6.351	6.351	0.000	98	493895	50.0	47.9	
18 Acetone	43	6.421	6.407	0.014	99	96358	50.0	58.4	
19 trans-1,2-Dichloroethene	96	6.547	6.546	0.001	96	572836	50.0	47.3	
20 Methyl acetate	74	6.560	6.560	0.000	99	204470	250.0	244.8	
21 Hexane	86	6.630	6.630	0.000	94	199790	50.0	47.2	
22 Methyl tert-butyl ether	73	6.672	6.672	0.000	90	1004737	50.0	46.9	
24 Acetonitrile	41	6.993	6.993	0.000	99	396225	500.0	559.8	
25 Isopropyl ether	45	7.091	7.091	0.000	96	1868938	50.0	50.5	
23 2-Methyl-2-propanol	59	7.091	7.091	0.000	34	194006	500.0	479.8	
27 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	93	1099739	50.0	49.7	
28 1,1-Dichloroethane	63	7.273	7.273	0.000	95	1060500	50.0	48.1	
29 Acrylonitrile	53	7.343	7.329	0.014	98	1133669	500.0	510.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
30 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	1442133	50.0	48.1	
31 Vinyl acetate	43	7.524	7.510	0.014	97	1000639	50.0	59.4	
32 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	584601	50.0	48.3	
33 2,2-Dichloropropane	77	7.957	7.957	0.000	93	846893	50.0	45.6	
35 Chlorobromomethane	128	8.055	8.055	0.000	92	214399	50.0	48.2	
34 Cyclohexane	84	8.069	8.055	0.014	94	1014787	50.0	48.1	
36 Chloroform	83	8.111	8.111	0.000	94	901844	50.0	48.4	
39 Ethyl acetate	45	8.209	8.194	0.014	99	90338	100.0	103.1	
37 Carbon tetrachloride	117	8.264	8.264	0.000	98	820841	50.0	49.7	
38 Tetrahydrofuran	71	8.292	8.292	0.000	90	55450	100.0	90.3	
$ 41 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	422966	50.0	49.5	
40 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	933014	50.0	50.1	
43 2-Butanone (MEK)	43	8.418	8.418	0.000	99	136458	50.0	48.5	
42 1,1-Dichloropropene	75	8.446	8.446	0.000	94	811678	50.0	48.1	
125 Isooctane	57	8.530	8.530	0.000	99	3036211	50.0	49.2	
117 n-Heptane	43	8.614	8.613	0.001	96	1403678	50.0	52.4	
44 Benzene	78	8.697	8.697	0.000	98	2203808	50.0	47.8	
45 Propionitrile	54	8.725	8.725	0.000	89	428817	500.0	515.6	
46 Methacrylonitrile	41	8.739	8.739	0.000	95	2264153	500.0	535.0	
48 Tert-amyl methyl ether	73	8.767	8.767	0.000	95	1097237	50.0	47.7	
50 Isobutyl alcohol	42	8.823	8.823	0.000	93	219750	1250.0	1291.1	
$ 47 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	92	453219	50.0	51.6	
49 1,2-Dichloroethane	62	8.893	8.893	0.000	96	584648	50.0	49.8	
* 51 Fluorobenzene	96	9.074	9.074	0.000	99	2129718	50.0	50.0	
118 1,4-Difluorobenzene	114		9.130					ND	
53 Trichloroethene	95	9.228	9.228	0.000	67	592835	50.0	48.6	
52 Methylcyclohexane	55	9.242	9.228	0.014	94	1086395	50.0	50.8	
54 n-Butanol	56	9.452	9.451	0.001	93	202897	1250.0	1209.2	
55 Dibromomethane	93	9.647	9.647	0.000	95	220002	50.0	49.3	
56 1,2-Dichloropropane	63	9.731	9.731	0.000	93	549085	50.0	49.5	
57 Dichlorobromomethane	83	9.759	9.759	0.000	98	612126	50.0	49.4	
124 Ethyl acrylate	55	9.857	9.856	0.001	95	41366	50.0	48.1	
58 Methyl methacrylate	69	9.857	9.856	0.001	96	410064	100.0	94.5	
59 1,4-Dioxane	88	9.940	9.940	0.000	95	55786	1000.0	971.8	
60 2-Chloroethyl vinyl ether	63	10.234	10.233	0.001	93	93208	50.0	33.6	
128 2-Pentanone	43		10.253					ND	
61 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	93	748564	50.0	48.2	
$ 62 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	2000122	50.0	48.6	
63 Toluene	92	10.555	10.555	0.000	98	1481976	50.0	47.6	
64 2-Nitropropane	43	10.764	10.764	0.000	98	175942	100.0	97.5	
66 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	98	301657	50.0	48.8	
67 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	90	611428	50.0	48.0	
65 Tetrachloroethene	164	10.904	10.904	0.000	96	543261	50.0	49.2	
69 Ethyl methacrylate	69	10.988	10.988	0.000	93	415494	50.0	46.9	
68 1,1,2-Trichloroethane	83	11.058	11.058	0.000	92	272536	50.0	48.0	
70 Chlorodibromomethane	129	11.239	11.239	0.000	90	408310	50.0	48.0	
71 1,3-Dichloropropane	76	11.323	11.323	0.000	97	603859	50.0	47.7	
119 n-Butyl acetate	43	11.463	11.463	0.000	96	540171	50.0	48.2	
72 Ethylene Dibromide	107	11.491	11.490	0.001	99	308826	50.0	48.4	
74 2-Hexanone	43	11.588	11.588	0.000	99	203220	50.0	47.2	
S 73 1,3-Dichloropropene, Total	75				0			96.3	
75 1-Chlorohexane	91	11.854	11.854	0.000	93	898614	50.0	51.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
78 Ethylbenzene	91	11.924	11.923	0.001	98	2780055	50.0	49.4	
* 76 Chlorobenzene-d5	117	11.924	11.923	0.001	91	1490489	50.0	50.0	
77 Chlorobenzene	112	11.937	11.937	0.000	94	1515319	50.0	48.7	
79 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	95	520351	50.0	49.0	
80 m-Xylene & p-Xylene	106	12.049	12.049	0.000	98	1109908	50.0	50.7	
82 o-Xylene	106	12.454	12.454	0.000	97	1014790	50.0	48.8	
83 Styrene	104	12.496	12.496	0.000	95	1585194	50.0	48.8	
84 Bromoform	173	12.566	12.566	0.000	97	235208	50.0	51.2	
85 Isopropylbenzene	105	12.734	12.733	0.001	96	2878958	50.0	51.1	
$ 86 4-Bromofluorobenzene (Surr	95	13.027	13.027	0.000	92	687805	50.0	47.2	
88 N-Propylbenzene	91	13.111	13.111	0.000	98	3390496	50.0	52.3	
87 Bromobenzene	156	13.153	13.152	0.001	88	634790	50.0	48.5	
89 1,1,2,2-Tetrachloroethane	83	13.167	13.166	0.001	96	361600	50.0	48.9	
91 1,3,5-Trimethylbenzene	105	13.278	13.278	0.000	96	2289478	50.0	50.3	
90 2-Chlorotoluene	91	13.292	13.306	-0.014	97	2159673	50.0	50.3	
92 1,2,3-Trichloropropane	110	13.334	13.334	0.000	87	113786	50.0	47.3	
93 trans-1,4-Dichloro-2-buten	53	13.348	13.348	0.000	92	119879	50.0	46.9	
94 Cyclohexanone	55	13.418	13.418	0.000	91	92384	500.0	424.4	
95 4-Chlorotoluene	91	13.446	13.460	-0.014	99	1952338	50.0	49.5	
96 tert-Butylbenzene	119	13.599	13.599	0.000	93	2195190	50.0	51.6	
97 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	2323319	50.0	50.8	
81 Pentachloroethane	167		13.655					ND	
98 sec-Butylbenzene	105	13.767	13.767	0.000	94	3257835	50.0	53.4	
99 4-Isopropyltoluene	119	13.893	13.893	0.000	97	2791920	50.0	52.8	
100 1,3-Dichlorobenzene	146	14.032	14.032	0.000	99	1289349	50.0	49.0	
* 101 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	97	785985	50.0	50.0	
120 1,2,3-Trimethylbenzene	105	14.102	14.102	0.000	96	2175703	50.0	49.6	
102 1,4-Dichlorobenzene	146	14.116	14.116	0.000	97	1257144	50.0	49.0	
103 n-Butylbenzene	134	14.298	14.298	0.000	97	734597	50.0	54.7	
121 Benzyl chloride	126	14.340	14.340	0.000	96	147698	50.0	40.9	
104 1,2-Dichlorobenzene	146	14.535	14.535	0.000	99	1118408	50.0	48.2	
106 n-Nonyl Aldehyde	57	15.247	15.247	0.000	88	253728	50.0	43.6	
105 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	84	74515	50.0	46.0	
107 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	980359	50.0	50.2	
108 Hexachlorobutadiene	225	15.918	15.918	0.000	98	545731	50.0	55.4	
109 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	95	812604	50.0	48.4	
110 Naphthalene	128	16.351	16.351	0.000	97	1215441	50.0	48.2	
S 112 Xylenes, Total	106				0			99.5	
111 1,2,3-Trichlorobenzene	180	16.546	16.546	0.000	96	698034	50.0	47.3	
126 C6-C12	1		0.000					ND	
S 113 Trihalomethanes, Total	1				0			196.9	
127 2-Methylpentane	1		0.000					ND	

QC Flag Legend

Review Flags

M - Manually Integrated

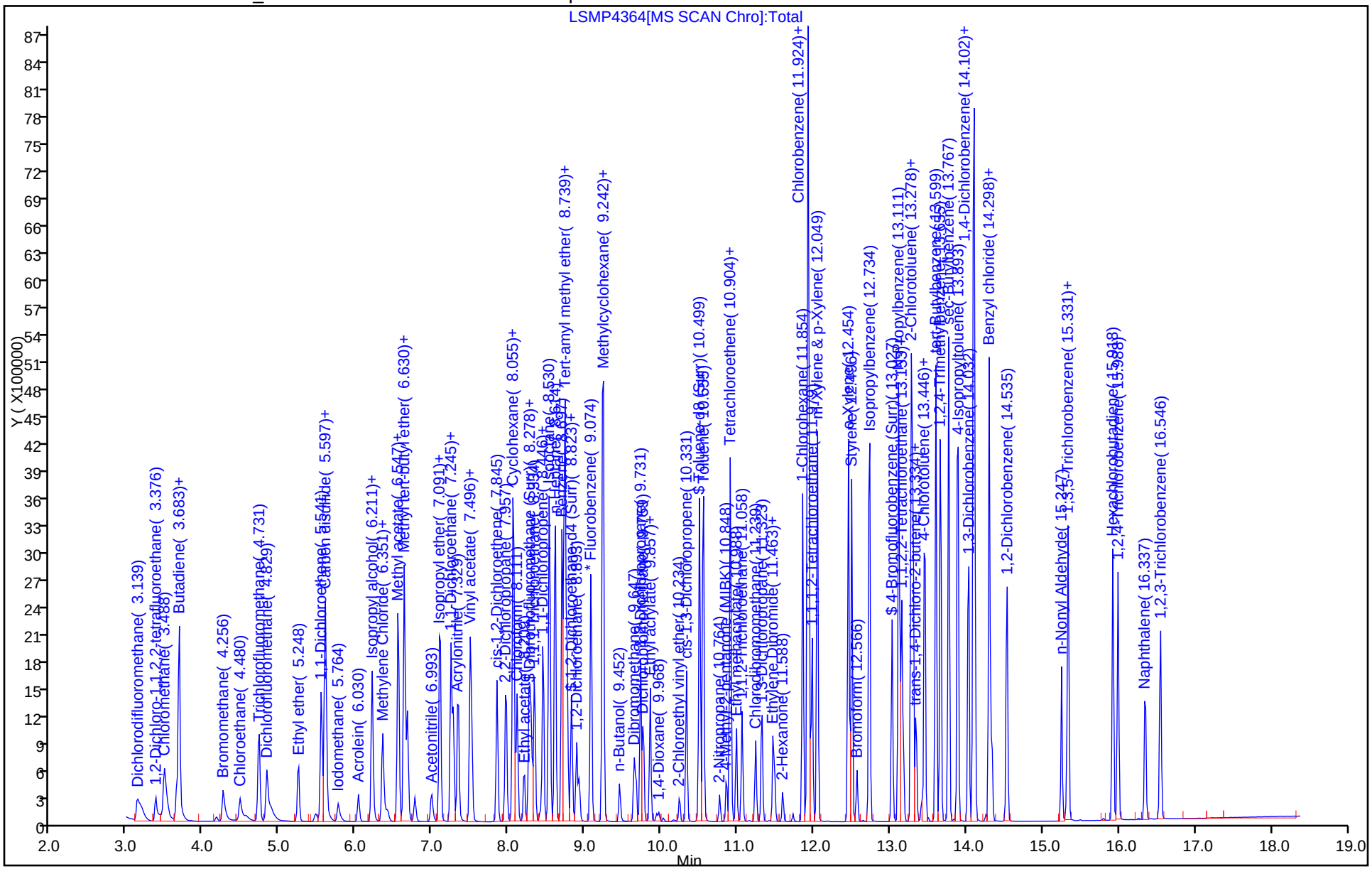
Reagents:

8260 NewWkMix_00178	Amount Added:	10.00	Units: uL	
I.S. Working_00134	Amount Added:	10.00	Units: uL	Run Reagent
8260 Surr 25_00064	Amount Added:	10.00	Units: uL	Run Reagent

Report Date: 16-Aug-2016 23:06:26 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4364.D				
Injection Date:	10-Aug-2016 04:43:30	Instrument ID:	VMSL	Operator ID:	JDH
Lims ID:	160-18521-D-2-A MSD			Worklist Smp#:	27
Client ID:					
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	26
Method:	5mL-8260_VMSL	Limit Group:	MSV-8260		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\LSMP4364.D
Lims ID: 160-18521-D-2-A MSD
Client ID:
Sample Type: MSD
Inject. Date: 10-Aug-2016 04:43:30 ALS Bottle#: 26 Worklist Smp#: 27
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008158-027
Misc. Info.: 160-18521-D-2-A MSD
Operator ID: JDH Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160809-8158.b\5mL-8260_VMSL.m
Limit Group: MSV-8260
Last Update: 16-Aug-2016 23:06:25 Calib Date: 11-Jul-2016 12:00:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160711-7870.b\LICL3541.D

Column 1 : Det: MS SCAN
Process Host: XAWRK001

First Level Reviewer: hannj Date: 16-Aug-2016 23:06:25

Compound	Amount Added	Amount Recovered	% Rec.
$ 41 Dibromofluoromethane (Surr)	50.0	49.5	99.07
$ 47 1,2-Dichloroethane-d4 (Surr)	50.0	51.6	103.21
$ 62 Toluene-d8 (Surr)	50.0	48.6	97.27
$ 86 4-Bromofluorobenzene (Surr)	50.0	47.2	94.40

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: VMSL Start Date: 07/11/2016 08:18

Analysis Batch Number: 259855 End Date: 07/11/2016 12:50

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 160-259855/1		07/11/2016 08:18	1	LBFB3532.D	RTXVMS30 0.25(mm)
IC 160-259855/3		07/11/2016 09:07	1	LICL3534.D	RTXVMS30 0.25(mm)
IC 160-259855/4		07/11/2016 09:31	1	LICL3535.D	RTXVMS30 0.25(mm)
IC 160-259855/5		07/11/2016 09:56	1	LICL3536.D	RTXVMS30 0.25(mm)
IC 160-259855/6		07/11/2016 10:21	1	LICL3537.D	RTXVMS30 0.25(mm)
IC 160-259855/7		07/11/2016 10:46	1	LICL3538.D	RTXVMS30 0.25(mm)
ICIS 160-259855/8		07/11/2016 11:11	1	LICL3539.D	RTXVMS30 0.25(mm)
IC 160-259855/9		07/11/2016 11:36	1	LICL3540.D	RTXVMS30 0.25(mm)
IC 160-259855/10		07/11/2016 12:00	1	LICL3541.D	RTXVMS30 0.25(mm)
ICV 160-259855/12		07/11/2016 12:50	1	LICV3543.D	RTXVMS30 0.25(mm)

8260C

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: VMSL Start Date: 08/09/2016 17:38

Analysis Batch Number: 264101 End Date: 08/10/2016 04:43

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 160-264101/1		08/09/2016 17:38	1	LBFB4338.D	RTXVMS30 0.25(mm)
CCVIS 160-264101/2		08/09/2016 18:00	1	LCCV4339.D	RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 18:40	1		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 19:05	1		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 19:30	1		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 19:56	1		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 20:21	1		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 20:46	1		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 21:11	1		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 21:36	1		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 22:01	1		RTXVMS30 0.25(mm)
LCS 160-264101/12		08/09/2016 22:27	1	LLCS4349.D	RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 22:52	2000		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 23:17	1		RTXVMS30 0.25(mm)
ZZZZZ		08/09/2016 23:42	1		RTXVMS30 0.25(mm)
LB 160-263916/1-A		08/10/2016 00:32	1	LBLK4354.D	RTXVMS30 0.25(mm)
ZZZZZ		08/10/2016 00:57	1		RTXVMS30 0.25(mm)
ZZZZZ		08/10/2016 01:23	1		RTXVMS30 0.25(mm)
ZZZZZ		08/10/2016 01:48	1		RTXVMS30 0.25(mm)
ZZZZZ		08/10/2016 02:13	1		RTXVMS30 0.25(mm)
ZZZZZ		08/10/2016 02:38	1		RTXVMS30 0.25(mm)
ZZZZZ		08/10/2016 03:03	1		RTXVMS30 0.25(mm)
160-18521-1		08/10/2016 03:28	1	LSMP4361.D	RTXVMS30 0.25(mm)
160-18521-2		08/10/2016 03:53	1	LSMP4362.D	RTXVMS30 0.25(mm)
160-18521-2 MS		08/10/2016 04:18	1	LSMP4363.D	RTXVMS30 0.25(mm)
160-18521-2 MSD		08/10/2016 04:43	1	LSMP4364.D	RTXVMS30 0.25(mm)

8260C

GC/MS VOA BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 263916 Batch Start Date: 08/08/16 11:07 Batch Analyst: Mcnutt, Joe W

Batch Method: 1311 Batch End Date: 08/09/16 07:18

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	VesselNumber	FiltCompDate	ExtractFluid	Pressure_Init
LB 160-263916/1		1311, 8260C			500 mL	44	08/09/16	1	50 psi absolute
160-18521-B-1	YMTFA74SE001	1311, 8260C	P	25.21 g	500 mL	47	08/09/16	1	50 psi absolute
160-18521-D-2	YMTFA75SE001	1311, 8260C	P	25.16 g	500 mL	48	08/09/16	1	50 psi absolute

Lab Sample ID	Client Sample ID	Method Chain	Basis	Pressure_Final	TCLP Fluid #1 00097				
LB 160-263916/1		1311, 8260C		50 psi absolute	500 mL				
160-18521-B-1	YMTFA74SE001	1311, 8260C	P	50 psi absolute	500 mL				
160-18521-D-2	YMTFA75SE001	1311, 8260C	P	48 psi absolute	500 mL				

Batch Notes	
Balance ID	26950069
pH Buffer 1 ID	922485
pH Buffer 2 ID	922483
pH Buffer 3 ID	922484
First End time	08/09/16 6:00
Filter Paper ID	1168557
pH Meter Calibration Slope	100.3
pH Meter ID	A111
Room Temperature Thermometer ID	91037040
First Start time	08/08/16 1200
TCLP Fluid 1 ID	898896
TCLP Fluid pH	4.94 SU
Thermometer ID	0801024473
Tumbler Rotations per Minute	30
Uncorrected Maximum Temperature	24.2 Celsius
Uncorrected Minimum Temperature	21.0 Celsius

Basis	Basis Description
P	TCLP

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Method 8270D

Semivolatile Organic Compounds (GC/MS) by Method 8270D

FORM II
GC/MS SEMI VOA SURROGATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid (TCLP) Level: Low

GC Column (1): RXI5SiiMS ID: 0.25(mm)

Client Sample ID	Lab Sample ID	2FP #	PHL #	NBZ #	FBP #	TBP #	TPHL #
YMTFA74SE001	160-18521-1	67	60	85	85	81	98
YMTFA75SE001	160-18521-2	65	59	81	81	81	100
	LB 160-264502/1-B	84	82	93	92	101 S	112
	LCS 160-264673/2-A	79	78	84	87	92	104
	160-18420-B-1-G MS	67	70	79	80	84	102
	160-18420-B-1-H MSD	64	68	76	80	76	98

	QC LIMITS
2FP = 2-Fluorophenol (Surr)	46-92
PHL = Phenol-d5 (Surr)	37-95
NBZ = Nitrobenzene-d5 (Surr)	51-98
FBP = 2-Fluorobiphenyl (Surr)	45-94
TBP = 2,4,6-Tribromophenol (Surr)	49-100
TPHL = Terphenyl-d14 (Surr)	60-113

Column to be used to flag recovery values

FORM II 8270D

FORM III
GC/MS SEMI VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Water Level: Low Lab File ID: I2064.D

Lab ID: LCS 160-264673/2-A Client ID:

COMPOUND	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC	QC LIMITS REC	#
1,4-Dichlorobenzene	0.500	0.385	77	36-93	
2,4-Dinitrotoluene	0.500	0.415	83	51-90	
Hexachlorobenzene	0.500	0.509	102	52-93	N
Hexachlorobutadiene	0.500	0.388	78	37-92	
Hexachloroethane	0.500	0.379	76	36-95	
2-Methylphenol	0.500	0.401	80	51-100	
3 & 4 Methylphenol	0.500	0.361	72	46-95	
Nitrobenzene	0.500	0.404	81	51-93	
Pentachlorophenol	0.500	0.428	86	41-96	
Pyridine	0.500	0.275	55	10-80	
2,4,5-Trichlorophenol	0.500	0.441	88	49-96	
2,4,6-Trichlorophenol	0.500	0.457	91	48-93	

Column to be used to flag recovery and RPD values

FORM III 8270D

FORM III
GC/MS SEMI VOA MATRIX SPIKE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid (TCLP) Level: Low Lab File ID: I2076.D

Lab ID: 160-18420-B-1-G MS Client ID:

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC	QC LIMITS REC	#
1,4-Dichlorobenzene	0.500	0.0050 U	0.356	71	46-88	
2,4-Dinitrotoluene	0.500	0.0050 U	0.390	78	52-97	
Hexachlorobenzene	0.500	0.0050 U	0.489	98	56-90	N
Hexachlorobutadiene	0.500	0.0050 U	0.348	70	43-92	
Hexachloroethane	0.500	0.0050 U	0.342	68	44-91	
2-Methylphenol	0.500	0.010 U	0.377	75	55-97	
3 & 4 Methylphenol	0.500	0.0050 U	0.337	67	46-94	
Nitrobenzene	0.500	0.0050 U	0.387	77	53-97	
Pentachlorophenol	0.500	0.010 U	0.408	82	39-103	
Pyridine	0.500	0.025 U	0.278	56	10-82	
2,4,5-Trichlorophenol	0.500	0.010 U	0.412	82	52-98	
2,4,6-Trichlorophenol	0.500	0.010 U	0.421	84	52-94	

Column to be used to flag recovery and RPD values

FORM III 8270D

FORM III
GC/MS SEMI VOA MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid (TCLP) Level: Low Lab File ID: I2077.D

Lab ID: 160-18420-B-1-H MSD Client ID:

COMPOUND	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
1,4-Dichlorobenzene	0.500	0.345	69	3	20	46-88	
2,4-Dinitrotoluene	0.500	0.367	73	6	20	52-97	
Hexachlorobenzene	0.500	0.450	90	8	20	56-90	
Hexachlorobutadiene	0.500	0.347	69	0	20	43-92	
Hexachloroethane	0.500	0.335	67	2	20	44-91	
2-Methylphenol	0.500	0.376	75	0	20	55-97	
3 & 4 Methylphenol	0.500	0.337	67	0	20	46-94	
Nitrobenzene	0.500	0.375	75	3	20	53-97	
Pentachlorophenol	0.500	0.353	71	14	20	39-103	
Pyridine	0.500	0.286	57	3	20	10-82	
2,4,5-Trichlorophenol	0.500	0.397	79	4	20	52-98	
2,4,6-Trichlorophenol	0.500	0.413	83	2	20	52-94	

Column to be used to flag recovery and RPD values

FORM III 8270D

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab File ID: I1959.D DFTPP Injection Date: 08/09/2016

Instrument ID: SMSI DFTPP Injection Time: 12:07

Analysis Batch No.: 264049

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 60.0 % of mass 198	35.7	
68	Less than 2.0 % of mass 69	0.0	(0.0) 1
69	Mass 69 relative abundance	37.2	
70	Less than 2.0 % of mass 69	0.0	(0.0) 1
127	40.0 - 60.0 % of mass 198	53.5	
197	Less than 1.0 % of mass 198	0.3	
198	Base Peak, 100 % relative abundance	100.0	
199	5.0- 9.0 % of mass 198	6.9	
275	10.0 - 30.0 % of mass 198	23.6	
365	Greater than 1.0 % of mass 198	3.1	
441	Present but less than mass 443	13.1	(79.8) 3
442	Greater than 40.0 % of mass 198	85.5	
443	17.0 - 23.0 % of mass 442	16.4	(19.2) 2

1-Value is % mass 69 2-Value is % mass 442 3-Value is % mass 443

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	ICIS 160-264049/3	I1960.D	08/09/2016	12:25
	IC 160-264049/4	I1961.D	08/09/2016	12:58
	IC 160-264049/5	I1962.D	08/09/2016	13:31
	IC 160-264049/6	I1963.D	08/09/2016	14:04
	IC 160-264049/7	I1964.D	08/09/2016	14:37
	IC 160-264049/8	I1965.D	08/09/2016	15:10
	IC 160-264049/9	I1966.D	08/09/2016	15:43
	ICV 160-264049/10	I1967.D	08/09/2016	16:16

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab File ID: I2061.D DFTPP Injection Date: 08/15/2016

Instrument ID: SMSI DFTPP Injection Time: 16:12

Analysis Batch No.: 264877

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 60.0 % of mass 198	37.2	
68	Less than 2.0 % of mass 69	0.0	(0.0) 1
69	Mass 69 relative abundance	38.0	
70	Less than 2.0 % of mass 69	0.0	(0.0) 1
127	40.0 - 60.0 % of mass 198	53.7	
197	Less than 1.0 % of mass 198	0.0	
198	Base Peak, 100 % relative abundance	100.0	
199	5.0- 9.0 % of mass 198	6.7	
275	10.0 - 30.0 % of mass 198	24.4	
365	Greater than 1.0 % of mass 198	3.2	
441	Present but less than mass 443	13.1	(77.1) 3
442	Greater than 40.0 % of mass 198	85.1	
443	17.0 - 23.0 % of mass 442	16.9	(19.9) 2

1-Value is % mass 69 2-Value is % mass 442 3-Value is % mass 443

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 160-264877/3	I2062.D	08/15/2016	16:31
	LB 160-264502/1-B	I2063.D	08/15/2016	17:03
	LCS 160-264673/2-A	I2064.D	08/15/2016	17:36
YMTFA74SE001	160-18521-1	I2069.D	08/15/2016	20:22
YMTFA75SE001	160-18521-2	I2070.D	08/15/2016	20:56
	160-18420-B-1-G MS	I2076.D	08/16/2016	00:15
	160-18420-B-1-H MSD	I2077.D	08/16/2016	00:48

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: ICIS 160-264049/3 Date Analyzed: 08/09/2016 12:25

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm)

Lab File ID (Standard): I1960.D Heated Purge: (Y/N) N

Calibration ID: 11303

		DCBd4		NPT		ANT	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		269773	5.58	1123788	7.26	625398	10.15
UPPER LIMIT		539546	6.08	2247576	7.76	1250796	10.65
LOWER LIMIT		134887	5.08	561894	6.76	312699	9.65
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 160-264049/10		201923	5.57	843918	7.24	459978	10.14
CCVIS 160-264877/3		230377	5.54	955619	7.21	511678	10.10

DCBd4 = 1,4-Dichlorobenzene-d4
NPT = Naphthalene-d8
ANT = Acenaphthene-d10

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270D

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: ICIS 160-264049/3 Date Analyzed: 08/09/2016 12:25

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm)

Lab File ID (Standard): I1960.D Heated Purge: (Y/N) N

Calibration ID: 11303

		PHN		CRY		PRY	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		1004919	12.96	986485	18.21	901882	20.88
UPPER LIMIT		2009838	13.46	1972970	18.71	1803764	21.38
LOWER LIMIT		502460	12.46	493243	17.71	450941	20.38
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 160-264049/10		738794	12.95	732915	18.19	689496	20.86
CCVIS 160-264877/3		803900	12.90	794375	18.16	617685	20.81

PHN = Phenanthrene-d10
CRY = Chrysene-d12
PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270D

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: CCVIS 160-264877/3 Date Analyzed: 08/15/2016 16:31

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm)

Lab File ID (Standard): I2062.D Heated Purge: (Y/N) N

Calibration ID: 11303

		DCBd4		NPT		ANT	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		230377	5.54	955619	7.21	511678	10.10
UPPER LIMIT		460754	6.04	1911238	7.71	1023356	10.60
LOWER LIMIT		115189	5.04	477810	6.71	255839	9.60
LAB SAMPLE ID	CLIENT SAMPLE ID						
LB 160-264502/1-B		196956	5.53	801894	7.19	430780	10.08
LCS 160-264673/2-A		226704	5.53	927173	7.20	479293	10.08
160-18521-1	YMTFA74SE001	169804	5.53	691720	7.19	369867	10.08
160-18521-2	YMTFA75SE001	295138	5.54	1209500	7.21	639049	10.10
160-18420-B-1-G MS		279168	5.54	1123309	7.21	574843	10.10
160-18420-B-1-H MSD		182115	5.54	736460	7.21	381314	10.10

DCBd4 = 1,4-Dichlorobenzene-d4
NPT = Naphthalene-d8
ANT = Acenaphthene-d10

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270D

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: CCVIS 160-264877/3 Date Analyzed: 08/15/2016 16:31

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm)

Lab File ID (Standard): I2062.D Heated Purge: (Y/N) N

Calibration ID: 11303

		PHN		CRY		PRY	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		803900	12.90	794375	18.16	617685	20.81
UPPER LIMIT		1607800	13.40	1588750	18.66	1235370	21.31
LOWER LIMIT		401950	12.40	397188	17.66	308843	20.31
LAB SAMPLE ID	CLIENT SAMPLE ID						
LB 160-264502/1-B		706002	12.89	643095	18.13	464191	20.80
LCS 160-264673/2-A		736055	12.89	678760	18.13	493015	20.80
160-18521-1	YMTFA74SE001	603103	12.89	532698	18.13	399692	20.79
160-18521-2	YMTFA75SE001	994012	12.90	805049	18.15	540403	20.81
160-18420-B-1-G MS		860444	12.90	738167	18.15	521909	20.81
160-18420-B-1-H MSD		582185	12.90	492109	18.15	370233	20.81

PHN = Phenanthrene-d10
CRY = Chrysene-d12
PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270D

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: YMTFA74SE001 | Lab Sample ID: 160-18521-1

Matrix: Solid (TCLP) | Lab File ID: I2069.D

Analysis Method: 8270D | Date Collected: 08/05/2016 07:50

Extract. Method: 3510C | Date Extracted: 08/12/2016 15:52

Sample wt/vol: 200(mL) | Date Analyzed: 08/15/2016 20:22

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 264877 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
106-46-7	1,4-Dichlorobenzene	0.0050	U	0.050	0.0050
121-14-2	2,4-Dinitrotoluene	0.0050	U	0.050	0.0050
118-74-1	Hexachlorobenzene	0.0050	U N	0.050	0.0050
87-68-3	Hexachlorobutadiene	0.0050	U	0.050	0.0050
67-72-1	Hexachloroethane	0.0050	U	0.050	0.0050
95-48-7	2-Methylphenol	0.010	U	0.050	0.010
15831-10-4	3 & 4 Methylphenol	0.0050	U	0.10	0.0050
98-95-3	Nitrobenzene	0.0050	U	0.050	0.0050
87-86-5	Pentachlorophenol	0.010	U	0.25	0.010
110-86-1	Pyridine	0.025	U	0.10	0.025
95-95-4	2,4,5-Trichlorophenol	0.010	U	0.050	0.010
88-06-2	2,4,6-Trichlorophenol	0.010	U	0.050	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
118-79-6	2,4,6-Tribromophenol (Surr)	81		49-100
4165-60-0	Nitrobenzene-d5 (Surr)	85		51-98
4165-62-2	Phenol-d5 (Surr)	60		37-95
1718-51-0	Terphenyl-d14 (Surr)	98		60-113
321-60-8	2-Fluorobiphenyl (Surr)	85		45-94
367-12-4	2-Fluorophenol (Surr)	67		46-92

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2069.D
Lims ID: 160-18521-B-1-C
Client ID: YMTFA74SE001
Sample Type: Client
Inject. Date: 15-Aug-2016 20:22:30 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-010
Misc. Info.: 160-18521-B-1-C
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:47:41 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:47:41

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/ml	Flags
4 Pyridine	79		2.526				ND	
$ 10 2-Fluorophenol	112	4.040	4.051	-0.011	96	324705	50.1	
$ 16 Phenol-d5	99	5.115	5.131	-0.016	92	357103	44.9	
* 23 1,4-Dichlorobenzene-d4	152	5.527	5.538	-0.011	98	169804	40.0	
24 1,4-Dichlorobenzene	146		5.559				ND	
27 2-Methylphenol	108		5.869				ND	
31 3 & 4 Methylphenol	107		6.062				ND	
35 Hexachloroethane	117		6.164				ND	
$ 37 Nitrobenzene-d5	82	6.217	6.228	-0.011	88	429380	64.0	
38 Nitrobenzene	77		6.254				ND	
* 49 Naphthalene-d8	136	7.191	7.207	-0.016	100	691720	40.0	
54 Hexachlorobutadiene	225		7.437				ND	
67 2,4,6-Trichlorophenol	196		8.784				ND	
68 2,4,5-Trichlorophenol	196		8.849				ND	
$ 69 2-Fluorobiphenyl (Surr)	172	8.918	8.929	-0.011	98	757266	64.0	
* 82 Acenaphthene-d10	164	10.079	10.095	-0.016	92	369867	40.0	
86 2,4-Dinitrotoluene	165		10.491				ND	
$ 102 2,4,6-Tribromophenol	330	11.555	11.576	-0.021	88	89848	60.6	
108 Hexachlorobenzene	284		12.175				ND	
112 Pentachlorophenol	266		12.577				ND	
* 117 Phenanthrene-d10	188	12.887	12.903	-0.016	99	603103	40.0	
$ 132 Terphenyl-d14	244	16.112	16.117	-0.005	99	786745	73.5	
* 145 Chrysene-d12	240	18.129	18.155	-0.026	99	532698	40.0	
* 154 Perylene-d12	264	20.792	20.813	-0.021	97	399692	40.0	

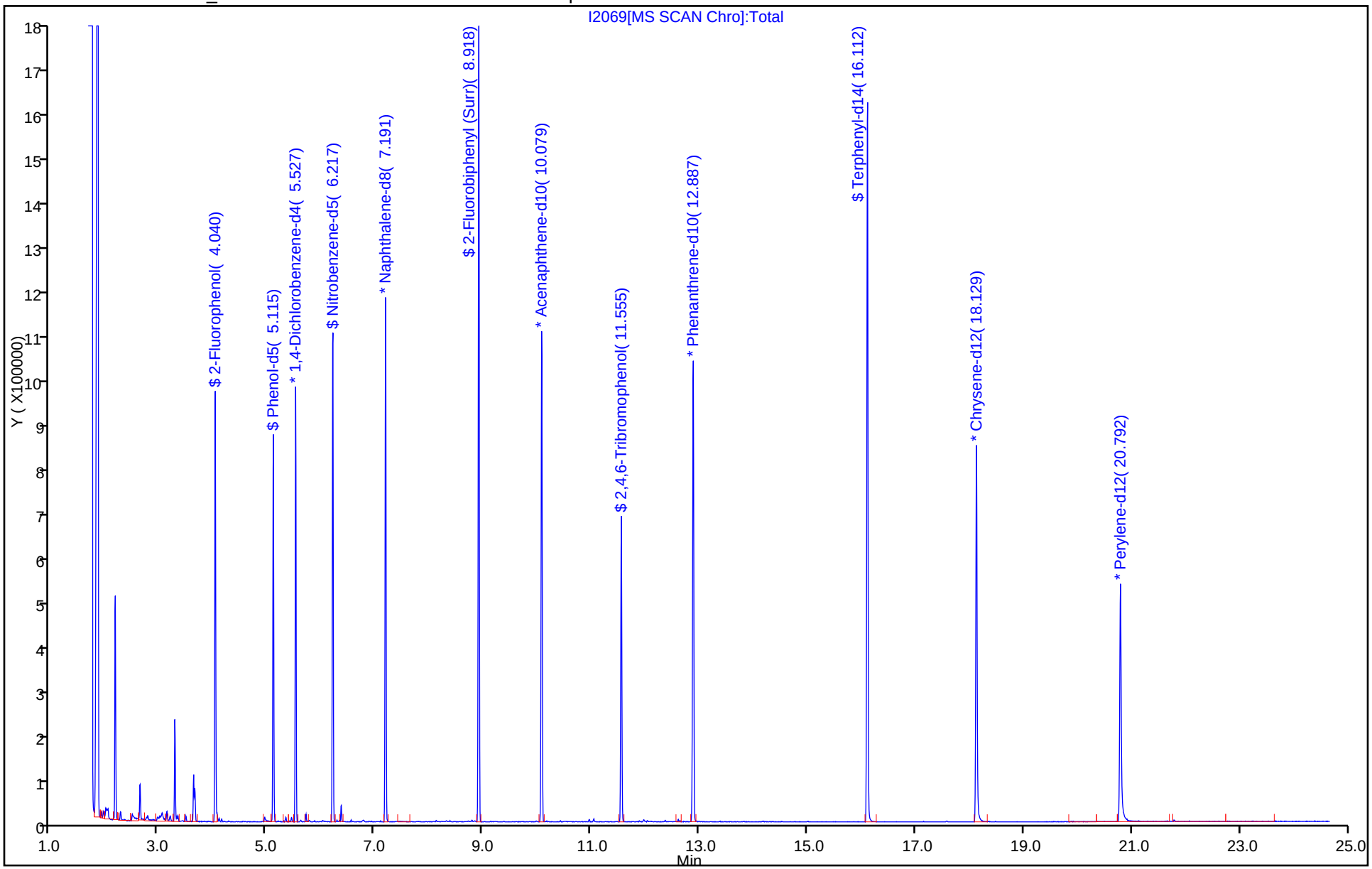
Reagents:

800 ppm I Std_00138 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 16-Aug-2016 09:47:42 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2069.D				
Injection Date:	15-Aug-2016 20:22:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	160-18521-B-1-C	Lab Sample ID:	160-18521-1	Worklist Smp#:	10
Client ID:	YMTFA74SE001				
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	10
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2069.D
Lims ID: 160-18521-B-1-C
Client ID: YMTFA74SE001
Sample Type: Client
Inject. Date: 15-Aug-2016 20:22:30 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-010
Misc. Info.: 160-18521-B-1-C
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:47:41 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:47:41

Compound	Amount Added	Amount Recovered	% Rec.
$ 10 2-Fluorophenol	75.0	50.1	66.77
$ 16 Phenol-d5	75.0	44.9	59.91
$ 37 Nitrobenzene-d5	75.0	64.0	85.28
$ 69 2-Fluorobiphenyl (Surr)	75.0	64.0	85.27
$ 102 2,4,6-Tribromophenol	75.0	60.6	80.85
$ 132 Terphenyl-d14	75.0	73.5	98.03

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: YMTFA75SE001 | Lab Sample ID: 160-18521-2

Matrix: Solid (TCLP) | Lab File ID: I2070.D

Analysis Method: 8270D | Date Collected: 08/05/2016 09:25

Extract. Method: 3510C | Date Extracted: 08/12/2016 15:52

Sample wt/vol: 200(mL) | Date Analyzed: 08/15/2016 20:56

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 264877 | Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
106-46-7	1,4-Dichlorobenzene	0.0050	U	0.050	0.0050
121-14-2	2,4-Dinitrotoluene	0.0050	U	0.050	0.0050
118-74-1	Hexachlorobenzene	0.0050	U N	0.050	0.0050
87-68-3	Hexachlorobutadiene	0.0050	U	0.050	0.0050
67-72-1	Hexachloroethane	0.0050	U	0.050	0.0050
95-48-7	2-Methylphenol	0.010	U	0.050	0.010
15831-10-4	3 & 4 Methylphenol	0.0050	U	0.10	0.0050
98-95-3	Nitrobenzene	0.0050	U	0.050	0.0050
87-86-5	Pentachlorophenol	0.010	U	0.25	0.010
110-86-1	Pyridine	0.025	U	0.10	0.025
95-95-4	2,4,5-Trichlorophenol	0.010	U	0.050	0.010
88-06-2	2,4,6-Trichlorophenol	0.010	U	0.050	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
118-79-6	2,4,6-Tribromophenol (Surr)	81		49-100
4165-60-0	Nitrobenzene-d5 (Surr)	81		51-98
4165-62-2	Phenol-d5 (Surr)	59		37-95
1718-51-0	Terphenyl-d14 (Surr)	100		60-113
321-60-8	2-Fluorobiphenyl (Surr)	81		45-94
367-12-4	2-Fluorophenol (Surr)	65		46-92

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2070.D
Lims ID: 160-18521-D-2-C
Client ID: YMTFA75SE001
Sample Type: Client
Inject. Date: 15-Aug-2016 20:56:30 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-011
Misc. Info.: 160-18521-D-2-C
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:48:15 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:48:15

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/ml	Flags
4 Pyridine	79		2.526				ND	
$ 10 2-Fluorophenol	112	4.056	4.051	0.005	96	547194	48.6	
$ 16 Phenol-d5	99	5.126	5.131	-0.005	92	606836	43.9	
* 23 1,4-Dichlorobenzene-d4	152	5.538	5.538	0.000	98	295138	40.0	
24 1,4-Dichlorobenzene	146		5.559				ND	
27 2-Methylphenol	108		5.869				ND	
31 3 & 4 Methylphenol	107		6.062				ND	
35 Hexachloroethane	117		6.164				ND	
$ 37 Nitrobenzene-d5	82	6.228	6.228	0.000	87	717279	61.1	
38 Nitrobenzene	77		6.254				ND	
* 49 Naphthalene-d8	136	7.207	7.207	0.000	100	1209500	40.0	
54 Hexachlorobutadiene	225		7.437				ND	
67 2,4,6-Trichlorophenol	196		8.784				ND	
68 2,4,5-Trichlorophenol	196		8.849				ND	
$ 69 2-Fluorobiphenyl (Surr)	172	8.929	8.929	0.000	98	1237420	60.5	
* 82 Acenaphthene-d10	164	10.095	10.095	0.000	93	639049	40.0	
86 2,4-Dinitrotoluene	165		10.491				ND	
$ 102 2,4,6-Tribromophenol	330	11.571	11.576	-0.005	91	155844	60.9	
108 Hexachlorobenzene	284		12.175				ND	
112 Pentachlorophenol	266		12.577				ND	
* 117 Phenanthrene-d10	188	12.903	12.903	0.000	99	994012	40.0	
$ 132 Terphenyl-d14	244	16.128	16.117	0.011	99	1214089	75.1	
* 145 Chrysene-d12	240	18.145	18.155	-0.010	99	805049	40.0	
* 154 Perylene-d12	264	20.814	20.813	0.001	97	540403	40.0	

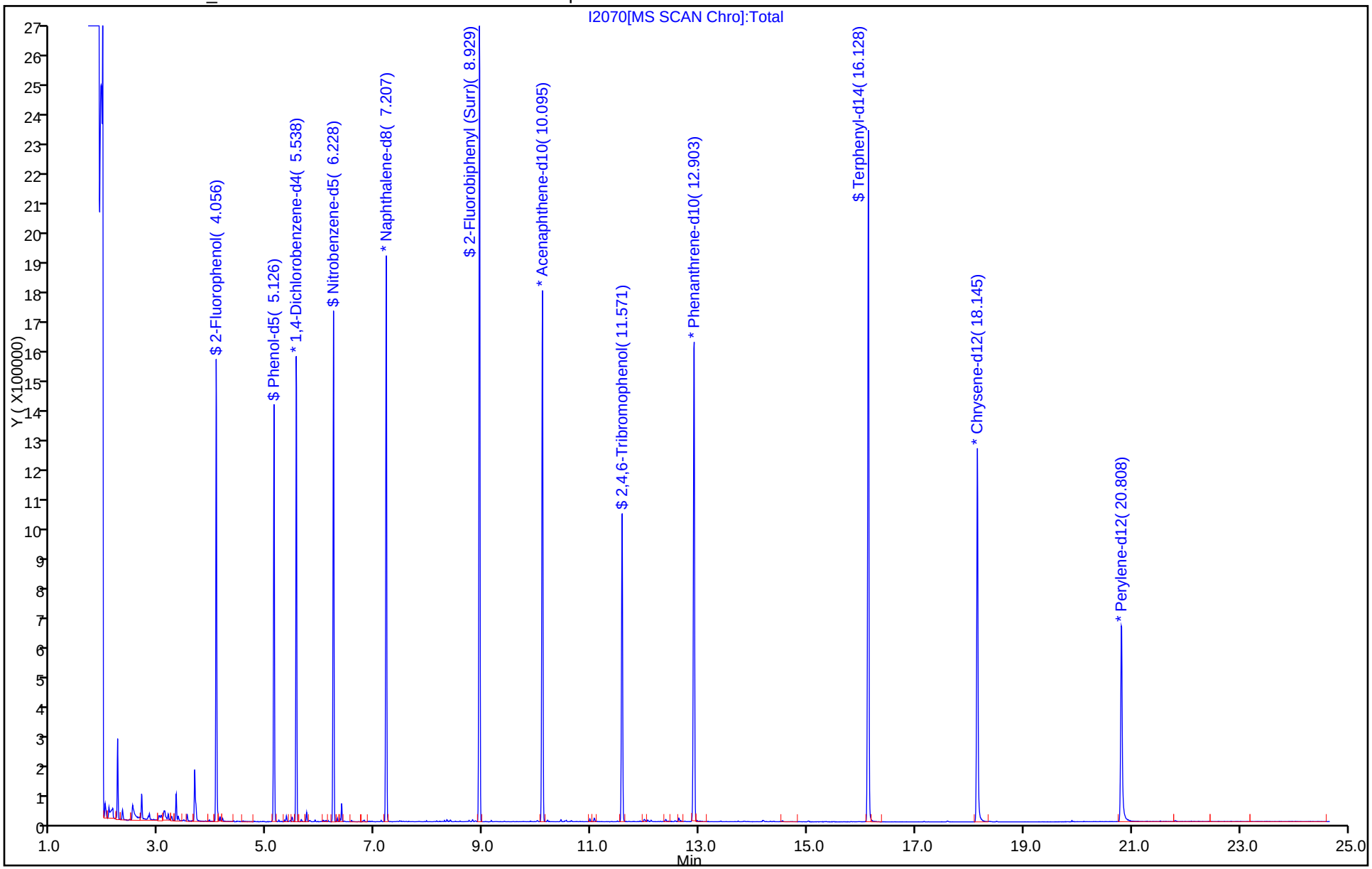
Reagents:

800 ppm I Std_00138 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 16-Aug-2016 09:48:16 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2070.D				
Injection Date:	15-Aug-2016 20:56:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	160-18521-D-2-C	Lab Sample ID:	160-18521-2	Worklist Smp#:	11
Client ID:	YMTFA75SE001				
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2070.D
Lims ID: 160-18521-D-2-C
Client ID: YMTFA75SE001
Sample Type: Client
Inject. Date: 15-Aug-2016 20:56:30 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-011
Misc. Info.: 160-18521-D-2-C
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:48:15 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:48:15

Compound	Amount Added	Amount Recovered	% Rec.
$ 10 2-Fluorophenol	75.0	48.6	64.74
$ 16 Phenol-d5	75.0	43.9	58.57
$ 37 Nitrobenzene-d5	75.0	61.1	81.48
$ 69 2-Fluorobiphenyl (Surr)	75.0	60.5	80.64
$ 102 2,4,6-Tribromophenol	75.0	60.9	81.17
$ 132 Terphenyl-d14	75.0	75.1	100.10

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-264049/9	I1966.D
Level 2	IC 160-264049/8	I1965.D
Level 3	IC 160-264049/7	I1964.D
Level 4	ICIS 160-264049/3	I1960.D
Level 5	IC 160-264049/6	I1963.D
Level 6	IC 160-264049/5	I1962.D
Level 7	IC 160-264049/4	I1961.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
1,4-Dioxane	0.7032 0.6611	0.6779 0.6392	0.6769	0.6816	0.6608	Ave		0.6715			0.0100	3.0		20.0			
N-Nitrosodimethylamine	1.0313 1.0072	1.0169 0.9831	1.0416	1.0227	1.0010	Ave		1.0148			0.0100	1.9		20.0			
Pyridine	1.8209 1.7731	1.7889 1.7276	1.8068	1.8170	1.7797	Ave		1.7877			0.0100	1.8		20.0			
Dimethylformamide	1.0065 0.9416	0.9777 0.9376	0.9441	0.9686	0.9436	Ave		0.9600			0.0100	2.7		20.0			
Cyclohexanol	1.3712 1.2952	1.3723 1.2647	1.3710	1.3514	1.2985	Ave		1.3320			0.0100	3.4		20.0			
Phenol	2.2383 1.9555	2.1944 1.8301	2.1523	2.1015	2.0212	Ave		2.0705			0.8000	7.0		20.0			
Aniline	2.5665 2.2690	2.5696 2.1279	2.4979	2.4323	2.3492	Ave		2.4018			0.0100	6.8		20.0			
Bis(2-chloroethyl)ether	1.6156 1.5026	1.5986 1.4612	1.5755	1.5414	1.5107	Ave		1.5437			0.7000	3.6		20.0			
2-Chlorophenol	1.6454 1.5265	1.6104 1.4978	1.6118	1.5818	1.5405	Ave		1.5735			0.8000	3.4		20.0			
1,3-Dichlorobenzene	1.7464 1.5420	1.7126 1.4965	1.6992	1.6208	1.5537	Ave		1.6245			0.0100	6.0		20.0			
1,4-Dichlorobenzene	1.7363 1.5484	1.7185 1.5041	1.6839	1.6229	1.5514	Ave		1.6237			0.0100	5.6		20.0			
Benzyl alcohol	1.0977 1.0890	1.0819 1.0570	1.1103	1.1096	1.0945	Ave		1.0914			0.0100	1.7		20.0			
1,2-Dichlorobenzene	1.6526 1.4595	1.6317 1.4101	1.6156	1.5470	1.4834	Ave		1.5428			0.0100	6.1		20.0			
2-Methylphenol	1.5285 1.4111	1.5024 1.3519	1.4868	1.4679	1.4266	Ave		1.4536			0.6000	4.2		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
bis (2-chloroisopropyl) ether	2.0135 1.7409	1.9794 1.6325	1.9590	1.8983	1.7982	Ave		1.8602			0.0100	7.6		20.0			
Acetophenone	0.5435 0.4697	0.5274 0.4613	0.5161	0.5084	0.4796	Ave		0.5009			0.0100	6.2		20.0			
N-Nitrosodi-n-propylamine	1.1801 1.0511	1.1514 1.0117	1.1442	1.1096	1.0620	Ave		1.1015			0.5000	5.6		20.0			
3 & 4 Methylphenol	1.6743 1.5610	1.6991 1.4837	1.6649	1.6399	1.5871	Ave		1.6157			0.6000	4.7		20.0			
Hexachloroethane	0.6577 0.6140	0.6470 0.5991	0.6418	0.6398	0.6180	Ave		0.6311			0.3000	3.3		20.0			
Nitrobenzene	0.4091 0.3727	0.4088 0.3659	0.4079	0.4000	0.3827	Ave		0.3924			0.2000	4.7		20.0			
Isophorone	0.7825 0.7090	0.7662 0.7057	0.7740	0.7541	0.7231	Ave		0.7449			0.4000	4.3		20.0			
2-Nitrophenol	0.1910 0.1973	0.1922 0.1926	0.2044	0.2050	0.2011	Ave		0.1977			0.1000	3.0		20.0			
2,4-Dimethylphenol	0.3898 0.3595	0.3908 0.3549	0.3936	0.3854	0.3663	Ave		0.3772			0.2000	4.3		20.0			
Bis(2-chloroethoxy)methane	0.4638 0.4141	0.4526 0.4078	0.4518	0.4410	0.4225	Ave		0.4362			0.0100	4.9		20.0			
Benzoic acid	+++++ 0.2414	0.1652 0.2383	0.2025	0.2381	0.2331	Ave		0.2198			0.0100	13.8		20.0			
2,4-Dichlorophenol	0.2991 0.2683	0.2965 0.2634	0.2959	0.2923	0.2772	Ave		0.2847			0.0100	5.2		20.0			
1,2,4-Trichlorobenzene	0.3267 0.2874	0.3201 0.2833	0.3152	0.3083	0.2943	Ave		0.3050			0.0100	5.5		20.0			
Naphthalene	1.1662 0.9628	1.1310 0.9327	1.1242	1.0523	0.9947	Ave		1.0520			0.7000	8.7		20.0			
4-Chloroaniline	0.4893 0.4385	0.4838 0.4205	0.4842	0.4715	0.4502	Ave		0.4626			0.0100	5.7		20.0			
2,6-Dichlorophenol	0.2998 0.2577	0.2901 0.2513	0.2889	0.2775	0.2647	Ave		0.2757			0.0100	6.6		20.0			
Hexachlorobutadiene	0.1650 0.1442	0.1586 0.1415	0.1600	0.1525	0.1464	Ave		0.1526			0.0100	5.8		20.0			
4-Chloro-3-methylphenol	0.3394 0.3147	0.3280 0.3093	0.3405	0.3358	0.3244	Ave		0.3274			0.2000	3.7		20.0			
2-Methylnaphthalene	0.7698 0.6555	0.7487 0.6367	0.7426	0.7097	0.6735	Ave		0.7052			0.4000	7.2		20.0			
1-Methylnaphthalene	0.7190 0.6145	0.7028 0.5982	0.7005	0.6677	0.6292	Ave		0.6617			0.0100	7.3		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Hexachlorocyclopentadiene	+++++ 0.2581	0.1834 0.2570	0.2186	0.2492	0.2523	Ave		0.2364			0.0500	12.6		20.0			
1,2,4,5-Tetrachlorobenzene	0.5059 0.4505	0.4956 0.4415	0.4905	0.4732	0.4597	Ave		0.4738			0.0100	5.2		20.0			
2,4,6-Trichlorophenol	0.3588 0.3477	0.3547 0.3463	0.3580	0.3571	0.3487	Ave		0.3531			0.2000	1.5		20.0			
2,4,5-Trichlorophenol	0.3678 0.3561	0.3584 0.3563	0.3701	0.3643	0.3588	Ave		0.3617			0.2000	1.6		20.0			
1,1'-Biphenyl	1.6403 1.3613	1.5984 1.2930	1.5601	1.4929	1.4114	Ave		1.4796			0.0100	8.7		20.0			
2-Chloronaphthalene	1.2233 1.0215	1.1868 0.9932	1.1677	1.1054	1.0553	Ave		1.1076			0.8000	8.0		20.0			
2-Nitroaniline	0.3754 0.3923	0.3782 0.3934	0.4029	0.4061	0.3969	Ave		0.3922			0.0100	3.0		20.0			
Dimethyl phthalate	1.4291 1.2073	1.3821 1.1868	1.3808	1.2961	1.2404	Ave		1.3033			0.0100	7.3		20.0			
1,3-Dinitrobenzene	0.1822 0.2246	0.1936 0.2281	0.2166	0.2297	0.2269	Ave		0.2145			0.0100	8.8		20.0			
2,6-Dinitrotoluene	0.2978 0.2985	0.3006 0.2987	0.3109	0.3077	0.3022	Ave		0.3023			0.2000	1.7		20.0			
Acenaphthylene	1.9427 1.6638	1.8897 1.6564	1.8872	1.7849	1.7069	Ave		1.7902			0.9000	6.6		20.0			
3-Nitroaniline	0.3791 0.3771	0.3785 0.3789	0.3836	0.3893	0.3820	Ave		0.3812			0.0100	1.1		20.0			
Acenaphthene	1.2899 1.1026	1.2577 1.0941	1.2369	1.1736	1.1254	Ave		1.1829			0.0100	6.7		20.0			
2,4-Dinitrophenol	+++++ 0.2115	+++++ 0.2171	0.1722	0.2050	0.2087	Ave		0.2029			0.0100	8.7		20.0			
4-Nitrophenol	0.2077 0.2119	0.2090 0.2065	0.2181	0.2241	0.2180	Ave		0.2136			0.0100	3.1		20.0			
Dibenzofuran	1.7738 1.4361	1.6969 1.4070	1.6633	1.5490	1.4622	Ave		1.5698			0.8000	9.1		20.0			
2,4-Dinitrotoluene	0.4032 0.3866	0.4011 0.3899	0.4127	0.4064	0.3936	Ave		0.3991			0.2000	2.4		20.0			
2,3,4,6-Tetrachlorophenol	0.2827 0.2912	0.2773 0.2937	0.2883	0.2941	0.2890	Ave		0.2880			0.0100	2.1		20.0			
Diethyl phthalate	1.4488 1.2671	1.4115 1.2530	1.3931	1.3477	1.2930	Ave		1.3449			0.0100	5.7		20.0			
Fluorene	1.4356 1.2259	1.4128 1.2061	1.3759	1.3146	1.2531	Ave		1.3177			0.9000	7.0		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
4-Chlorophenyl phenyl ether	0.6336 0.5415	0.6097 0.5371	0.6120	0.5807	0.5496	Ave		0.5806			0.4000	6.7		20.0			
4-Nitroaniline	0.3725 0.3816	0.3774 0.3830	0.3918	0.3967	0.3872	Ave		0.3843			0.0100	2.2		20.0			
4,6-Dinitro-2-methylphenol	0.1122 0.1549	0.1208 0.1552	0.1397	0.1554	0.1544	Ave		0.1418			0.0100	12.9		20.0			
Diphenylamine	0.7265 0.6698	0.7043 0.6657	0.6960	0.6998	0.6750	Ave		0.6910			0.0100	3.2		20.0			
Diphenylamine + N-Nitrosodiphenylamine	0.6212 0.5727	0.6022 0.5691	0.5950	0.5983	0.5771	Ave		0.5908			0.0100	3.2		20.0			
Azobenzene	0.9703 0.8683	0.9359 0.8509	0.9355	0.9291	0.8854	Ave		0.9108			0.0100	4.7		20.0			
4-Bromophenyl phenyl ether	0.2129 0.2057	0.2023 0.2050	0.2043	0.2083	0.2018	Ave		0.2057			0.0100	1.9		20.0			
Hexachlorobenzene	0.2164 0.2090	0.2089 0.2081	0.2091	0.2112	0.2058	Ave		0.2098			0.1000	1.6		20.0			
Pentachlorophenol	0.0988 0.1345	0.1033 0.1353	0.1156	0.1300	0.1302	Ave		0.1211			0.0500	12.6		20.0			
Phenanthrene	1.2487 1.0954	1.2037 1.0767	1.1780	1.1613	1.1068	Ave		1.1529			0.7000	5.4		20.0			
Anthracene	1.2825 1.1483	1.2487 1.1277	1.2425	1.2180	1.1604	Ave		1.2040			0.7000	4.9		20.0			
Carbazole	1.1852 1.0552	1.1536 1.0519	1.1586	1.1189	1.0763	Ave		1.1143			0.0100	4.8		20.0			
Di-n-butyl phthalate	1.4473 1.2976	1.4135 1.2637	1.4370	1.3969	1.3393	Ave		1.3708			0.0100	5.2		20.0			
Fluoranthene	1.2132 1.1353	1.2045 1.1356	1.2119	1.1902	1.1601	Ave		1.1787			0.6000	2.9		20.0			
Benzidine	0.7679 0.9423	0.8331 0.9500	0.8875	0.9265	0.9250	Ave		0.8903			0.0100	7.5		20.0			
Pyrene	1.3083 1.2486	1.2830 1.2533	1.2764	1.2436	1.2214	Ave		1.2621			0.6000	2.3		20.0			
Butyl benzyl phthalate	0.5975 0.6380	0.6141 0.6446	0.6397	0.6433	0.6315	Ave		0.6298			0.0100	2.8		20.0			
Benzo[a]anthracene	1.1359 1.1278	1.1271 1.1308	1.1416	1.1487	1.1299	Ave		1.1345			0.8000	0.7		20.0			
3,3'-Dichlorobenzidine	0.3818 0.4207	0.4043 0.4153	0.4163	0.4204	0.4232	Ave		0.4117			0.0100	3.5		20.0			
Chrysene	1.1210 1.0972	1.1237 1.1139	1.1426	1.1158	1.0985	Ave		1.1161			0.7000	1.4		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Bis(2-ethylhexyl) phthalate	0.8317 0.8442	0.8339 0.8509	0.8810	0.8626	0.8486	Ave		0.8504			0.0100	2.0		20.0			
Di-n-octyl phthalate	1.3324 1.4419	1.3722 1.4435	1.4847	1.4879	1.4583	Ave		1.4316			0.0100	4.1		20.0			
Benzo[b]fluoranthene	0.9930 1.1203	1.0520 1.1398	1.0841	1.1384	1.0728	Ave		1.0858			0.7000	4.9		20.0			
Benzo[k]fluoranthene	1.2898 1.1882	1.2884 1.1541	1.3264	1.2465	1.2198	Ave		1.2447			0.7000	4.9		20.0			
Benzo[a]pyrene	1.0238 1.1131	1.0486 1.0886	1.1207	1.1108	1.1036	Ave		1.0870			0.7000	3.4		20.0			
Indeno[1,2,3-cd]pyrene	0.7563 0.9603	0.8561 0.8992	0.9612	0.9841	0.9381	Ave		0.9079			0.5000	8.8		20.0			
Dibenz(a,h)anthracene	0.8732 0.9683	1.0607 0.9206	1.0694	1.0446	0.9795	Ave		0.9881			0.4000	7.5		20.0			
Benzo[g,h,i]perylene	0.9484 1.0062	1.0927 0.9394	1.1104	1.0874	1.0245	Ave		1.0299			0.5000	6.8		20.0			
2-Fluorophenol (Surr)	1.5540 1.5064	1.5516 1.4758	1.5517	1.5420	1.5101	Ave		1.5274			0.0100	2.0		20.0			
Phenol-d5 (Surr)	1.9476 1.8088	1.9519 1.7194	1.9402	1.9011	1.8361	Ave		1.8721			0.0100	4.7		20.0			
Nitrobenzene-d5 (Surr)	0.4038 0.3753	0.3948 0.3681	0.3996	0.3946	0.3812	Ave		0.3882			0.0100	3.5		20.0			
2-Fluorobiphenyl (Surr)	1.4031 1.2000	1.3639 1.1827	1.3355	1.2637	1.2154	Ave		1.2806			0.0100	6.8		20.0			
2,4,6-Tribromophenol (Surr)	0.1580 0.1620	0.1551 0.1657	0.1599	0.1606	0.1604	Ave		0.1602			0.0100	2.0		20.0			
Terphenyl-d14 (Surr)	0.7944 0.8132	0.7921 0.8210	0.7973	0.8085	0.7983	Ave		0.8035			0.0100	1.3		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-264049/9	I1966.D
Level 2	IC 160-264049/8	I1965.D
Level 3	IC 160-264049/7	I1964.D
Level 4	ICIS 160-264049/3	I1960.D
Level 5	IC 160-264049/6	I1963.D
Level 6	IC 160-264049/5	I1962.D
Level 7	IC 160-264049/4	I1961.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
1,4-Dioxane	DCBd 4	Ave	27510 388368	36689 494803	72441	229848	279008	5.00 120	10.0 160	20.0	50.0	80.0
N-Nitrosodimethylamine	DCBd 4	Ave	40346 591704	55034 761001	111462	344856	422676	5.00 120	10.0 160	20.0	50.0	80.0
Pyridine	DCBd 4	Ave	71236 1041613	96815 1337336	193354	612734	751475	5.00 120	10.0 160	20.0	50.0	80.0
Dimethylformamide	DCBd 4	Ave	39374 553119	52914 725832	101033	326640	398422	5.00 120	10.0 160	20.0	50.0	80.0
Cyclohexanol	DCBd 4	Ave	53644 760840	74270 979028	146715	455708	548283	5.00 120	10.0 160	20.0	50.0	80.0
Phenol	DCBd 4	Ave	87564 1148785	118757 1416741	230321	708652	853439	5.00 120	10.0 160	20.0	50.0	80.0
Aniline	DCBd 4	Ave	100405 1332897	139065 1647252	267308	820200	991965	5.00 120	10.0 160	20.0	50.0	80.0
Bis(2-chloroethyl)ether	DCBd 4	Ave	63203 882720	86513 1131097	168603	519779	637914	5.00 120	10.0 160	20.0	50.0	80.0
2-Chlorophenol	DCBd 4	Ave	64368 896767	87152 1159471	172479	533424	650473	5.00 120	10.0 160	20.0	50.0	80.0
1,3-Dichlorobenzene	DCBd 4	Ave	68320 905851	92684 1158439	181839	546566	656043	5.00 120	10.0 160	20.0	50.0	80.0
1,4-Dichlorobenzene	DCBd 4	Ave	67925 909620	93001 1164353	180200	547285	655094	5.00 120	10.0 160	20.0	50.0	80.0
Benzyl alcohol	DCBd 4	Ave	42942 639727	58549 818205	118817	374176	462141	5.00 120	10.0 160	20.0	50.0	80.0
1,2-Dichlorobenzene	DCBd 4	Ave	64650 857359	88308 1091569	172892	521665	626381	5.00 120	10.0 160	20.0	50.0	80.0
2-Methylphenol	DCBd 4	Ave	59797 828948	81309 1046546	159109	494992	602384	5.00 120	10.0 160	20.0	50.0	80.0
bis (2-chloroisopropyl) ether	DCBd 4	Ave	78771 1022674	107124 1263717	209634	640134	759269	5.00 120	10.0 160	20.0	50.0	80.0

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Acetophenone	NPT	Ave	87121 1183141	118285 1506457	227173	714149	861621	5.00 120	10.0 160	20.0	50.0	80.0
N-Nitrosodi-n-propylamine	DCBd 4	Ave	46166 617477	62311 783207	122443	374192	448431	5.00 120	10.0 160	20.0	50.0	80.0
3 & 4 Methylphenol	DCBd 4	Ave	65501 917002	91956 1148527	178169	553017	670146	5.00 120	10.0 160	20.0	50.0	80.0
Hexachloroethane	DCBd 4	Ave	25729 360683	35013 463735	68686	215752	260970	5.00 120	10.0 160	20.0	50.0	80.0
Nitrobenzene	NPT	Ave	65575 938723	91688 1194980	179557	561853	687582	5.00 120	10.0 160	20.0	50.0	80.0
Isophorone	NPT	Ave	125430 1785800	171859 2304445	340700	1059285	1299087	5.00 120	10.0 160	20.0	50.0	80.0
2-Nitrophenol	NPT	Ave	30623 496987	43119 629067	89959	287961	361371	5.00 120	10.0 160	20.0	50.0	80.0
2,4-Dimethylphenol	NPT	Ave	62491 905477	87649 1158879	173233	541320	658028	5.00 120	10.0 160	20.0	50.0	80.0
Bis(2-chloroethoxy)methane	NPT	Ave	74340 1043190	101504 1331655	198864	619427	759089	5.00 120	10.0 160	20.0	50.0	80.0
Benzoic acid	NPT	Ave	+++++ 608163	37063 778280	89135	334436	418779	+++++ 120	10.0 160	20.0	50.0	80.0
2,4-Dichlorophenol	NPT	Ave	47939 675889	66500 860029	130258	410557	498092	5.00 120	10.0 160	20.0	50.0	80.0
1,2,4-Trichlorobenzene	NPT	Ave	52364 723806	71798 925139	138754	433029	528690	5.00 120	10.0 160	20.0	50.0	80.0
Naphthalene	NPT	Ave	186941 2425158	253670 3045830	494835	1478246	1787019	5.00 120	10.0 160	20.0	50.0	80.0
4-Chloroaniline	NPT	Ave	78434 1104502	108523 1373349	213104	662395	808876	5.00 120	10.0 160	20.0	50.0	80.0
2,6-Dichlorophenol	NPT	Ave	48050 648993	65061 820823	127146	389774	475553	5.00 120	10.0 160	20.0	50.0	80.0
Hexachlorobutadiene	NPT	Ave	26443 363287	35569 462212	70422	214214	263042	5.00 120	10.0 160	20.0	50.0	80.0
4-Chloro-3-methylphenol	NPT	Ave	54399 792574	73574 1010038	149891	471713	582802	5.00 120	10.0 160	20.0	50.0	80.0
2-Methylnaphthalene	NPT	Ave	123397 1651070	167918 2079241	326844	996985	1210026	5.00 120	10.0 160	20.0	50.0	80.0
1-Methylnaphthalene	NPT	Ave	115249 1547731	157637 1953453	308310	937963	1130383	5.00 120	10.0 160	20.0	50.0	80.0
Hexachlorocyclopentadiene	ANT	Ave	+++++ 353796	22818 449333	53524	194808	250416	+++++ 120	10.0 160	20.0	50.0	80.0
1,2,4,5-Tetrachlorobenzene	ANT	Ave	44743 617533	61652 771743	120101	369896	456288	5.00 120	10.0 160	20.0	50.0	80.0

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
2,4,6-Trichlorophenol	ANT	Ave	31732 476652	44131 605336	87673	279159	346165	5.00 120	10.0 160	20.0	50.0	80.0
2,4,5-Trichlorophenol	ANT	Ave	32531 488180	44587 622838	90627	284769	356185	5.00 120	10.0 160	20.0	50.0	80.0
1,1'-Biphenyl	ANT	Ave	145061 1866174	198855 2260274	382025	1167086	1401013	5.00 120	10.0 160	20.0	50.0	80.0
2-Chloronaphthalene	ANT	Ave	108188 1400334	147648 1736169	285950	864151	1047564	5.00 120	10.0 160	20.0	50.0	80.0
2-Nitroaniline	ANT	Ave	33201 537811	47048 687771	98669	317435	393983	5.00 120	10.0 160	20.0	50.0	80.0
Dimethyl phthalate	ANT	Ave	126388 1655097	171946 2074621	338131	1013244	1231321	5.00 120	10.0 160	20.0	50.0	80.0
1,3-Dinitrobenzene	ANT	Ave	16113 307924	24086 398663	53052	179568	225275	5.00 120	10.0 160	20.0	50.0	80.0
2,6-Dinitrotoluene	ANT	Ave	26334 409175	37395 522205	76144	240548	299983	5.00 120	10.0 160	20.0	50.0	80.0
Acenaphthylene	ANT	Ave	171804 2280868	235083 2895558	462121	1395315	1694330	5.00 120	10.0 160	20.0	50.0	80.0
3-Nitroaniline	ANT	Ave	33525 516949	47091 662280	93944	304367	379152	5.00 120	10.0 160	20.0	50.0	80.0
Acenaphthene	ANT	Ave	114078 1511525	156464 1912632	302897	917459	1117123	5.00 120	10.0 160	20.0	50.0	80.0
2,4-Dinitrophenol	ANT	Ave	+++++ 579824	+++++ 759114	84325	320453	414306	+++++ 240	+++++ 320	40.0	100	160
4-Nitrophenol	ANT	Ave	36743 581089	52010 721974	106798	350358	432850	10.0 240	20.0 320	40.0	100	160
Dibenzofuran	ANT	Ave	156864 1968800	211105 2459598	407309	1210908	1451485	5.00 120	10.0 160	20.0	50.0	80.0
2,4-Dinitrotoluene	ANT	Ave	35661 530006	49898 681637	101052	317672	390683	5.00 120	10.0 160	20.0	50.0	80.0
2,3,4,6-Tetrachlorophenol	ANT	Ave	24998 399262	34497 513352	70593	229939	286871	5.00 120	10.0 160	20.0	50.0	80.0
Diethyl phthalate	ANT	Ave	128123 1737114	175599 2190325	341147	1053523	1283456	5.00 120	10.0 160	20.0	50.0	80.0
Fluorene	ANT	Ave	126958 1680579	175763 2108454	336918	1027654	1243838	5.00 120	10.0 160	20.0	50.0	80.0
4-Chlorophenyl phenyl ether	ANT	Ave	56032 742333	75856 938933	149858	453999	545518	5.00 120	10.0 160	20.0	50.0	80.0
4-Nitroaniline	ANT	Ave	32943 523128	46949 669509	95940	310092	384397	5.00 120	10.0 160	20.0	50.0	80.0
4,6-Dinitro-2-methylphenol	PHN	Ave	32919 671961	50014 866111	113317	390487	492044	10.0 240	20.0 320	40.0	100	160

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Diphenylamine	PHN	Ave	91097 1242560	124677 1588593	241273	751585	919526	4.28 103	8.55 137	17.1	42.8	68.4
Diphenylamine + N-Nitrosodiphenylamine	PHN	Ave	91097 1242560	124677 1588593	241273	751585	919526	5.00 120	10.0 160	20.0	50.0	80.0
Azobenzene	PHN	Ave	142299 1883961	193766 2375052	379307	1167129	1410836	5.00 120	10.0 160	20.0	50.0	80.0
4-Bromophenyl phenyl ether	PHN	Ave	31216 446336	41887 572081	82820	261640	321594	5.00 120	10.0 160	20.0	50.0	80.0
Hexachlorobenzene	PHN	Ave	31729 453362	43249 580947	84777	265335	327855	5.00 120	10.0 160	20.0	50.0	80.0
Pentachlorophenol	PHN	Ave	28981 583638	42777 755221	93752	326597	414994	10.0 240	20.0 320	40.0	100	160
Phenanthrene	PHN	Ave	183119 2376651	249214 3005273	477640	1458798	1763545	5.00 120	10.0 160	20.0	50.0	80.0
Anthracene	PHN	Ave	188073 2491296	258540 3147524	503807	1529927	1848914	5.00 120	10.0 160	20.0	50.0	80.0
Carbazole	PHN	Ave	173808 2289459	238848 2935996	469792	1405531	1714915	5.00 120	10.0 160	20.0	50.0	80.0
Di-n-butyl phthalate	PHN	Ave	212245 2815293	292656 3527318	582652	1754748	2134028	5.00 120	10.0 160	20.0	50.0	80.0
Fluoranthene	PHN	Ave	177913 2463156	249377 3169577	491390	1495124	1848427	5.00 120	10.0 160	20.0	50.0	80.0
Benzidine	CRY	Ave	108729 1886163	167476 2430614	352396	1142413	1421270	5.00 120	10.0 160	20.0	50.0	80.0
Pyrene	CRY	Ave	185251 2499461	257922 3206698	506794	1533540	1876583	5.00 120	10.0 160	20.0	50.0	80.0
Butyl benzyl phthalate	CRY	Ave	84603 1277050	123448 1649402	254001	793250	970290	5.00 120	10.0 160	20.0	50.0	80.0
Benzo[a]anthracene	CRY	Ave	160843 2257537	226576 2893301	453276	1416439	1736069	5.00 120	10.0 160	20.0	50.0	80.0
3,3'-Dichlorobenzidine	CRY	Ave	54059 842102	81278 1062707	165279	518454	650206	5.00 120	10.0 160	20.0	50.0	80.0
Chrysene	CRY	Ave	158723 2196395	225894 2850091	453683	1375899	1687804	5.00 120	10.0 160	20.0	50.0	80.0
Bis(2-ethylhexyl) phthalate	CRY	Ave	117771 1689974	167643 2177026	349819	1063738	1303808	5.00 120	10.0 160	20.0	50.0	80.0
Di-n-octyl phthalate	CRY	Ave	188666 2886397	275855 3693342	589528	1834731	2240724	5.00 120	10.0 160	20.0	50.0	80.0
Benzo[b]fluoranthene	PRY	Ave	124979 2084366	193213 2805137	401200	1283366	1558976	5.00 120	10.0 160	20.0	50.0	80.0
Benzo[k]fluoranthene	PRY	Ave	162342 2210715	236640 2840282	490887	1405270	1772513	5.00 120	10.0 160	20.0	50.0	80.0

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264049

SDG No.: Headworks/9720-8

Instrument ID: SMSI GC Column: RXI5SiiMS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2016 12:25 Calibration End Date: 08/09/2016 15:43 Calibration ID: 11303

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Benzo[a]pyrene	PRY	Ave	128860 2070968	192598 2679107	414740	1252233	1603736	5.00 120	10.0 160	20.0	50.0	80.0
Indeno[1,2,3-cd]pyrene	PRY	Ave	95188 1786744	157238 2213050	355721	1109462	1363276	5.00 120	10.0 160	20.0	50.0	80.0
Dibenz(a,h)anthracene	PRY	Ave	109909 1801536	194817 2265837	395777	1177671	1423323	5.00 120	10.0 160	20.0	50.0	80.0
Benzo[g,h,i]perylene	PRY	Ave	119371 1872145	200691 2311937	410923	1225881	1488839	5.00 120	10.0 160	20.0	50.0	80.0
2-Fluorophenol (Surr)	DCBd 4	Ave	60793 884912	83973 1142417	166057	519973	637654	5.00 120	10.0 160	20.0	50.0	80.0
Phenol-d5 (Surr)	DCBd 4	Ave	76194 1062559	105633 1330988	207623	641074	775305	5.00 120	10.0 160	20.0	50.0	80.0
Nitrobenzene-d5 (Surr)	NPT	Ave	64723 945240	88556 1202149	175882	554264	684837	5.00 120	10.0 160	20.0	50.0	80.0
2-Fluorobiphenyl (Surr)	ANT	Ave	124084 1645084	169674 2067524	327026	987871	1206484	5.00 120	10.0 160	20.0	50.0	80.0
2,4,6-Tribromophenol (Surr)	ANT	Ave	13976 222023	19294 289669	39145	125553	159222	5.00 120	10.0 160	20.0	50.0	80.0
Terphenyl-d14 (Surr)	CRY	Ave	112486 1627841	159235 2100520	316578	996937	1226498	5.00 120	10.0 160	20.0	50.0	80.0

Curve Type Legend:
Ave = Average ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1960.D
Lims ID: ICIS
Client ID:
Sample Type: ICIS Calib Level: 5
Inject. Date: 09-Aug-2016 12:25:30 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008148-003
Misc. Info.: ICIS
Operator ID: Instrument ID: SMSI
Sublist: chrom-BNA_SMSI*sub11

Method: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 10-Aug-2016 10:37:14 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK026

First Level Reviewer: kuessnerm Date: 09-Aug-2016 13:50:17

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88	2.168	2.168	0.000	95	229848	50.0	50.7	
3 N-Nitrosodimethylamine	74	2.543	2.543	0.000	85	344856	50.0	50.4	
4 Pyridine	79	2.575	2.575	0.000	93	612734	50.0	50.8	
5 Dimethylformamide	44	2.997	2.997	0.000	97	326640	50.0	50.5	
$ 10 2-Fluorophenol	112	4.088	4.088	0.000	96	519973	50.0	50.5	
11 Cyclohexanol	57	4.254	4.254	0.000	97	455708	50.0	50.7	
$ 16 Phenol-d5	99	5.163	5.163	0.000	90	641074	50.0	50.8	
17 Phenol	94	5.179	5.179	0.000	98	708652	50.0	50.7	
18 Aniline	93	5.190	5.190	0.000	97	820200	50.0	50.6	
19 Bis(2-chloroethyl)ether	93	5.265	5.265	0.000	98	519779	50.0	49.9	
21 2-Chlorophenol	128	5.335	5.335	0.000	95	533424	50.0	50.3	
22 1,3-Dichlorobenzene	146	5.516	5.516	0.000	94	546566	50.0	49.9	
* 23 1,4-Dichlorobenzene-d4	152	5.581	5.581	0.000	97	269773	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.602	5.602	0.000	93	547285	50.0	50.0	
25 Benzyl alcohol	108	5.757	5.757	0.000	94	374176	50.0	50.8	
26 1,2-Dichlorobenzene	146	5.789	5.789	0.000	94	521665	50.0	50.1	
27 2-Methylphenol	108	5.907	5.907	0.000	93	494992	50.0	50.5	
28 2,2'-oxybis[1-chloropropan	45	5.928	5.928	0.000	93	640134	50.0	51.0	
29 Acetophenone	105	6.083	6.083	0.000	94	714149	50.0	50.8	
30 N-Nitrosodi-n-propylamine	70	6.094	6.094	0.000	88	374192	50.0	50.4	
31 3 & 4 Methylphenol	107	6.105	6.105	0.000	95	553017	50.0	50.7	
35 Hexachloroethane	117	6.212	6.212	0.000	91	215752	50.0	50.7	
$ 37 Nitrobenzene-d5	82	6.271	6.271	0.000	88	554264	50.0	50.8	
38 Nitrobenzene	77	6.297	6.297	0.000	96	561853	50.0	51.0	
40 Isophorone	82	6.624	6.624	0.000	99	1059285	50.0	50.6	
41 2-Nitrophenol	139	6.720	6.720	0.000	90	287961	50.0	51.9	
42 2,4-Dimethylphenol	107	6.800	6.800	0.000	91	541320	50.0	51.1	
43 Bis(2-chloroethoxy)methane	93	6.918	6.918	0.000	100	619427	50.0	50.5	
45 Benzoic acid	122	7.009	7.009	0.000	89	334436	50.0	54.2	
46 2,4-Dichlorophenol	162	7.067	7.067	0.000	95	410557	50.0	51.3	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
48 1,2,4-Trichlorobenzene	180	7.174	7.174	0.000	94	433029	50.0	50.5	
* 49 Naphthalene-d8	136	7.255	7.255	0.000	100	1123788	40.0	40.0	
50 Naphthalene	128	7.287	7.287	0.000	99	1478246	50.0	50.0	
52 4-Chloroaniline	127	7.378	7.378	0.000	97	662395	50.0	51.0	
53 2,6-Dichlorophenol	162	7.388	7.388	0.000	96	389774	50.0	50.3	
54 Hexachlorobutadiene	225	7.485	7.485	0.000	91	214214	50.0	50.0	
60 4-Chloro-3-methylphenol	107	8.143	8.143	0.000	96	471713	50.0	51.3	
62 2-Methylnaphthalene	142	8.357	8.357	0.000	86	996985	50.0	50.3	
63 1-Methylnaphthalene	142	8.512	8.512	0.000	93	937963	50.0	50.5	
64 Hexachlorocyclopentadiene	237	8.635	8.635	0.000	95	194808	50.0	52.7	
65 1,2,4,5-Tetrachlorobenzene	216	8.640	8.640	0.000	94	369896	50.0	49.9	
67 2,4,6-Trichlorophenol	196	8.838	8.838	0.000	87	279159	50.0	50.6	
68 2,4,5-Trichlorophenol	196	8.897	8.897	0.000	93	284769	50.0	50.4	
$ 69 2-Fluorobiphenyl (Surr)	172	8.982	8.982	0.000	98	987871	50.0	49.3	
70 1,1'-Biphenyl	154	9.148	9.148	0.000	96	1167086	50.0	50.4	
71 2-Chloronaphthalene	162	9.170	9.170	0.000	99	864151	50.0	49.9	
73 2-Nitroaniline	65	9.362	9.362	0.000	98	317435	50.0	51.8	
77 Dimethyl phthalate	163	9.726	9.726	0.000	98	1013244	50.0	49.7	
78 1,3-Dinitrobenzene	168	9.747	9.747	0.000	85	179568	50.0	53.5	
79 2,6-Dinitrotoluene	165	9.806	9.806	0.000	94	240548	50.0	50.9	
80 Acenaphthylene	152	9.892	9.892	0.000	97	1395315	50.0	49.9	
81 3-Nitroaniline	138	10.106	10.106	0.000	94	304367	50.0	51.1	
* 82 Acenaphthene-d10	164	10.154	10.154	0.000	92	625398	40.0	40.0	
83 Acenaphthene	153	10.212	10.212	0.000	95	917459	50.0	49.6	
84 2,4-Dinitrophenol	184	10.303	10.303	0.000	94	320453	100.0	101.0	
85 4-Nitrophenol	109	10.496	10.496	0.000	92	350358	100.0	104.9	
87 Dibenzofuran	168	10.533	10.533	0.000	98	1210908	50.0	49.3	
86 2,4-Dinitrotoluene	165	10.544	10.544	0.000	90	317672	50.0	50.9	
90 2,3,4,6-Tetrachlorophenol	232	10.785	10.785	0.000	89	229939	50.0	51.1	
92 Diethyl phthalate	149	11.047	11.047	0.000	98	1053523	50.0	50.1	
93 Fluorene	166	11.175	11.175	0.000	96	1027654	50.0	49.9	
94 4-Chlorophenyl phenyl ethe	204	11.202	11.202	0.000	85	453999	50.0	50.0	
95 4-Nitroaniline	138	11.261	11.261	0.000	89	310092	50.0	51.6	
98 4,6-Dinitro-2-methylphenol	198	11.325	11.325	0.000	81	390487	100.0	109.6	
99 N-Nitrosodiphenylamine	169	11.437	11.437	0.000	99	751585	50.0	50.6	
171 Diphenylamine	169	11.437	11.437	0.000	95	751585	42.8	43.3	
100 Azobenzene	77	11.507	11.507	0.000	99	1167129	50.0	51.0	
$ 102 2,4,6-Tribromophenol	330	11.630	11.630	0.000	89	125553	50.0	50.1	
106 4-Bromophenyl phenyl ether	248	12.133	12.133	0.000	86	261640	50.0	50.6	
108 Hexachlorobenzene	284	12.234	12.234	0.000	98	265335	50.0	50.3	
112 Pentachlorophenol	266	12.630	12.630	0.000	90	326597	100.0	107.3	
* 117 Phenanthrene-d10	188	12.962	12.962	0.000	99	1004919	40.0	40.0	
118 Phenanthrene	178	13.010	13.010	0.000	98	1458798	50.0	50.4	
119 Anthracene	178	13.106	13.106	0.000	98	1529927	50.0	50.6	
122 Carbazole	167	13.454	13.454	0.000	96	1405531	50.0	50.2	
124 Di-n-butyl phthalate	149	14.251	14.251	0.000	100	1754748	50.0	51.0	
129 Fluoranthene	202	15.353	15.353	0.000	97	1495124	50.0	50.5	
130 Benzidine	184	15.679	15.679	0.000	99	1142413	50.0	52.0	
131 Pyrene	202	15.786	15.786	0.000	96	1533540	50.0	49.3	
$ 132 Terphenyl-d14	244	16.176	16.176	0.000	99	996937	50.0	50.3	
139 Butyl benzyl phthalate	149	17.219	17.219	0.000	98	793250	50.0	51.1	
143 Benzo[a]anthracene	228	18.187	18.187	0.000	99	1416439	50.0	50.6	

Report Date: 10-Aug-2016 10:37:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1960.D

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
144 3,3'-Dichlorobenzidine	252	18.198	18.198	0.000	99	518454	50.0	51.1	
* 145 Chrysene-d12	240	18.214	18.214	0.000	99	986485	40.0	40.0	
146 Chrysene	228	18.268	18.268	0.000	98	1375899	50.0	50.0	
148 Bis(2-ethylhexyl) phthalat	149	18.423	18.423	0.000	89	1063738	50.0	50.7	
149 Di-n-octyl phthalate	149	19.653	19.653	0.000	97	1834731	50.0	52.0	
150 Benzo[b]fluoranthene	252	20.198	20.198	0.000	98	1283366	50.0	52.4	
151 Benzo[k]fluoranthene	252	20.247	20.247	0.000	99	1405270	50.0	50.1	
153 Benzo[a]pyrene	252	20.776	20.776	0.000	96	1252233	50.0	51.1	
* 154 Perylene-d12	264	20.883	20.883	0.000	98	901882	40.0	40.0	
156 Indeno[1,2,3-cd]pyrene	276	23.226	23.226	0.000	99	1109462	50.0	54.2	M
157 Dibenz(a,h)anthracene	278	23.295	23.295	0.000	98	1177671	50.0	52.9	M
158 Benzo[g,h,i]perylene	276	23.921	23.921	0.000	97	1225881	50.0	52.8	

QC Flag Legend

Review Flags

M - Manually Integrated

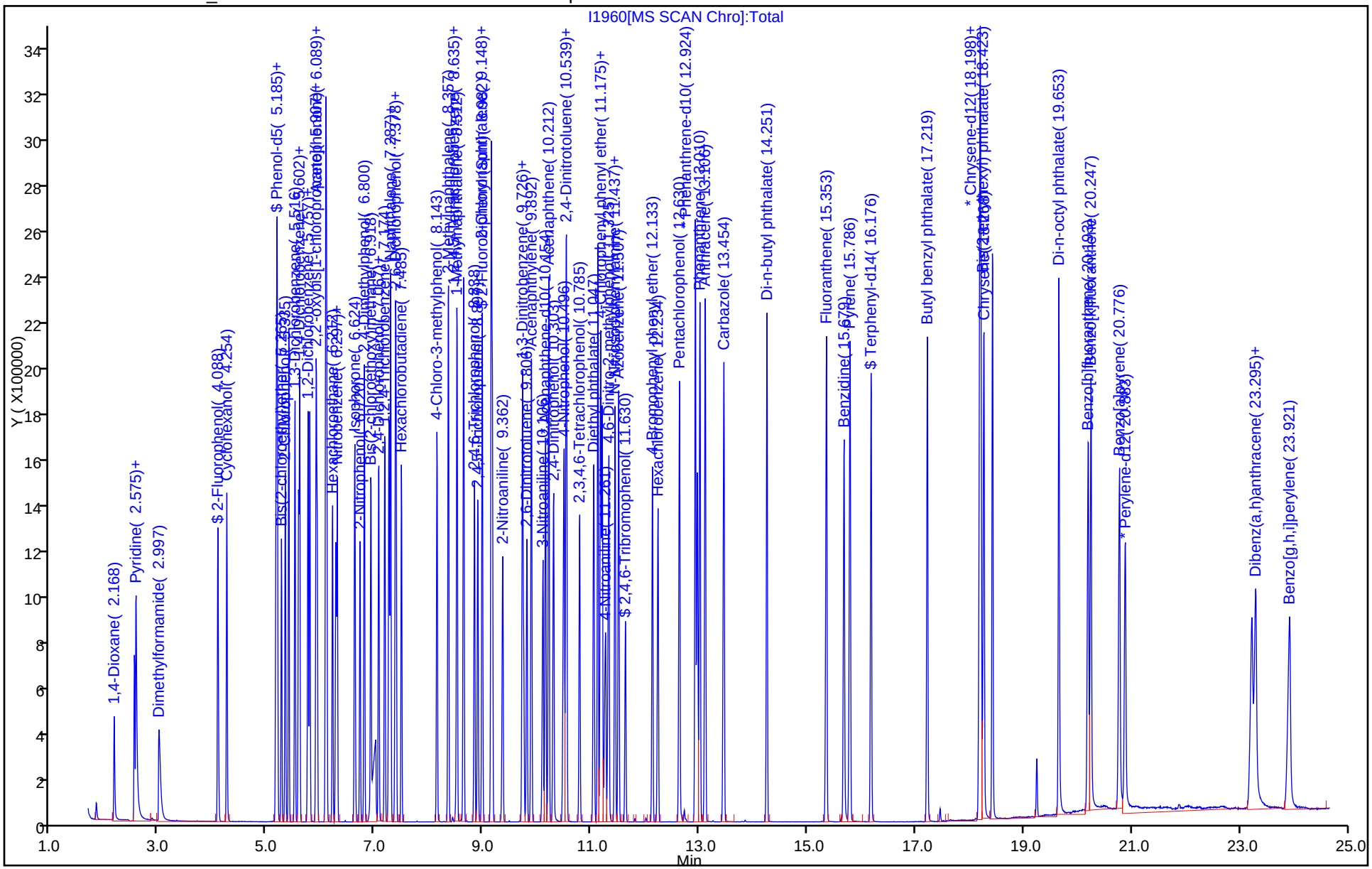
Reagents:

50 ppm 8270_00080 Amount Added: 1.00 Units: mL

Report Date: 10-Aug-2016 10:37:15 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1960.D				
Injection Date:	09-Aug-2016 12:25:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	ICIS			Worklist Smp#:	3
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

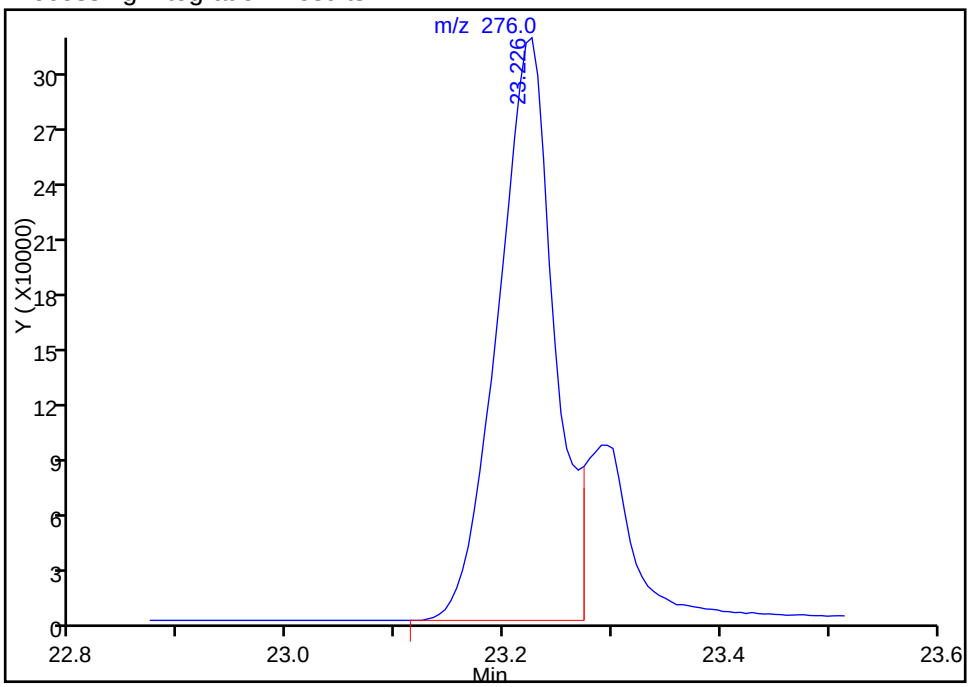
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1960.D				
Injection Date:	09-Aug-2016 12:25:30	Instrument ID:	SMSI		
Lims ID:	ICIS				
Client ID:					
Operator ID:		ALS Bottle#:	3	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

156 Indeno[1,2,3-cd]pyrene, CAS: 193-39-5

Signal: 1

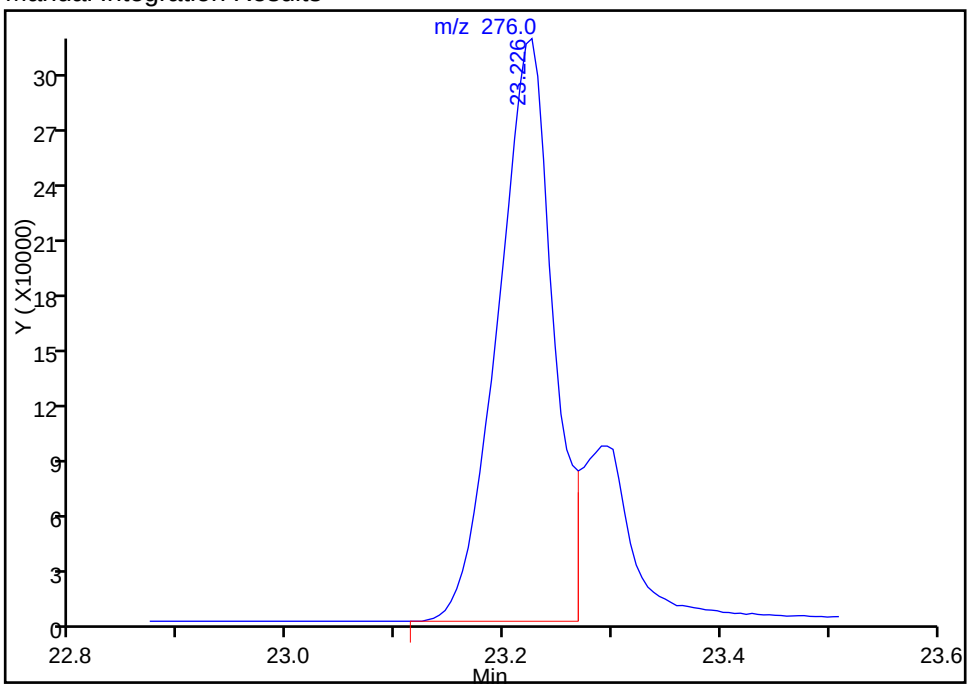
Processing Integration Results

RT: 23.23
Area: 1135893
Amount: 52.841897
Amount Units: ug/ml



Manual Integration Results

RT: 23.23
Area: 1109462
Amount: 54.197270
Amount Units: ug/ml



Reviewer: kuessnerm, 09-Aug-2016 13:50:17

Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

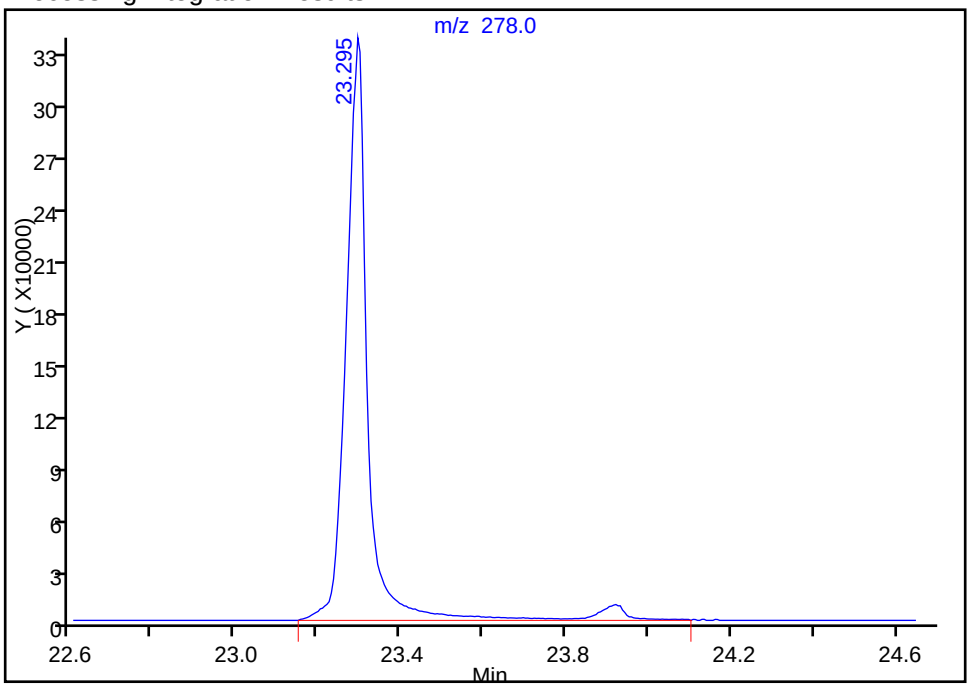
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1960.D				
Injection Date:	09-Aug-2016 12:25:30	Instrument ID:	SMSI		
Lims ID:	ICIS				
Client ID:					
Operator ID:		ALS Bottle#:	3	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

157 Dibenz(a,h)anthracene, CAS: 53-70-3

Signal: 1

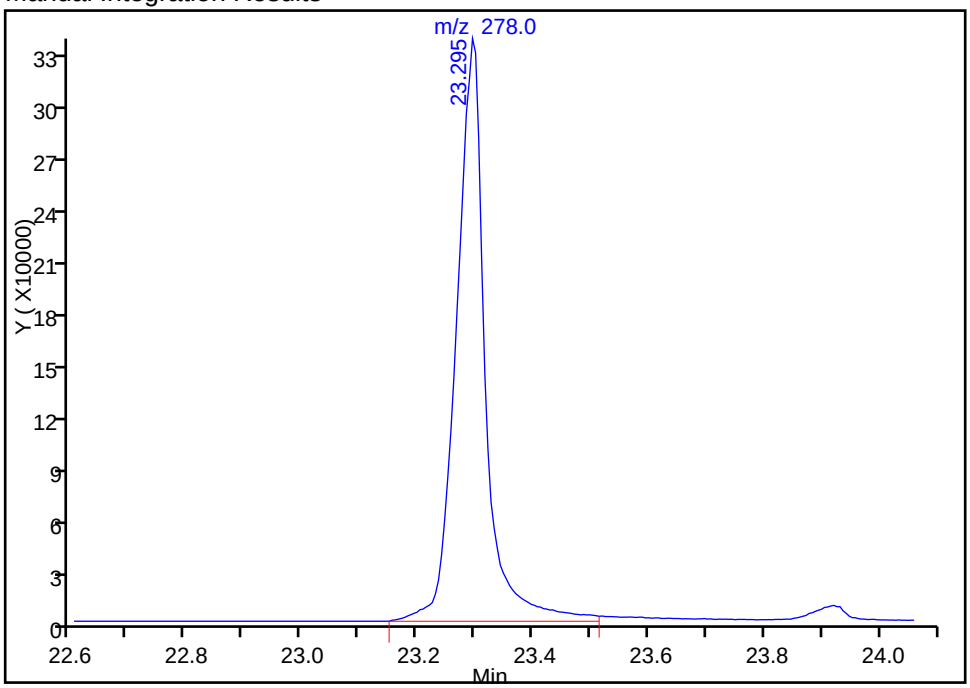
Processing Integration Results

RT: 23.30
Area: 1250212
Amount: 53.207984
Amount Units: ug/ml



Manual Integration Results

RT: 23.30
Area: 1177671
Amount: 52.862795
Amount Units: ug/ml



Reviewer: kuessnerm, 09-Aug-2016 13:50:17

Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1961.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 09-Aug-2016 12:58:30 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008148-004
Misc. Info.: IC
Operator ID: Instrument ID: SMSI
Sublist: chrom-BNA_SMSI*sub11

Method: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 10-Aug-2016 10:37:20 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK026

First Level Reviewer: kuessnerm Date: 09-Aug-2016 14:10:15

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88	2.147	2.168	-0.021	96	494803	160.0	152.3	
3 N-Nitrosodimethylamine	74	2.532	2.543	-0.011	87	761001	160.0	155.0	
4 Pyridine	79	2.559	2.575	-0.016	93	1337336	160.0	154.6	
5 Dimethylformamide	44	3.035	2.997	0.038	98	725832	160.0	156.3	
$ 10 2-Fluorophenol	112	4.083	4.088	-0.005	96	1142417	160.0	154.6	
11 Cyclohexanol	57	4.249	4.254	-0.005	97	979028	160.0	151.9	
$ 16 Phenol-d5	99	5.163	5.163	0.000	92	1330988	160.0	146.9	
17 Phenol	94	5.185	5.179	0.006	92	1416741	160.0	141.4	
18 Aniline	93	5.179	5.190	-0.011	88	1647252	160.0	141.8	
19 Bis(2-chloroethyl)ether	93	5.260	5.265	-0.005	98	1131097	160.0	151.4	
21 2-Chlorophenol	128	5.329	5.335	-0.006	96	1159471	160.0	152.3	
22 1,3-Dichlorobenzene	146	5.506	5.516	-0.010	94	1158439	160.0	147.4	
* 23 1,4-Dichlorobenzene-d4	152	5.570	5.581	-0.011	97	193528	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.591	5.602	-0.011	93	1164353	160.0	148.2	
25 Benzyl alcohol	108	5.757	5.757	0.000	94	818205	160.0	154.9	
26 1,2-Dichlorobenzene	146	5.778	5.789	-0.011	95	1091569	160.0	146.2	
27 2-Methylphenol	108	5.907	5.907	0.000	90	1046546	160.0	148.8	
28 2,2'-oxybis[1-chloropropan	45	5.917	5.928	-0.011	94	1263717	160.0	140.4	
29 Acetophenone	105	6.083	6.083	0.000	92	1506457	160.0	147.4	
30 N-Nitrosodi-n-propylamine	70	6.094	6.094	0.000	85	783207	160.0	147.0	M
31 3 & 4 Methylphenol	107	6.105	6.105	0.000	96	1148527	160.0	146.9	
35 Hexachloroethane	117	6.201	6.212	-0.011	92	463735	160.0	151.9	
$ 37 Nitrobenzene-d5	82	6.271	6.271	-0.001	87	1202149	160.0	151.7	
38 Nitrobenzene	77	6.297	6.297	0.000	98	1194980	160.0	149.2	
S 36 Total Cresols	100				0			295.7	
40 Isophorone	82	6.629	6.624	0.005	99	2304445	160.0	151.6	
41 2-Nitrophenol	139	6.714	6.720	-0.006	91	629067	160.0	155.9	
42 2,4-Dimethylphenol	107	6.800	6.800	0.000	92	1158879	160.0	150.5	
43 Bis(2-chloroethoxy)methane	93	6.918	6.918	0.000	99	1331655	160.0	149.6	
45 Benzoic acid	122	7.073	7.009	0.064	90	778280	160.0	173.5	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
46 2,4-Dichlorophenol	162	7.062	7.067	-0.005	97	860029	160.0	148.0	
48 1,2,4-Trichlorobenzene	180	7.169	7.174	-0.005	94	925139	160.0	148.6	
* 49 Naphthalene-d8	136	7.244	7.255	-0.011	99	816416	40.0	40.0	
50 Naphthalene	128	7.276	7.287	-0.011	99	3045830	160.0	141.9	
52 4-Chloroaniline	127	7.372	7.378	-0.006	97	1373349	160.0	145.5	
53 2,6-Dichlorophenol	162	7.388	7.388	0.000	98	820823	160.0	145.9	
54 Hexachlorobutadiene	225	7.474	7.485	-0.011	94	462212	160.0	148.4	
60 4-Chloro-3-methylphenol	107	8.137	8.143	-0.006	96	1010038	160.0	151.1	
62 2-Methylnaphthalene	142	8.346	8.357	-0.010	86	2079241	160.0	144.5	
63 1-Methylnaphthalene	142	8.506	8.512	-0.006	93	1953453	160.0	144.6	
64 Hexachlorocyclopentadiene	237	8.624	8.635	-0.011	96	449333	160.0	173.9	
65 1,2,4,5-Tetrachlorobenzene	216	8.635	8.640	-0.005	96	771743	160.0	149.1	
67 2,4,6-Trichlorophenol	196	8.833	8.838	-0.006	87	605336	160.0	156.9	
68 2,4,5-Trichlorophenol	196	8.891	8.897	-0.006	95	622838	160.0	157.6	
$ 69 2-Fluorobiphenyl (Surr)	172	8.977	8.982	-0.005	97	2067524	160.0	147.8	
70 1,1'-Biphenyl	154	9.143	9.148	-0.005	96	2260274	160.0	139.8	
71 2-Chloronaphthalene	162	9.164	9.170	-0.006	95	1736169	160.0	143.5	
73 2-Nitroaniline	65	9.357	9.362	-0.005	98	687771	160.0	160.5	
77 Dimethyl phthalate	163	9.736	9.726	0.010	99	2074621	160.0	145.7	
78 1,3-Dinitrobenzene	168	9.752	9.747	0.005	87	398663	160.0	170.1	
79 2,6-Dinitrotoluene	165	9.811	9.806	0.005	95	522205	160.0	158.1	
80 Acenaphthylene	152	9.886	9.892	-0.006	97	2895558	160.0	148.0	
81 3-Nitroaniline	138	10.111	10.106	0.005	95	662280	160.0	159.0	
* 82 Acenaphthene-d10	164	10.138	10.154	-0.016	92	437026	40.0	40.0	
83 Acenaphthene	153	10.207	10.212	-0.005	95	1912632	160.0	148.0	
84 2,4-Dinitrophenol	184	10.314	10.303	0.011	96	759114	320.0	342.5	
85 4-Nitrophenol	109	10.507	10.496	0.011	84	721974	320.0	309.3	
87 Dibenzofuran	168	10.528	10.533	-0.005	97	2459598	160.0	143.4	
86 2,4-Dinitrotoluene	165	10.555	10.544	0.011	93	681637	160.0	156.3	
90 2,3,4,6-Tetrachlorophenol	232	10.779	10.785	-0.006	91	513352	160.0	163.1	
92 Diethyl phthalate	149	11.052	11.047	0.005	98	2190325	160.0	149.1	
93 Fluorene	166	11.170	11.175	-0.005	96	2108454	160.0	146.5	
94 4-Chlorophenyl phenyl ethe	204	11.197	11.202	-0.005	87	938933	160.0	148.0	
95 4-Nitroaniline	138	11.304	11.261	0.043	87	669509	160.0	159.5	
98 4,6-Dinitro-2-methylphenol	198	11.346	11.325	0.021	85	866111	320.0	350.1	
99 N-Nitrosodiphenylamine	169	11.448	11.437	0.011	99	1588593	160.0	154.1	
171 Diphenylamine	169	11.448	11.437	0.011	95	1588593	136.8	131.8	
100 Azobenzene	77	11.507	11.507	0.000	97	2375052	160.0	149.5	
$ 102 2,4,6-Tribromophenol	330	11.635	11.630	0.005	93	289669	160.0	165.5	
106 4-Bromophenyl phenyl ether	248	12.127	12.133	-0.006	87	572081	160.0	159.4	
108 Hexachlorobenzene	284	12.229	12.234	-0.005	100	580947	160.0	158.8	
112 Pentachlorophenol	266	12.630	12.630	0.000	94	755221	320.0	357.5	
* 117 Phenanthrene-d10	188	12.951	12.962	-0.011	99	697793	40.0	40.0	
118 Phenanthrene	178	13.010	13.010	0.000	98	3005273	160.0	149.4	
119 Anthracene	178	13.106	13.106	0.000	98	3147524	160.0	149.9	
122 Carbazole	167	13.454	13.454	0.000	96	2935996	160.0	151.0	
124 Di-n-butyl phthalate	149	14.245	14.251	-0.006	100	3527318	160.0	147.5	
129 Fluoranthene	202	15.347	15.353	-0.006	97	3169577	160.0	154.1	
130 Benzidine	184	15.679	15.679	0.000	99	2430614	160.0	170.7	
131 Pyrene	202	15.786	15.786	0.000	96	3206698	160.0	158.9	
$ 132 Terphenyl-d14	244	16.171	16.176	-0.005	100	2100520	160.0	163.5	
139 Butyl benzyl phthalate	149	17.214	17.219	-0.005	98	1649402	160.0	163.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
143 Benzo[a]anthracene	228	18.182	18.187	-0.005	99	2893301	160.0	159.5	
144 3,3'-Dichlorobenzidine	252	18.198	18.198	0.000	100	1062707	160.0	161.4	
* 145 Chrysene-d12	240	18.203	18.214	-0.011	99	639656	40.0	40.0	
146 Chrysene	228	18.268	18.268	0.000	98	2850091	160.0	159.7	
148 Bis(2-ethylhexyl) phthalat	149	18.417	18.423	-0.006	89	2177026	160.0	160.1	
149 Di-n-octyl phthalate	149	19.647	19.653	-0.006	97	3693342	160.0	161.3	
150 Benzo[b]fluoranthene	252	20.198	20.198	0.000	98	2805137	160.0	168.0	
151 Benzo[k]fluoranthene	252	20.252	20.247	0.005	98	2840282	160.0	148.3	
153 Benzo[a]pyrene	252	20.781	20.776	0.005	96	2679107	160.0	160.2	
* 154 Perylene-d12	264	20.862	20.883	-0.021	98	615284	40.0	40.0	
156 Indeno[1,2,3-cd]pyrene	276	23.226	23.226	0.000	99	2213050	160.0	158.5	
157 Dibenz(a,h)anthracene	278	23.301	23.295	0.006	98	2265837	160.0	149.1	M
158 Benzo[g,h,i]perylene	276	23.932	23.921	0.011	97	2311937	160.0	145.9	
S 164 Phthalates, Total	1				0			927.5	

QC Flag Legend

Review Flags

M - Manually Integrated

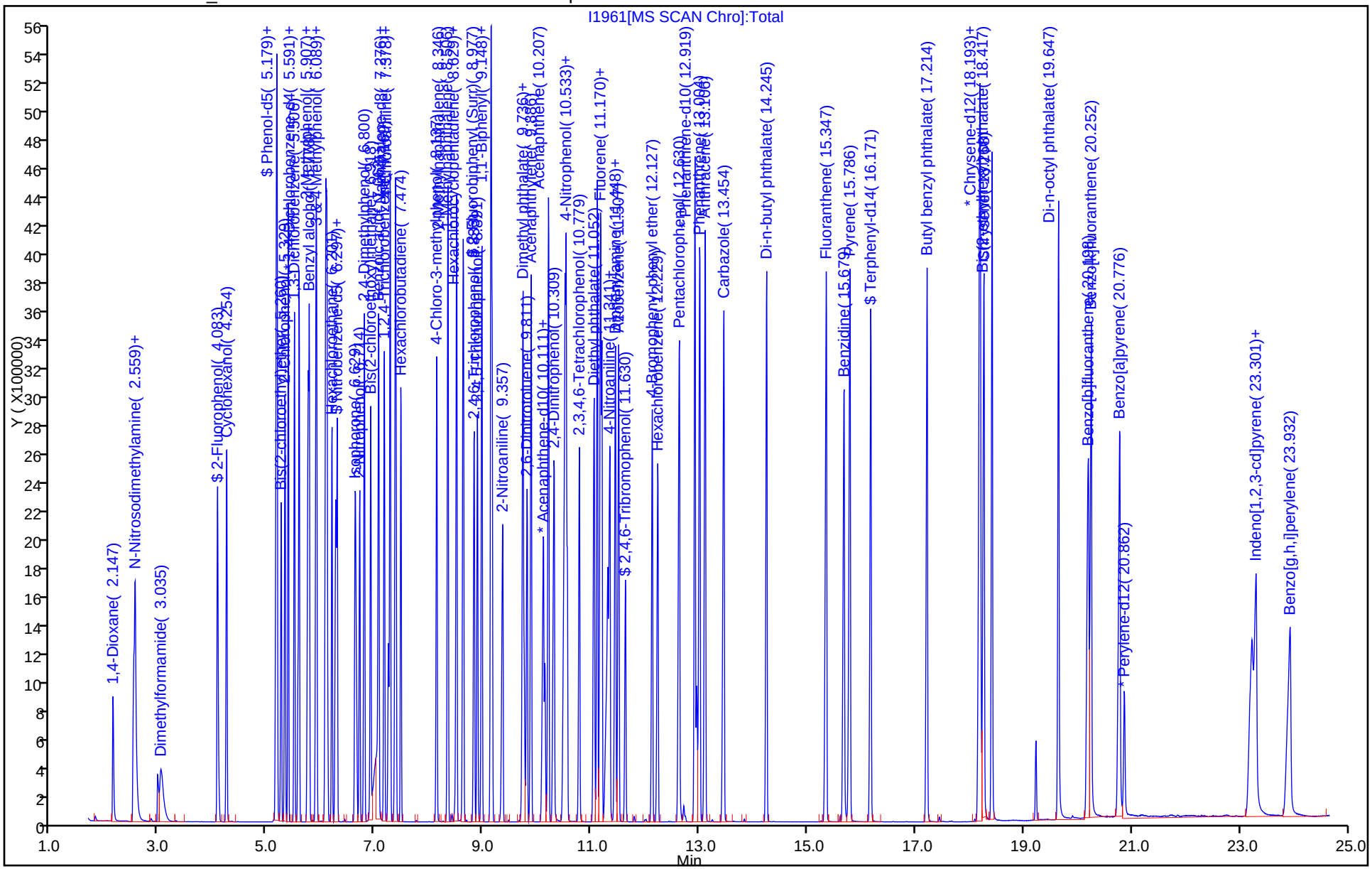
Reagents:

160 ppm 8270_00009 Amount Added: 1.00 Units: mL

Report Date: 10-Aug-2016 10:37:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1961.D				
Injection Date:	09-Aug-2016 12:58:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	IC			Worklist Smp#:	4
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



TestAmerica St. Louis

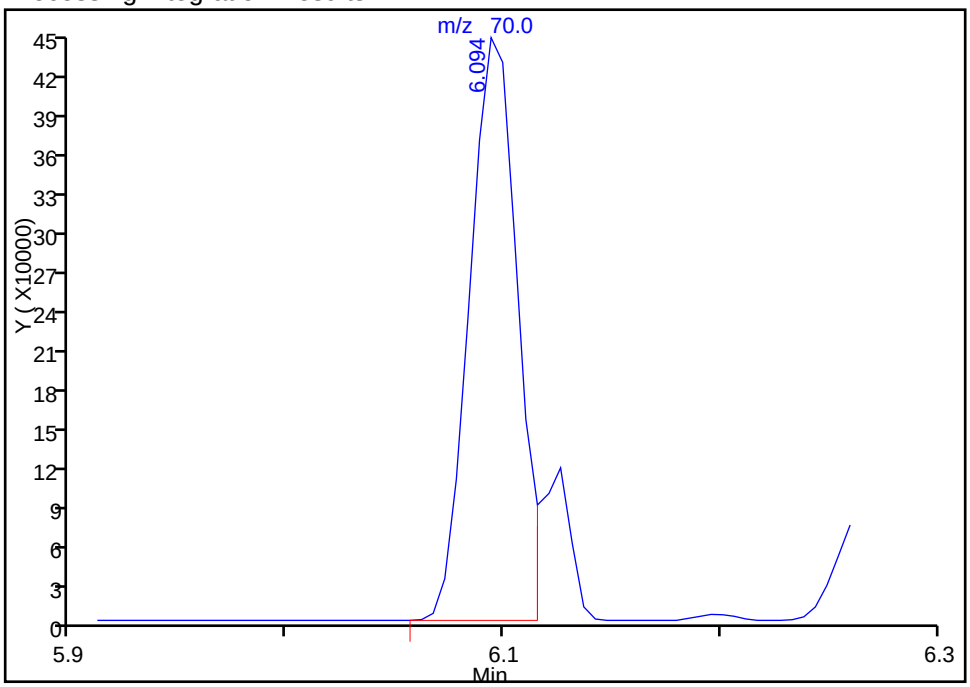
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1961.D				
Injection Date:	09-Aug-2016 12:58:30	Instrument ID:	SMSI		
Lims ID:	IC				
Client ID:					
Operator ID:		ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

30 N-Nitrosodi-n-propylamine, CAS: 621-64-7

Signal: 1

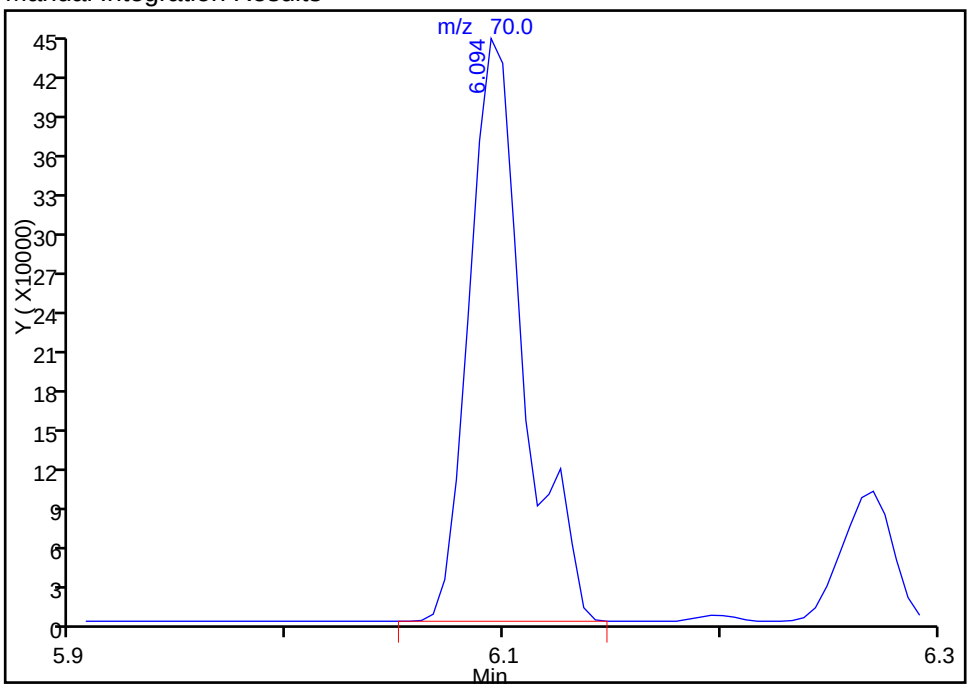
Processing Integration Results

RT: 6.09
Area: 691807
Amount: 140.4400
Amount Units: ug/ml



Manual Integration Results

RT: 6.09
Area: 783207
Amount: 146.9697
Amount Units: ug/ml



Reviewer: kuessnerm, 09-Aug-2016 14:10:15
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica St. Louis

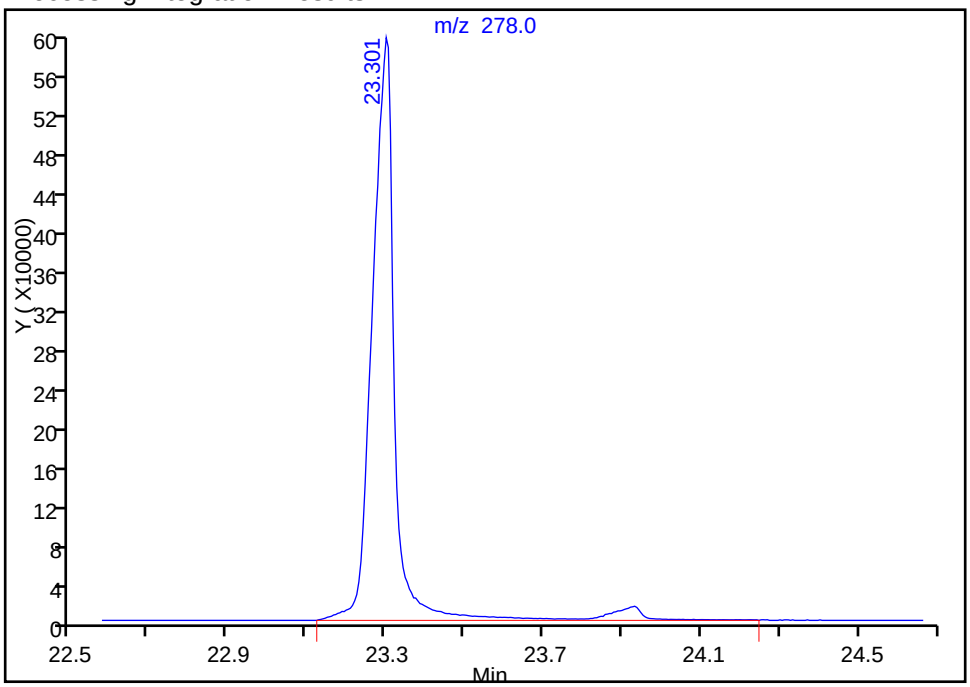
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1961.D				
Injection Date:	09-Aug-2016 12:58:30	Instrument ID:	SMSI		
Lims ID:	IC				
Client ID:					
Operator ID:		ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

157 Dibenz(a,h)anthracene, CAS: 53-70-3

Signal: 1

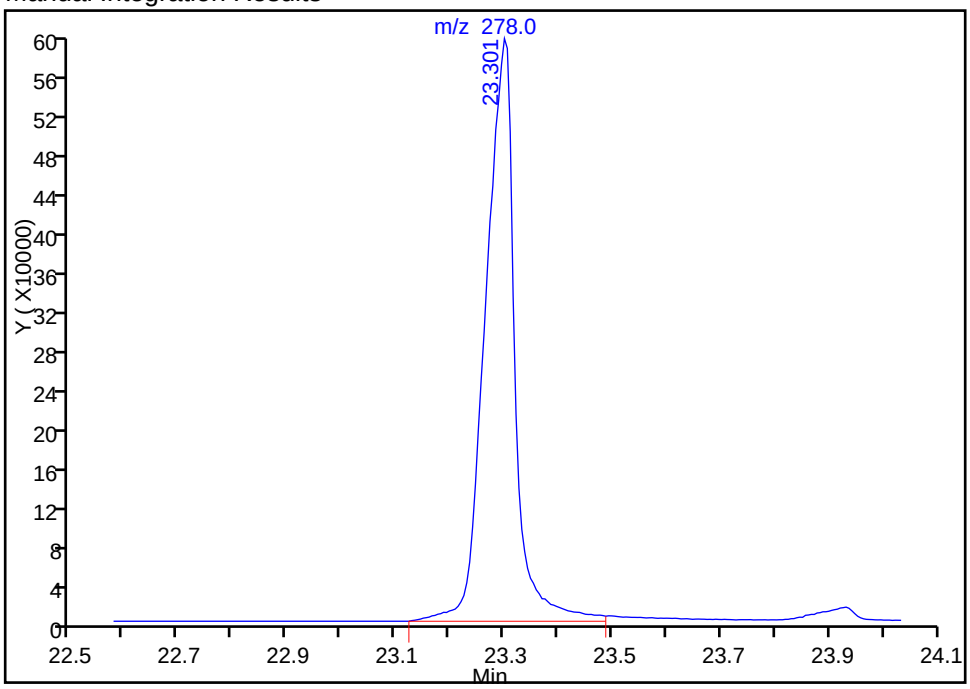
Processing Integration Results

RT: 23.30
Area: 2400239
Amount: 153.8470
Amount Units: ug/ml



Manual Integration Results

RT: 23.30
Area: 2265837
Amount: 149.0833
Amount Units: ug/ml



Reviewer: kuessnerm, 09-Aug-2016 14:10:15
Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1962.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 09-Aug-2016 13:31:30 ALS Bottle#: 5 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008148-005
Misc. Info.: IC
Operator ID: Instrument ID: SMSI
Sublist: chrom-BNA_SMSI*sub11

Method: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 10-Aug-2016 10:37:24 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK026

First Level Reviewer: kuessnerm Date: 09-Aug-2016 14:11:28

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88	2.152	2.168	-0.016	95	388368	120.0	118.1	
3 N-Nitrosodimethylamine	74	2.532	2.543	-0.011	88	591704	120.0	119.1	
4 Pyridine	79	2.559	2.575	-0.016	93	1041613	120.0	119.0	
5 Dimethylformamide	44	3.019	2.997	0.022	96	553119	120.0	117.7	
$ 10 2-Fluorophenol	112	4.078	4.088	-0.010	96	884912	120.0	118.3	
11 Cyclohexanol	57	4.249	4.254	-0.005	97	760840	120.0	116.7	
$ 16 Phenol-d5	99	5.158	5.163	-0.005	94	1062559	120.0	115.9	
17 Phenol	94	5.179	5.179	0.000	90	1148785	120.0	113.3	
18 Aniline	93	5.179	5.190	-0.011	79	1332897	120.0	113.4	
19 Bis(2-chloroethyl)ether	93	5.260	5.265	-0.005	98	882720	120.0	116.8	
21 2-Chlorophenol	128	5.329	5.335	-0.006	96	896767	120.0	116.4	
22 1,3-Dichlorobenzene	146	5.506	5.516	-0.010	94	905851	120.0	113.9	
* 23 1,4-Dichlorobenzene-d4	152	5.570	5.581	-0.011	97	195817	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.591	5.602	-0.011	93	909620	120.0	114.4	
25 Benzyl alcohol	108	5.752	5.757	-0.005	93	639727	120.0	119.7	
26 1,2-Dichlorobenzene	146	5.778	5.789	-0.011	95	857359	120.0	113.5	
27 2-Methylphenol	108	5.901	5.907	-0.006	90	828948	120.0	116.5	
28 2,2'-oxybis[1-chloropropan	45	5.918	5.928	-0.010	94	1022674	120.0	112.3	
29 Acetophenone	105	6.078	6.083	-0.005	93	1183141	120.0	112.5	
30 N-Nitrosodi-n-propylamine	70	6.089	6.094	-0.005	83	617477	120.0	114.5	
31 3 & 4 Methylphenol	107	6.099	6.105	-0.006	97	917002	120.0	115.9	
35 Hexachloroethane	117	6.196	6.212	-0.016	92	360683	120.0	116.8	
$ 37 Nitrobenzene-d5	82	6.265	6.271	-0.006	87	945240	120.0	116.0	
38 Nitrobenzene	77	6.292	6.297	-0.005	97	938723	120.0	114.0	
S 36 Total Cresols	100				0			232.4	
40 Isophorone	82	6.624	6.624	0.000	99	1785800	120.0	114.2	
41 2-Nitrophenol	139	6.709	6.720	-0.011	91	496987	120.0	119.8	
42 2,4-Dimethylphenol	107	6.795	6.800	-0.005	91	905477	120.0	114.4	
43 Bis(2-chloroethoxy)methane	93	6.912	6.918	-0.006	100	1043190	120.0	113.9	
45 Benzoic acid	122	7.041	7.009	0.032	89	608163	120.0	131.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
46 2,4-Dichlorophenol	162	7.057	7.067	-0.010	96	675889	120.0	113.1	
48 1,2,4-Trichlorobenzene	180	7.164	7.174	-0.010	94	723806	120.0	113.0	
* 49 Naphthalene-d8	136	7.239	7.255	-0.016	99	839628	40.0	40.0	
50 Naphthalene	128	7.276	7.287	-0.011	99	2425158	120.0	109.8	
52 4-Chloroaniline	127	7.367	7.378	-0.011	97	1104502	120.0	113.7	
53 2,6-Dichlorophenol	162	7.383	7.388	-0.005	97	648993	120.0	112.1	
54 Hexachlorobutadiene	225	7.474	7.485	-0.011	92	363287	120.0	113.4	
60 4-Chloro-3-methylphenol	107	8.132	8.143	-0.011	96	792574	120.0	115.3	
62 2-Methylnaphthalene	142	8.346	8.357	-0.010	85	1651070	120.0	111.5	
63 1-Methylnaphthalene	142	8.501	8.512	-0.011	93	1547731	120.0	111.4	
64 Hexachlorocyclopentadiene	237	8.624	8.635	-0.011	96	353796	120.0	131.0	
65 1,2,4,5-Tetrachlorobenzene	216	8.629	8.640	-0.011	96	617533	120.0	114.1	
67 2,4,6-Trichlorophenol	196	8.827	8.838	-0.011	88	476652	120.0	118.2	
68 2,4,5-Trichlorophenol	196	8.886	8.897	-0.011	94	488180	120.0	118.1	
$ 69 2-Fluorobiphenyl (Surr)	172	8.972	8.982	-0.010	97	1645084	120.0	112.4	
70 1,1'-Biphenyl	154	9.137	9.148	-0.011	96	1866174	120.0	110.4	
71 2-Chloronaphthalene	162	9.159	9.170	-0.011	95	1400334	120.0	110.7	
73 2-Nitroaniline	65	9.351	9.362	-0.011	98	537811	120.0	120.0	
77 Dimethyl phthalate	163	9.726	9.726	0.000	99	1655097	120.0	111.2	
78 1,3-Dinitrobenzene	168	9.742	9.747	-0.005	86	307924	120.0	125.6	
79 2,6-Dinitrotoluene	165	9.806	9.806	0.000	95	409175	120.0	118.5	
80 Acenaphthylene	152	9.881	9.892	-0.011	97	2280868	120.0	111.5	
81 3-Nitroaniline	138	10.106	10.106	0.000	95	516949	120.0	118.7	
* 82 Acenaphthene-d10	164	10.138	10.154	-0.016	90	456971	40.0	40.0	
83 Acenaphthene	153	10.202	10.212	-0.010	95	1511525	120.0	111.9	
84 2,4-Dinitrophenol	184	10.303	10.303	0.000	96	579824	240.0	250.2	
85 4-Nitrophenol	109	10.496	10.496	0.000	89	581089	240.0	238.1	
87 Dibenzofuran	168	10.523	10.533	-0.010	99	1968800	120.0	109.8	
86 2,4-Dinitrotoluene	165	10.544	10.544	0.000	92	530006	120.0	116.3	
90 2,3,4,6-Tetrachlorophenol	232	10.774	10.785	-0.011	92	399262	120.0	121.3	
92 Diethyl phthalate	149	11.042	11.047	-0.005	98	1737114	120.0	113.1	
93 Fluorene	166	11.165	11.175	-0.010	96	1680579	120.0	111.6	
94 4-Chlorophenyl phenyl ethe	204	11.191	11.202	-0.011	86	742333	120.0	111.9	
95 4-Nitroaniline	138	11.277	11.261	0.016	84	523128	120.0	119.2	
98 4,6-Dinitro-2-methylphenol	198	11.330	11.325	0.005	84	671961	240.0	262.1	
99 N-Nitrosodiphenylamine	169	11.437	11.437	0.000	99	1242560	120.0	116.3	
171 Diphenylamine	169	11.437	11.437	0.000	95	1242560	102.6	99.5	
100 Azobenzene	77	11.496	11.507	-0.011	98	1883961	120.0	114.4	
$ 102 2,4,6-Tribromophenol	330	11.625	11.630	-0.005	92	222023	120.0	121.3	
106 4-Bromophenyl phenyl ether	248	12.122	12.133	-0.011	85	446336	120.0	120.0	
108 Hexachlorobenzene	284	12.224	12.234	-0.010	99	453362	120.0	119.5	
112 Pentachlorophenol	266	12.625	12.630	-0.005	92	583638	240.0	266.6	
* 117 Phenanthrene-d10	188	12.946	12.962	-0.016	99	723198	40.0	40.0	
118 Phenanthrene	178	12.999	13.010	-0.011	98	2376651	120.0	114.0	
119 Anthracene	178	13.101	13.106	-0.005	98	2491296	120.0	114.4	
122 Carbazole	167	13.443	13.454	-0.011	96	2289459	120.0	113.6	
124 Di-n-butyl phthalate	149	14.240	14.251	-0.011	100	2815293	120.0	113.6	
129 Fluoranthene	202	15.342	15.353	-0.011	97	2463156	120.0	115.6	
130 Benzidine	184	15.668	15.679	-0.011	99	1886163	120.0	127.0	
131 Pyrene	202	15.780	15.786	-0.006	96	2499461	120.0	118.7	
$ 132 Terphenyl-d14	244	16.166	16.176	-0.010	99	1627841	120.0	121.4	
139 Butyl benzyl phthalate	149	17.209	17.219	-0.011	98	1277050	120.0	121.6	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
143 Benzo[a]anthracene	228	18.177	18.187	-0.010	99	2257537	120.0	119.3	
144 3,3'-Dichlorobenzidine	252	18.187	18.198	-0.011	100	842102	120.0	122.6	
* 145 Chrysene-d12	240	18.198	18.214	-0.016	99	667251	40.0	40.0	
146 Chrysene	228	18.257	18.268	-0.011	98	2196395	120.0	118.0	
148 Bis(2-ethylhexyl) phthalat	149	18.412	18.423	-0.011	89	1689974	120.0	119.1	
149 Di-n-octyl phthalate	149	19.642	19.653	-0.011	97	2886397	120.0	120.9	
150 Benzo[b]fluoranthene	252	20.188	20.198	-0.010	99	2084366	120.0	123.8	
151 Benzo[k]fluoranthene	252	20.241	20.247	-0.006	99	2210715	120.0	114.6	
153 Benzo[a]pyrene	252	20.765	20.776	-0.011	97	2070968	120.0	122.9	
* 154 Perylene-d12	264	20.862	20.883	-0.021	97	620173	40.0	40.0	
156 Indeno[1,2,3-cd]pyrene	276	23.210	23.226	-0.016	98	1786744	120.0	126.9	M
157 Dibenz(a,h)anthracene	278	23.285	23.295	-0.010	97	1801536	120.0	117.6	M
158 Benzo[g,h,i]perylene	276	23.916	23.921	-0.005	97	1872145	120.0	117.2	
S 164 Phthalates, Total	1				0			699.4	

QC Flag Legend

Review Flags

M - Manually Integrated

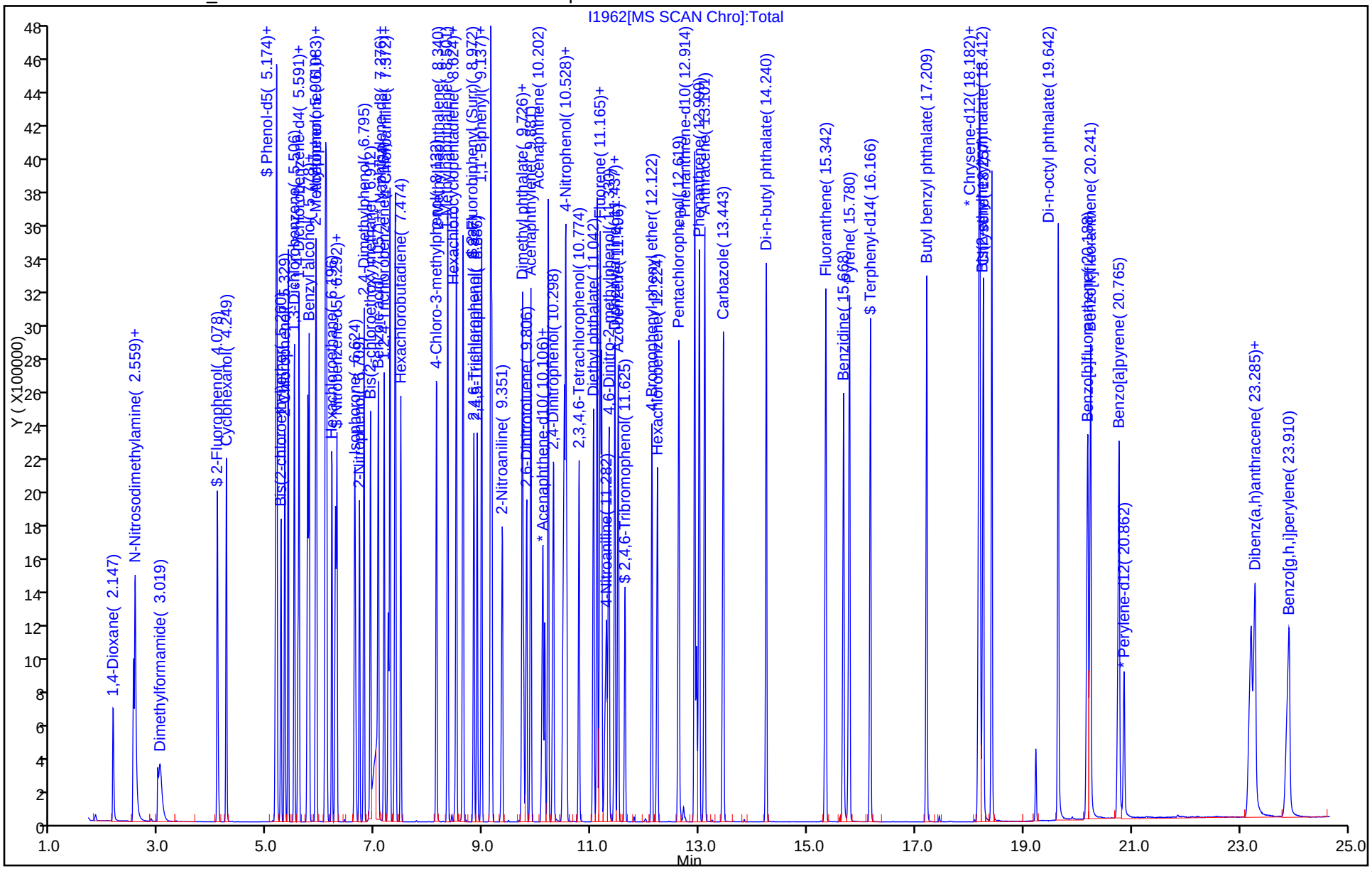
Reagents:

120 ppm 8270_00009 Amount Added: 1.00 Units: mL

Report Date: 10-Aug-2016 10:37:25 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1962.D				
Injection Date:	09-Aug-2016 13:31:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	IC			Worklist Smp#:	5
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

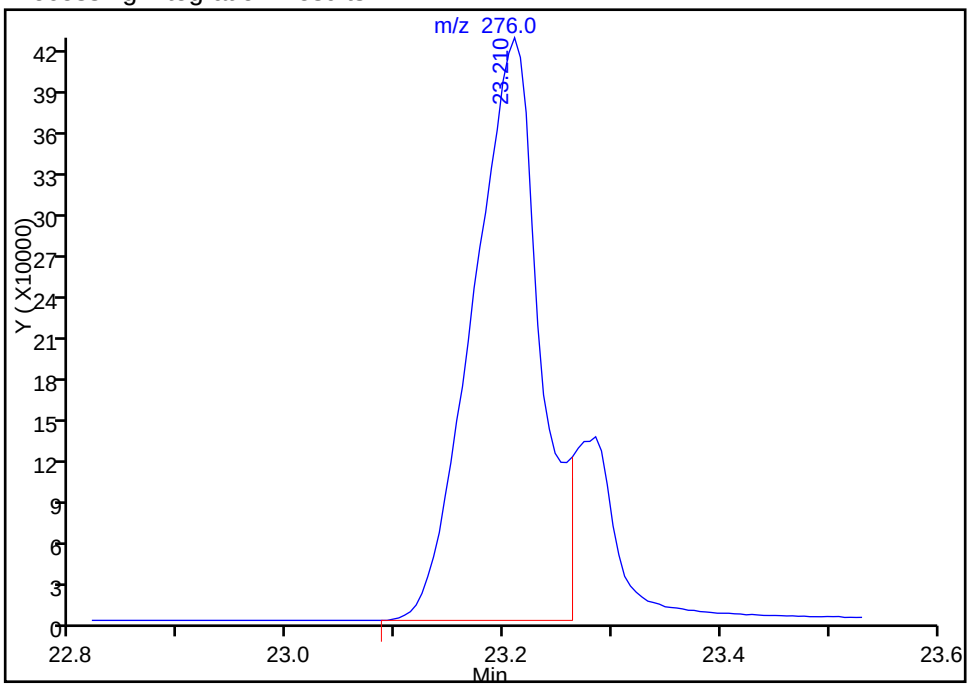
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1962.D				
Injection Date:	09-Aug-2016 13:31:30	Instrument ID:	SMSI		
Lims ID:	IC				
Client ID:					
Operator ID:		ALS Bottle#:	5	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

156 Indeno[1,2,3-cd]pyrene, CAS: 193-39-5

Signal: 1

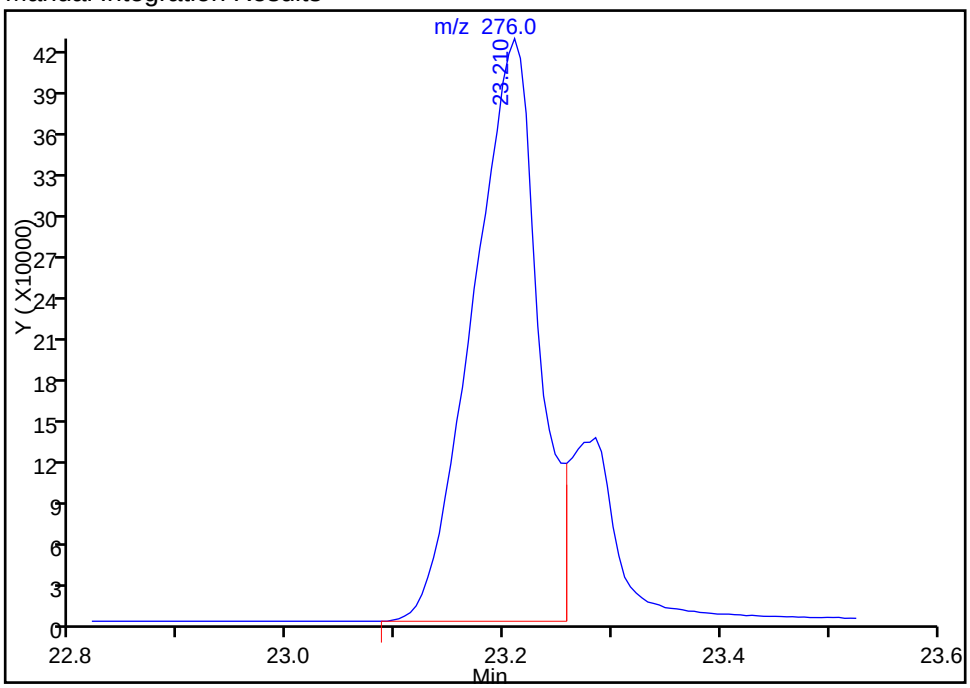
Processing Integration Results

RT: 23.21
Area: 1824928
Amount: 123.2852
Amount Units: ug/ml



Manual Integration Results

RT: 23.21
Area: 1786744
Amount: 126.9300
Amount Units: ug/ml



Reviewer: kuessnerm, 09-Aug-2016 14:11:28

Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

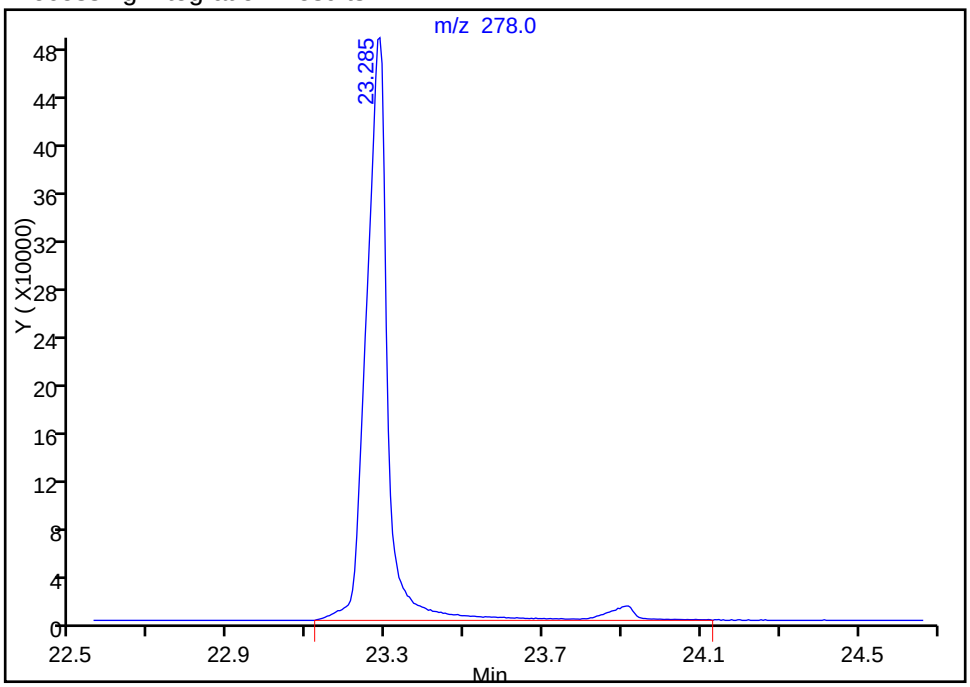
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1962.D				
Injection Date:	09-Aug-2016 13:31:30	Instrument ID:	SMSI		
Lims ID:	IC				
Client ID:					
Operator ID:		ALS Bottle#:	5	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

157 Dibenz(a,h)anthracene, CAS: 53-70-3

Signal: 1

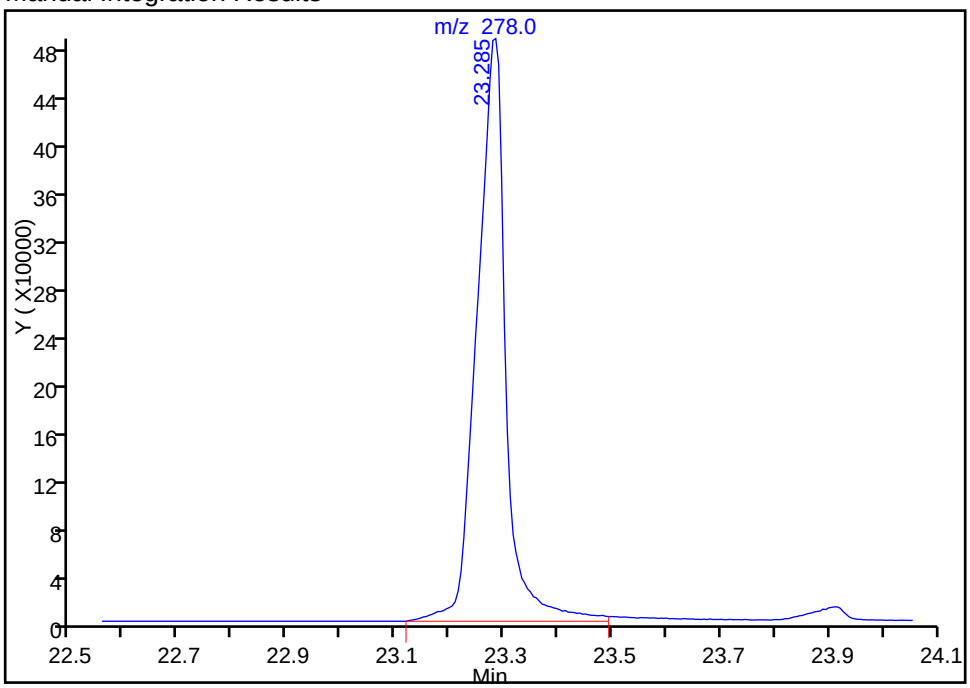
Processing Integration Results

RT: 23.28
Area: 1903111
Amount: 123.2329
Amount Units: ug/ml



Manual Integration Results

RT: 23.28
Area: 1801536
Amount: 117.5996
Amount Units: ug/ml



Reviewer: kuessnerm, 09-Aug-2016 14:11:28

Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1963.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 09-Aug-2016 14:04:30 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008148-006
Misc. Info.: IC
Operator ID: Instrument ID: SMSI
Sublist: chrom-BNA_SMSI*sub11

Method: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 10-Aug-2016 10:37:29 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK026

First Level Reviewer: kuessnerm Date: 10-Aug-2016 10:20:09

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88	2.157	2.168	-0.011	95	279008	80.0	78.7	
3 N-Nitrosodimethylamine	74	2.532	2.543	-0.011	87	422676	80.0	78.9	
4 Pyridine	79	2.564	2.575	-0.011	93	751475	80.0	79.6	
5 Dimethylformamide	44	2.987	2.997	-0.010	96	398422	80.0	78.6	
$ 10 2-Fluorophenol	112	4.088	4.088	0.000	96	637654	80.0	79.1	
11 Cyclohexanol	57	4.254	4.254	0.000	97	548283	80.0	78.0	
$ 16 Phenol-d5	99	5.169	5.163	0.006	90	775305	80.0	78.5	
17 Phenol	94	5.185	5.179	0.006	97	853439	80.0	78.1	
18 Aniline	93	5.190	5.190	0.000	96	991965	80.0	78.3	
19 Bis(2-chloroethyl)ether	93	5.265	5.265	0.000	99	637914	80.0	78.3	
21 2-Chlorophenol	128	5.335	5.335	0.000	96	650473	80.0	78.3	
22 1,3-Dichlorobenzene	146	5.516	5.516	0.000	94	656043	80.0	76.5	
* 23 1,4-Dichlorobenzene-d4	152	5.581	5.581	0.000	97	211125	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.602	5.602	0.000	93	655094	80.0	76.4	
25 Benzyl alcohol	108	5.757	5.757	0.000	94	462141	80.0	80.2	
26 1,2-Dichlorobenzene	146	5.789	5.789	0.000	94	626381	80.0	76.9	
27 2-Methylphenol	108	5.907	5.907	0.000	92	602384	80.0	78.5	
28 2,2'-oxybis[1-chloropropan	45	5.928	5.928	0.000	98	759269	80.0	77.3	
29 Acetophenone	105	6.083	6.083	0.000	95	861621	80.0	76.6	
30 N-Nitrosodi-n-propylamine	70	6.094	6.094	0.000	87	448431	80.0	77.1	
31 3 & 4 Methylphenol	107	6.105	6.105	0.000	97	670146	80.0	78.6	
35 Hexachloroethane	117	6.212	6.212	0.000	92	260970	80.0	78.4	
$ 37 Nitrobenzene-d5	82	6.276	6.271	0.005	87	684837	80.0	78.6	
38 Nitrobenzene	77	6.303	6.297	0.006	97	687582	80.0	78.0	
S 36 Total Cresols	100				0			157.1	
40 Isophorone	82	6.629	6.624	0.005	99	1299087	80.0	77.7	
41 2-Nitrophenol	139	6.720	6.720	0.000	91	361371	80.0	81.4	
42 2,4-Dimethylphenol	107	6.800	6.800	0.000	91	658028	80.0	77.7	
43 Bis(2-chloroethoxy)methane	93	6.923	6.918	0.005	99	759089	80.0	77.5	
45 Benzoic acid	122	7.025	7.009	0.016	89	418779	80.0	84.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
46 2,4-Dichlorophenol	162	7.068	7.067	0.001	95	498092	80.0	77.9	
48 1,2,4-Trichlorobenzene	180	7.180	7.174	0.006	94	528690	80.0	77.2	
* 49 Naphthalene-d8	136	7.255	7.255	0.000	100	898307	40.0	40.0	
50 Naphthalene	128	7.287	7.287	0.000	99	1787019	80.0	75.6	
52 4-Chloroaniline	127	7.378	7.378	0.000	97	808876	80.0	77.9	
53 2,6-Dichlorophenol	162	7.388	7.388	0.000	97	475553	80.0	76.8	
54 Hexachlorobutadiene	225	7.485	7.485	0.000	91	263042	80.0	76.8	
60 4-Chloro-3-methylphenol	107	8.148	8.143	0.005	96	582802	80.0	79.3	
62 2-Methylnaphthalene	142	8.357	8.357	0.001	86	1210026	80.0	76.4	
63 1-Methylnaphthalene	142	8.517	8.512	0.005	93	1130383	80.0	76.1	
64 Hexachlorocyclopentadiene	237	8.635	8.635	0.000	95	250416	80.0	85.4	
65 1,2,4,5-Tetrachlorobenzene	216	8.640	8.640	0.000	95	456288	80.0	77.6	
67 2,4,6-Trichlorophenol	196	8.838	8.838	0.000	87	346165	80.0	79.0	
68 2,4,5-Trichlorophenol	196	8.902	8.897	0.005	94	356185	80.0	79.4	
$ 69 2-Fluorobiphenyl (Surr)	172	8.982	8.982	0.000	97	1206484	80.0	75.9	
70 1,1'-Biphenyl	154	9.148	9.148	0.000	96	1401013	80.0	76.3	
71 2-Chloronaphthalene	162	9.170	9.170	0.000	96	1047564	80.0	76.2	
73 2-Nitroaniline	65	9.362	9.362	0.000	98	393983	80.0	81.0	
77 Dimethyl phthalate	163	9.731	9.726	0.005	98	1231321	80.0	76.1	
78 1,3-Dinitrobenzene	168	9.753	9.747	0.006	87	225275	80.0	84.6	
79 2,6-Dinitrotoluene	165	9.811	9.806	0.005	95	299983	80.0	80.0	
80 Acenaphthylene	152	9.892	9.892	0.000	97	1694330	80.0	76.3	
81 3-Nitroaniline	138	10.111	10.106	0.005	95	379152	80.0	80.2	
* 82 Acenaphthene-d10	164	10.154	10.154	0.000	92	496321	40.0	40.0	
83 Acenaphthene	153	10.218	10.212	0.006	95	1117123	80.0	76.1	
84 2,4-Dinitrophenol	184	10.309	10.303	0.006	95	414306	160.0	164.6	
85 4-Nitrophenol	109	10.501	10.496	0.005	95	432850	160.0	163.3	
87 Dibenzofuran	168	10.539	10.533	0.006	96	1451485	80.0	74.5	
86 2,4-Dinitrotoluene	165	10.550	10.544	0.006	91	390683	80.0	78.9	
90 2,3,4,6-Tetrachlorophenol	232	10.785	10.785	0.000	90	286871	80.0	80.3	
92 Diethyl phthalate	149	11.047	11.047	0.000	98	1283456	80.0	76.9	
93 Fluorene	166	11.175	11.175	0.000	96	1243838	80.0	76.1	
94 4-Chlorophenyl phenyl ethe	204	11.202	11.202	0.000	86	545518	80.0	75.7	
95 4-Nitroaniline	138	11.277	11.261	0.016	87	384397	80.0	80.6	
98 4,6-Dinitro-2-methylphenol	198	11.336	11.325	0.011	82	492044	160.0	174.2	
99 N-Nitrosodiphenylamine	169	11.443	11.437	0.006	99	919526	80.0	78.1	
171 Diphenylamine	169	11.443	11.437	0.006	95	919526	68.4	66.8	
100 Azobenzene	77	11.507	11.507	0.000	98	1410836	80.0	77.8	
$ 102 2,4,6-Tribromophenol	330	11.635	11.630	0.005	92	159222	80.0	80.1	
106 4-Bromophenyl phenyl ether	248	12.133	12.133	0.000	83	321594	80.0	78.5	
108 Hexachlorobenzene	284	12.234	12.234	0.000	99	327855	80.0	78.5	
112 Pentachlorophenol	266	12.635	12.630	0.005	91	414994	160.0	172.0	
* 117 Phenanthrene-d10	188	12.962	12.962	0.000	99	796695	40.0	40.0	
118 Phenanthrene	178	13.010	13.010	0.000	98	1763545	80.0	76.8	
119 Anthracene	178	13.111	13.106	0.005	98	1848914	80.0	77.1	
122 Carbazole	167	13.459	13.454	0.005	96	1714915	80.0	77.3	
124 Di-n-butyl phthalate	149	14.251	14.251	0.000	100	2134028	80.0	78.2	
129 Fluoranthene	202	15.353	15.353	0.000	97	1848427	80.0	78.7	
130 Benzidine	184	15.679	15.679	0.000	99	1421270	80.0	83.1	
131 Pyrene	202	15.791	15.786	0.005	96	1876583	80.0	77.4	
$ 132 Terphenyl-d14	244	16.182	16.176	0.006	100	1226498	80.0	79.5	
139 Butyl benzyl phthalate	149	17.225	17.219	0.006	98	970290	80.0	80.2	

Report Date: 10-Aug-2016 10:37:29 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1963.D

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
143 Benzo[a]anthracene	228	18.193	18.187	0.006	99	1736069	80.0	79.7	
144 3,3'-Dichlorobenzidine	252	18.203	18.198	0.005	99	650206	80.0	82.2	
* 145 Chrysene-d12	240	18.214	18.214	0.000	99	768241	40.0	40.0	
146 Chrysene	228	18.268	18.268	0.000	98	1687804	80.0	78.7	
148 Bis(2-ethylhexyl) phthalat	149	18.428	18.423	0.005	89	1303808	80.0	79.8	
149 Di-n-octyl phthalate	149	19.653	19.653	0.000	97	2240724	80.0	81.5	
150 Benzo[b]fluoranthene	252	20.198	20.198	0.000	99	1558976	80.0	79.0	
151 Benzo[k]fluoranthene	252	20.252	20.247	0.005	99	1772513	80.0	78.4	
153 Benzo[a]pyrene	252	20.781	20.776	0.005	96	1603736	80.0	81.2	
* 154 Perylene-d12	264	20.878	20.883	-0.005	97	726583	40.0	40.0	
156 Indeno[1,2,3-cd]pyrene	276	23.231	23.226	0.005	99	1363276	80.0	82.7	M
157 Dibenz(a,h)anthracene	278	23.306	23.295	0.011	98	1423323	80.0	79.3	M
158 Benzo[g,h,i]perylene	276	23.932	23.921	0.011	97	1488839	80.0	79.6	
S 164 Phthalates, Total	1				0			472.8	

QC Flag Legend

Review Flags

M - Manually Integrated

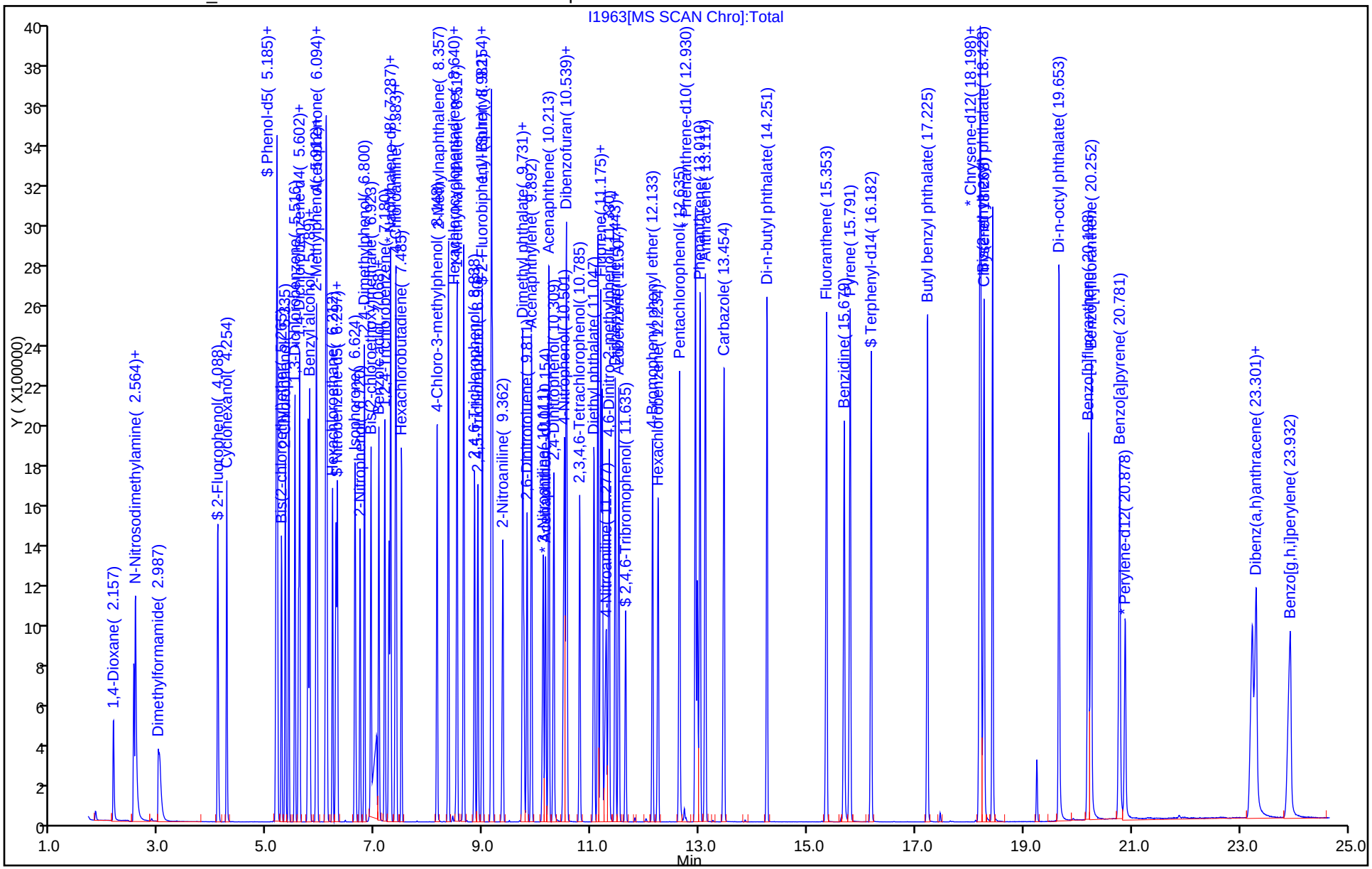
Reagents:

80 ppm 8270_00009 Amount Added: 1.00 Units: mL

Report Date: 10-Aug-2016 10:37:29 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1963.D				
Injection Date:	09-Aug-2016 14:04:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	IC			Worklist Smp#:	6
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

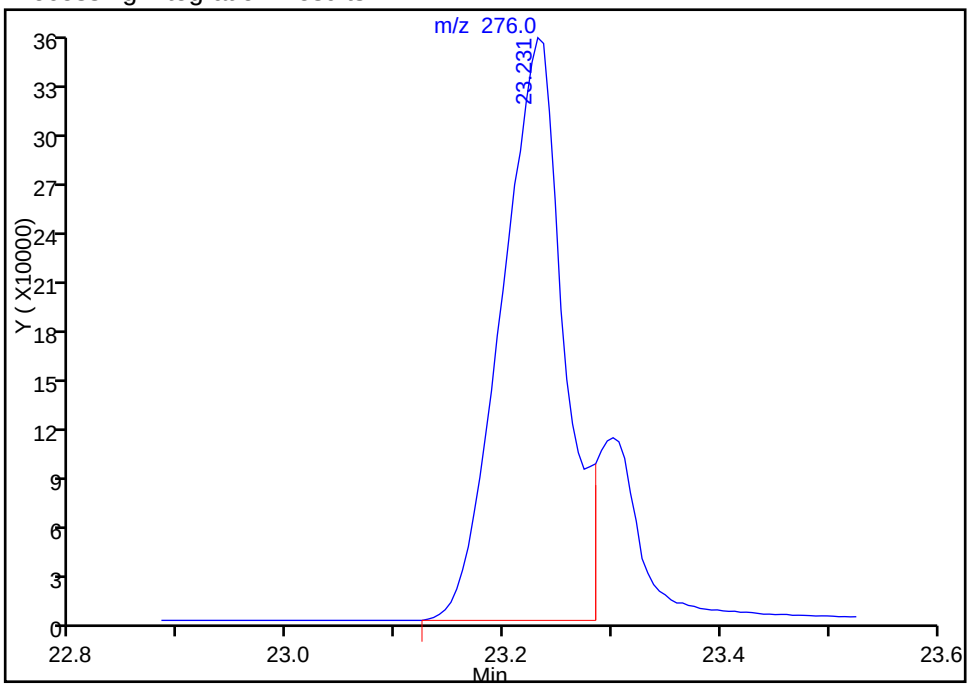
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1963.D				
Injection Date:	09-Aug-2016 14:04:30	Instrument ID:	SMSI		
Lims ID:	IC				
Client ID:					
Operator ID:		ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

156 Indeno[1,2,3-cd]pyrene, CAS: 193-39-5

Signal: 1

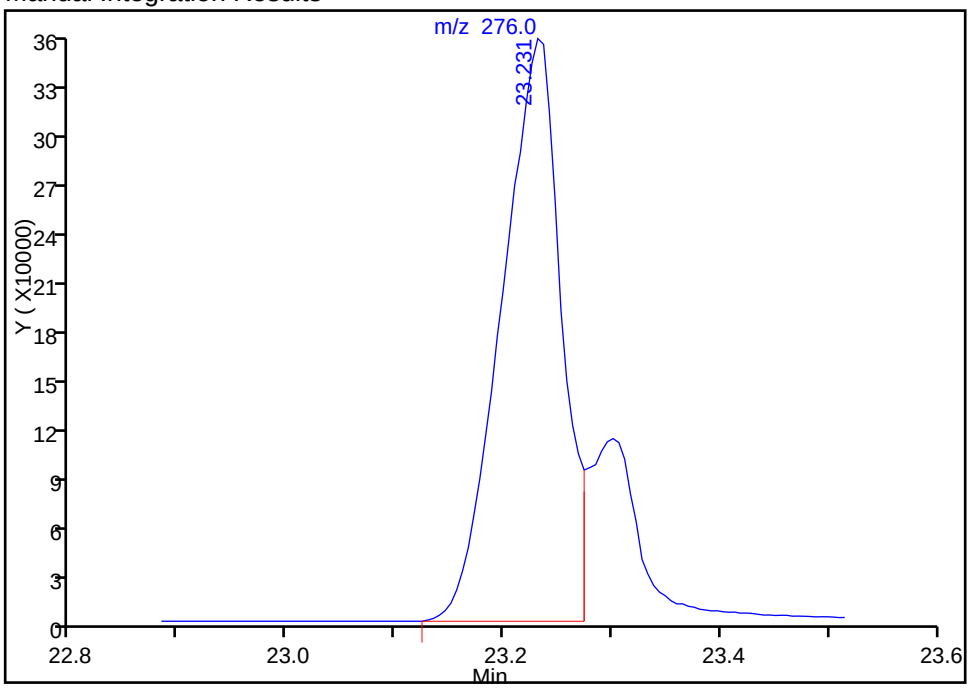
Processing Integration Results

RT: 23.23
Area: 1423791
Amount: 86.707449
Amount Units: ug/ml



Manual Integration Results

RT: 23.23
Area: 1363276
Amount: 82.663398
Amount Units: ug/ml



Reviewer: kuessnerm, 10-Aug-2016 10:20:09

Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

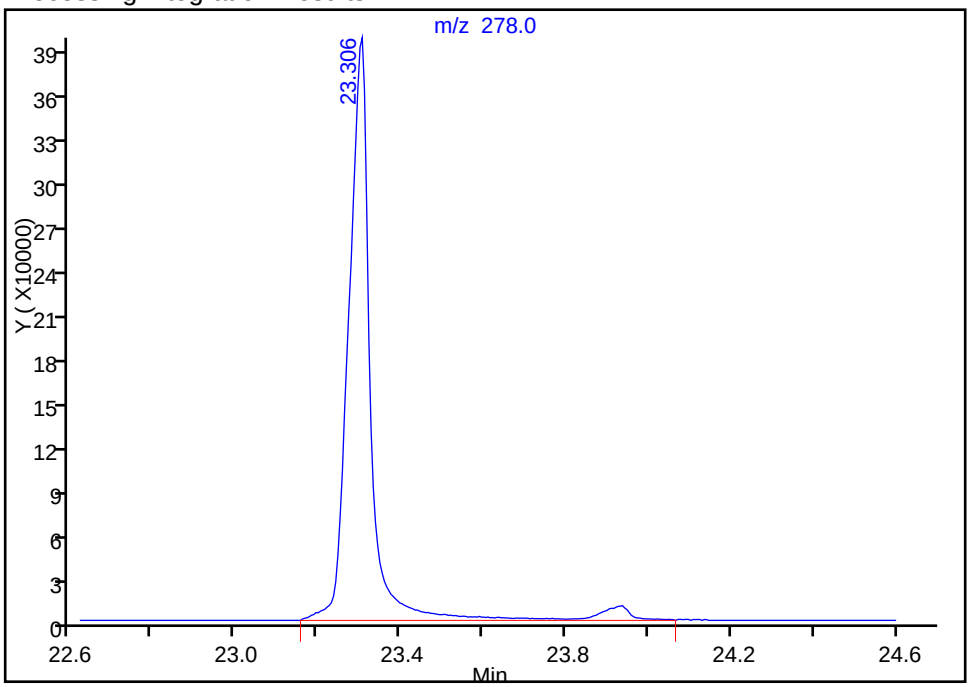
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1963.D				
Injection Date:	09-Aug-2016 14:04:30	Instrument ID:	SMSI		
Lims ID:	IC				
Client ID:					
Operator ID:		ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

157 Dibenz(a,h)anthracene, CAS: 53-70-3

Signal: 1

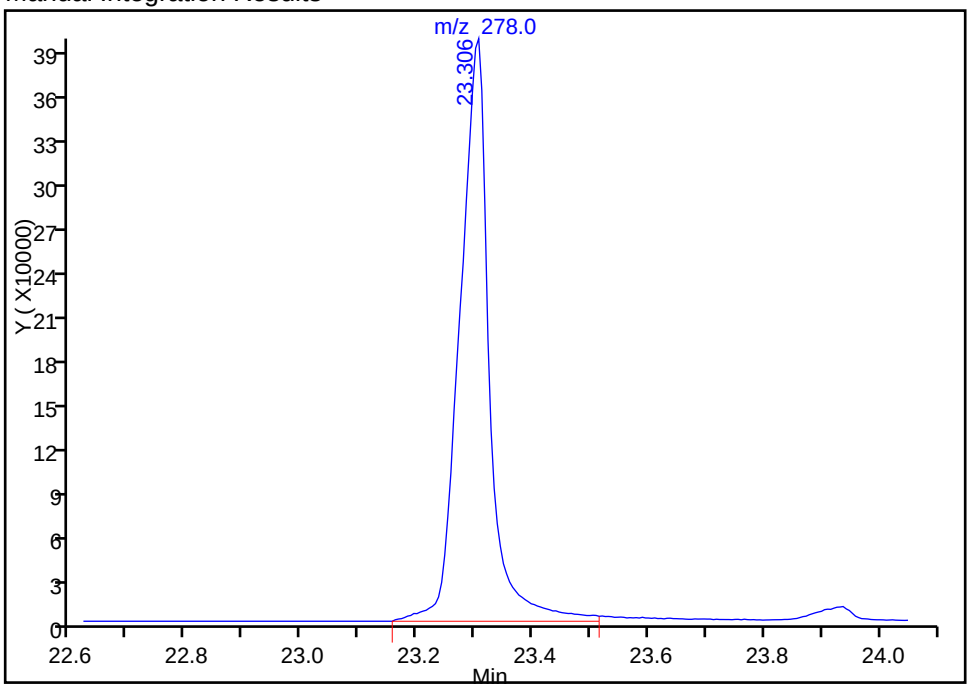
Processing Integration Results

RT: 23.31
Area: 1505028
Amount: 83.180013
Amount Units: ug/ml



Manual Integration Results

RT: 23.31
Area: 1423323
Amount: 79.303818
Amount Units: ug/ml



Reviewer: kuessnerm, 10-Aug-2016 10:20:09

Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1964.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 09-Aug-2016 14:37:30 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008148-007
Misc. Info.: IC
Operator ID: Instrument ID: SMSI
Sublist: chrom-BNA_SMSI*sub11

Method: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 10-Aug-2016 10:37:32 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK026

First Level Reviewer: kuessnerm Date: 10-Aug-2016 10:21:38

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88	2.158	2.168	-0.010	94	72441	20.0	20.2	
3 N-Nitrosodimethylamine	74	2.532	2.543	-0.011	87	111462	20.0	20.5	
4 Pyridine	79	2.569	2.575	-0.006	92	193354	20.0	20.2	
5 Dimethylformamide	44	2.987	2.997	-0.010	97	101033	20.0	19.7	
$ 10 2-Fluorophenol	112	4.083	4.088	-0.005	96	166057	20.0	20.3	
11 Cyclohexanol	57	4.249	4.254	-0.005	97	146715	20.0	20.6	
$ 16 Phenol-d5	99	5.158	5.163	-0.005	90	207623	20.0	20.7	
17 Phenol	94	5.174	5.179	-0.005	96	230321	20.0	20.8	
18 Aniline	93	5.185	5.190	-0.005	95	267308	20.0	20.8	
19 Bis(2-chloroethyl)ether	93	5.260	5.265	-0.005	99	168603	20.0	20.4	
21 2-Chlorophenol	128	5.335	5.335	0.000	96	172479	20.0	20.5	
22 1,3-Dichlorobenzene	146	5.516	5.516	0.000	95	181839	20.0	20.9	
* 23 1,4-Dichlorobenzene-d4	152	5.581	5.581	0.000	97	214026	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.602	5.602	0.000	94	180200	20.0	20.7	
25 Benzyl alcohol	108	5.752	5.757	-0.005	94	118817	20.0	20.3	
26 1,2-Dichlorobenzene	146	5.789	5.789	0.000	94	172892	20.0	20.9	
27 2-Methylphenol	108	5.902	5.907	-0.005	91	159109	20.0	20.5	
28 2,2'-oxybis[1-chloropropan	45	5.928	5.928	0.000	93	209634	20.0	21.1	
29 Acetophenone	105	6.078	6.083	-0.005	92	227173	20.0	20.6	
30 N-Nitrosodi-n-propylamine	70	6.083	6.094	-0.011	90	122443	20.0	20.8	
31 3 & 4 Methylphenol	107	6.094	6.105	-0.011	98	178169	20.0	20.6	
35 Hexachloroethane	117	6.212	6.212	0.000	91	68686	20.0	20.3	
$ 37 Nitrobenzene-d5	82	6.271	6.271	0.000	88	175882	20.0	20.6	
38 Nitrobenzene	77	6.292	6.297	-0.005	96	179557	20.0	20.8	
S 36 Total Cresols	100				0			41.1	
40 Isophorone	82	6.608	6.624	-0.016	99	340700	20.0	20.8	
41 2-Nitrophenol	139	6.720	6.720	0.000	90	89959	20.0	20.7	
42 2,4-Dimethylphenol	107	6.795	6.800	-0.005	91	173233	20.0	20.9	
43 Bis(2-chloroethoxy)methane	93	6.918	6.918	0.000	100	198864	20.0	20.7	
45 Benzoic acid	122	6.939	7.009	-0.070	90	89135	20.0	18.4	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
46 2,4-Dichlorophenol	162	7.062	7.067	-0.005	95	130258	20.0	20.8	
48 1,2,4-Trichlorobenzene	180	7.180	7.174	0.006	94	138754	20.0	20.7	
* 49 Naphthalene-d8	136	7.255	7.255	0.000	100	880309	40.0	40.0	
50 Naphthalene	128	7.282	7.287	-0.005	99	494835	20.0	21.4	
52 4-Chloroaniline	127	7.372	7.378	-0.006	96	213104	20.0	20.9	
53 2,6-Dichlorophenol	162	7.383	7.388	-0.005	96	127146	20.0	21.0	
54 Hexachlorobutadiene	225	7.490	7.485	0.005	91	70422	20.0	21.0	
60 4-Chloro-3-methylphenol	107	8.143	8.143	0.000	96	149891	20.0	20.8	
62 2-Methylnaphthalene	142	8.351	8.357	-0.005	86	326844	20.0	21.1	
63 1-Methylnaphthalene	142	8.512	8.512	0.000	93	308310	20.0	21.2	
64 Hexachlorocyclopentadiene	237	8.635	8.635	0.000	95	53524	20.0	18.5	
65 1,2,4,5-Tetrachlorobenzene	216	8.640	8.640	0.000	94	120101	20.0	20.7	
67 2,4,6-Trichlorophenol	196	8.838	8.838	0.000	86	87673	20.0	20.3	
68 2,4,5-Trichlorophenol	196	8.897	8.897	0.000	94	90627	20.0	20.5	
$ 69 2-Fluorobiphenyl (Surr)	172	8.982	8.982	0.000	98	327026	20.0	20.9	
70 1,1'-Biphenyl	154	9.143	9.148	-0.005	96	382025	20.0	21.1	
71 2-Chloronaphthalene	162	9.164	9.170	-0.006	98	285950	20.0	21.1	
73 2-Nitroaniline	65	9.357	9.362	-0.005	98	98669	20.0	20.5	
77 Dimethyl phthalate	163	9.715	9.726	-0.011	98	338131	20.0	21.2	
78 1,3-Dinitrobenzene	168	9.737	9.747	-0.010	86	53052	20.0	20.2	
79 2,6-Dinitrotoluene	165	9.801	9.806	-0.005	94	76144	20.0	20.6	
80 Acenaphthylene	152	9.886	9.892	-0.006	98	462121	20.0	21.1	
81 3-Nitroaniline	138	10.095	10.106	-0.011	94	93944	20.0	20.1	
* 82 Acenaphthene-d10	164	10.154	10.154	0.000	92	489752	40.0	40.0	
83 Acenaphthene	153	10.207	10.212	-0.005	95	302897	20.0	20.9	
84 2,4-Dinitrophenol	184	10.287	10.303	-0.016	93	84325	40.0	33.9	
85 4-Nitrophenol	109	10.475	10.496	-0.021	91	106798	40.0	40.8	
87 Dibenzofuran	168	10.528	10.533	-0.005	95	407309	20.0	21.2	
86 2,4-Dinitrotoluene	165	10.533	10.544	-0.011	88	101052	20.0	20.7	
90 2,3,4,6-Tetrachlorophenol	232	10.780	10.785	-0.005	89	70593	20.0	20.0	
92 Diethyl phthalate	149	11.036	11.047	-0.011	98	341147	20.0	20.7	
93 Fluorene	166	11.165	11.175	-0.010	96	336918	20.0	20.9	
94 4-Chlorophenyl phenyl ethe	204	11.202	11.202	0.000	85	149858	20.0	21.1	
95 4-Nitroaniline	138	11.234	11.261	-0.027	89	95940	20.0	20.4	
98 4,6-Dinitro-2-methylphenol	198	11.304	11.325	-0.021	80	113317	40.0	39.4	
99 N-Nitrosodiphenylamine	169	11.432	11.437	-0.005	99	241273	20.0	20.1	
171 Diphenylamine	169	11.432	11.437	-0.005	94	241273	17.1	17.2	
100 Azobenzene	77	11.496	11.507	-0.011	99	379307	20.0	20.5	
$ 102 2,4,6-Tribromophenol	330	11.625	11.630	-0.005	88	39145	20.0	20.0	
106 4-Bromophenyl phenyl ether	248	12.127	12.133	-0.006	79	82820	20.0	19.9	
108 Hexachlorobenzene	284	12.229	12.234	-0.005	96	84777	20.0	19.9	
112 Pentachlorophenol	266	12.625	12.630	-0.005	90	93752	40.0	38.2	
* 117 Phenanthrene-d10	188	12.962	12.962	0.000	99	810947	40.0	40.0	
118 Phenanthrene	178	13.005	13.010	-0.005	98	477640	20.0	20.4	
119 Anthracene	178	13.101	13.106	-0.005	98	503807	20.0	20.6	
122 Carbazole	167	13.448	13.454	-0.006	96	469792	20.0	20.8	
124 Di-n-butyl phthalate	149	14.251	14.251	0.000	100	582652	20.0	21.0	
129 Fluoranthene	202	15.347	15.353	-0.006	97	491390	20.0	20.6	
130 Benzidine	184	15.668	15.679	-0.011	99	352396	20.0	19.9	
131 Pyrene	202	15.781	15.786	-0.006	98	506794	20.0	20.2	
$ 132 Terphenyl-d14	244	16.176	16.176	0.000	99	316578	20.0	19.8	
139 Butyl benzyl phthalate	149	17.219	17.219	0.000	98	254001	20.0	20.3	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
143 Benzo[a]anthracene	228	18.182	18.187	-0.005	99	453276	20.0	20.1	
144 3,3'-Dichlorobenzidine	252	18.193	18.198	-0.005	99	165279	20.0	20.2	
* 145 Chrysene-d12	240	18.209	18.214	-0.005	99	794121	40.0	40.0	
146 Chrysene	228	18.252	18.268	-0.016	98	453683	20.0	20.5	
148 Bis(2-ethylhexyl) phthalat	149	18.423	18.423	0.000	90	349819	20.0	20.7	
149 Di-n-octyl phthalate	149	19.653	19.653	0.000	97	589528	20.0	20.7	
150 Benzo[b]fluoranthene	252	20.188	20.198	-0.010	99	401200	20.0	20.0	
151 Benzo[k]fluoranthene	252	20.236	20.247	-0.011	99	490887	20.0	21.3	
153 Benzo[a]pyrene	252	20.765	20.776	-0.011	98	414740	20.0	20.6	
* 154 Perylene-d12	264	20.878	20.883	-0.005	98	740166	40.0	40.0	
156 Indeno[1,2,3-cd]pyrene	276	23.204	23.226	-0.022	98	355721	20.0	21.2	M
157 Dibenz(a,h)anthracene	278	23.279	23.295	-0.016	97	395777	20.0	21.6	
158 Benzo[g,h,i]perylene	276	23.889	23.921	-0.032	97	410923	20.0	21.6	
S 164 Phthalates, Total	1				0			124.7	

QC Flag Legend

Review Flags

M - Manually Integrated

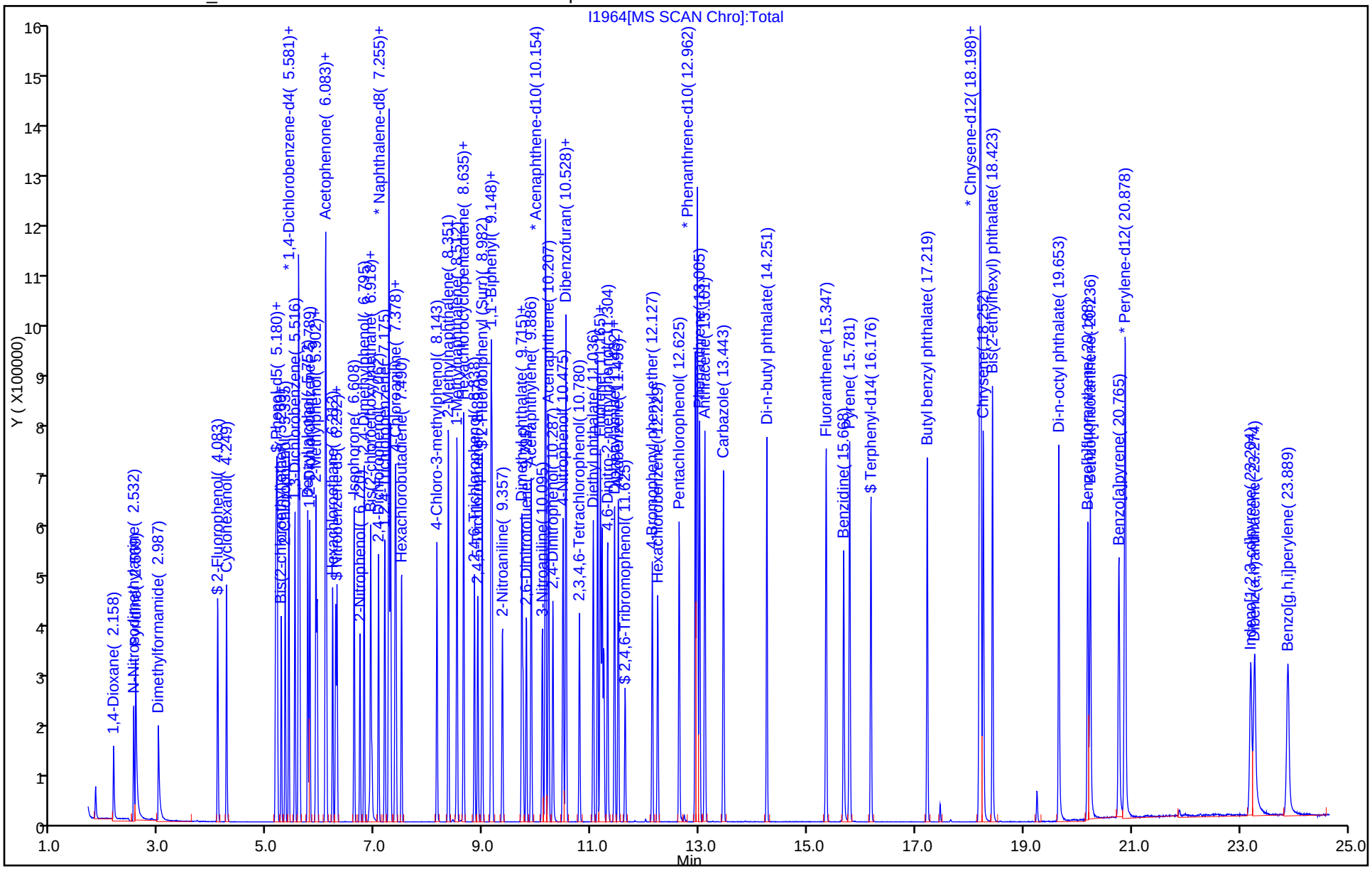
Reagents:

20 ppm 8270_00009 Amount Added: 1.00 Units: mL

Report Date: 10-Aug-2016 10:37:33 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1964.D				
Injection Date:	09-Aug-2016 14:37:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	IC			Worklist Smp#:	7
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	7
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

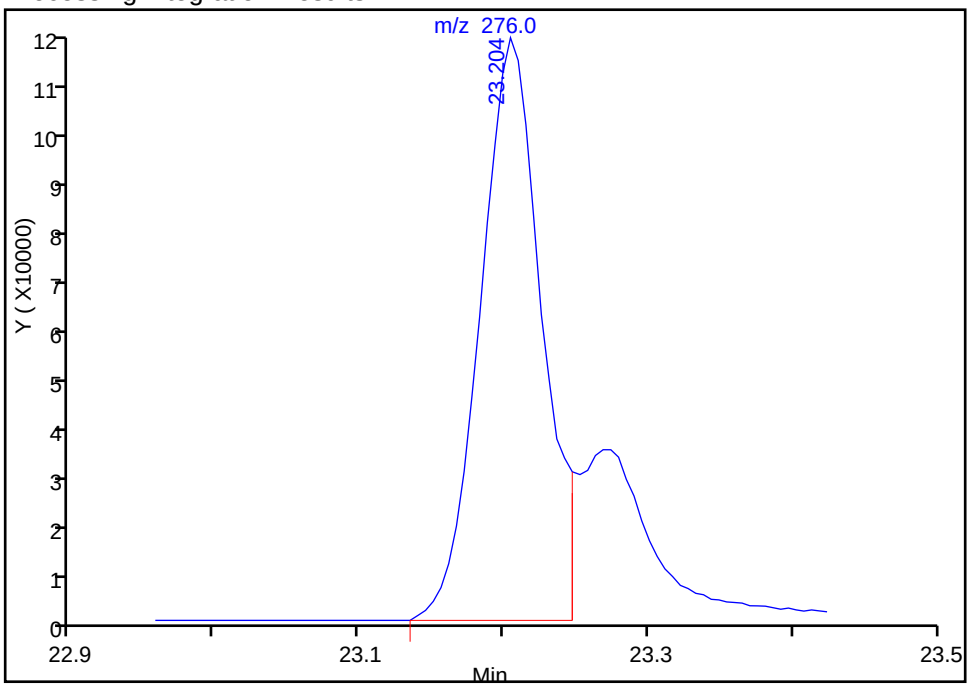
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1964.D				
Injection Date:	09-Aug-2016 14:37:30	Instrument ID:	SMSI		
Lims ID:	IC				
Client ID:					
Operator ID:		ALS Bottle#:	7	Worklist Smp#:	7
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

156 Indeno[1,2,3-cd]pyrene, CAS: 193-39-5

Signal: 1

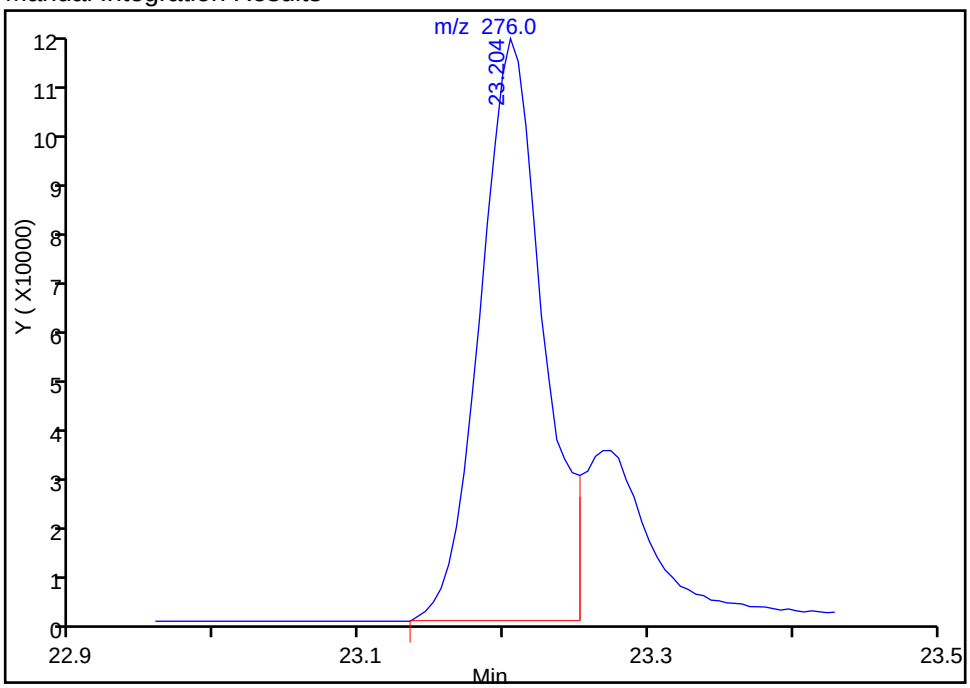
Processing Integration Results

RT: 23.20
Area: 347250
Amount: 20.896618
Amount Units: ug/ml



Manual Integration Results

RT: 23.20
Area: 355721
Amount: 21.173618
Amount Units: ug/ml



Reviewer: kuessnerm, 10-Aug-2016 10:21:38

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1965.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 09-Aug-2016 15:10:30 ALS Bottle#: 8 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008148-008
Misc. Info.: IC
Operator ID: Instrument ID: SMSI
Sublist: chrom-BNA_SMSI*sub11

Method: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 10-Aug-2016 10:37:37 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK026

First Level Reviewer: kuessnerm Date: 10-Aug-2016 10:22:31

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88	2.152	2.168	-0.016	96	36689	10.0	10.1	
3 N-Nitrosodimethylamine	74	2.521	2.543	-0.022	85	55034	10.0	10.0	
4 Pyridine	79	2.564	2.575	-0.011	93	96815	10.0	10.0	
5 Dimethylformamide	44	2.987	2.997	-0.010	98	52914	10.0	10.2	
$ 10 2-Fluorophenol	112	4.072	4.088	-0.016	96	83973	10.0	10.2	
11 Cyclohexanol	57	4.233	4.254	-0.021	97	74270	10.0	10.3	
$ 16 Phenol-d5	99	5.142	5.163	-0.021	93	105633	10.0	10.4	
17 Phenol	94	5.158	5.179	-0.021	98	118757	10.0	10.6	
18 Aniline	93	5.174	5.190	-0.016	95	139065	10.0	10.7	
19 Bis(2-chloroethyl)ether	93	5.249	5.265	-0.016	98	86513	10.0	10.4	
21 2-Chlorophenol	128	5.319	5.335	-0.016	95	87152	10.0	10.2	
22 1,3-Dichlorobenzene	146	5.500	5.516	-0.016	94	92684	10.0	10.5	
* 23 1,4-Dichlorobenzene-d4	152	5.570	5.581	-0.011	97	216476	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.591	5.602	-0.011	95	93001	10.0	10.6	
25 Benzyl alcohol	108	5.736	5.757	-0.021	94	58549	10.0	9.91	
26 1,2-Dichlorobenzene	146	5.779	5.789	-0.010	94	88308	10.0	10.6	
27 2-Methylphenol	108	5.891	5.907	-0.016	91	81309	10.0	10.3	
28 2,2'-oxybis[1-chloropropan	45	5.912	5.928	-0.016	92	107124	10.0	10.6	
29 Acetophenone	105	6.062	6.083	-0.021	94	118285	10.0	10.5	
30 N-Nitrosodi-n-propylamine	70	6.067	6.094	-0.027	91	62311	10.0	10.5	
31 3 & 4 Methylphenol	107	6.083	6.105	-0.022	91	91956	10.0	10.5	
35 Hexachloroethane	117	6.201	6.212	-0.011	90	35013	10.0	10.3	
$ 37 Nitrobenzene-d5	82	6.255	6.271	-0.016	88	88556	10.0	10.2	
38 Nitrobenzene	77	6.276	6.297	-0.021	96	91688	10.0	10.4	
S 36 Total Cresols	100				0			20.9	
40 Isophorone	82	6.592	6.624	-0.032	99	171859	10.0	10.3	
41 2-Nitrophenol	139	6.704	6.720	-0.016	88	43119	10.0	9.73	
42 2,4-Dimethylphenol	107	6.779	6.800	-0.021	91	87649	10.0	10.4	
43 Bis(2-chloroethoxy)methane	93	6.902	6.918	-0.016	99	101504	10.0	10.4	
45 Benzoic acid	122	6.896	7.009	-0.113	90	37063	10.0	7.52	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
46 2,4-Dichlorophenol	162	7.046	7.067	-0.021	95	66500	10.0	10.4	
48 1,2,4-Trichlorobenzene	180	7.164	7.174	-0.010	94	71798	10.0	10.5	
* 49 Naphthalene-d8	136	7.239	7.255	-0.016	99	897164	40.0	40.0	
50 Naphthalene	128	7.265	7.287	-0.022	99	253670	10.0	10.8	
52 4-Chloroaniline	127	7.351	7.378	-0.027	97	108523	10.0	10.5	
53 2,6-Dichlorophenol	162	7.367	7.388	-0.021	96	65061	10.0	10.5	
54 Hexachlorobutadiene	225	7.474	7.485	-0.011	90	35569	10.0	10.4	
60 4-Chloro-3-methylphenol	107	8.127	8.143	-0.016	96	73574	10.0	10.0	
62 2-Methylnaphthalene	142	8.335	8.357	-0.021	86	167918	10.0	10.6	
63 1-Methylnaphthalene	142	8.496	8.512	-0.016	93	157637	10.0	10.6	
64 Hexachlorocyclopentadiene	237	8.619	8.635	-0.016	93	22818	10.0	7.76	
65 1,2,4,5-Tetrachlorobenzene	216	8.619	8.640	-0.021	94	61652	10.0	10.5	
67 2,4,6-Trichlorophenol	196	8.822	8.838	-0.016	86	44131	10.0	10.0	
68 2,4,5-Trichlorophenol	196	8.881	8.897	-0.016	92	44587	10.0	9.91	
$ 69 2-Fluorobiphenyl (Surr)	172	8.961	8.982	-0.021	98	169674	10.0	10.7	
70 1,1'-Biphenyl	154	9.127	9.148	-0.021	95	198855	10.0	10.8	
71 2-Chloronaphthalene	162	9.143	9.170	-0.027	96	147648	10.0	10.7	
73 2-Nitroaniline	65	9.335	9.362	-0.027	97	47048	10.0	9.64	
77 Dimethyl phthalate	163	9.694	9.726	-0.032	98	171946	10.0	10.6	
78 1,3-Dinitrobenzene	168	9.715	9.747	-0.032	86	24086	10.0	9.02	
79 2,6-Dinitrotoluene	165	9.779	9.806	-0.027	93	37395	10.0	9.94	
80 Acenaphthylene	152	9.870	9.892	-0.022	98	235083	10.0	10.6	
81 3-Nitroaniline	138	10.073	10.106	-0.033	94	47091	10.0	9.93	
* 82 Acenaphthene-d10	164	10.132	10.154	-0.022	92	497622	40.0	40.0	
83 Acenaphthene	153	10.191	10.212	-0.021	95	156464	10.0	10.6	
84 2,4-Dinitrophenol	184	10.271	10.303	-0.032	93	33181	20.0	13.1	
85 4-Nitrophenol	109	10.453	10.496	-0.043	91	52010	20.0	19.6	
87 Dibenzofuran	168	10.507	10.533	-0.026	95	211105	10.0	10.8	
86 2,4-Dinitrotoluene	165	10.512	10.544	-0.032	87	49898	10.0	10.1	
90 2,3,4,6-Tetrachlorophenol	232	10.763	10.785	-0.022	89	34497	10.0	9.63	
92 Diethyl phthalate	149	11.015	11.047	-0.032	98	175599	10.0	10.5	
93 Fluorene	166	11.149	11.175	-0.026	96	175763	10.0	10.7	
94 4-Chlorophenyl phenyl ethe	204	11.181	11.202	-0.021	85	75856	10.0	10.5	
95 4-Nitroaniline	138	11.202	11.261	-0.059	89	46949	10.0	9.82	
98 4,6-Dinitro-2-methylphenol	198	11.277	11.325	-0.048	78	50014	20.0	17.0	
99 N-Nitrosodiphenylamine	169	11.411	11.437	-0.026	99	124677	10.0	10.2	
171 Diphenylamine	169	11.411	11.437	-0.026	94	124677	8.55	8.71	
100 Azobenzene	77	11.480	11.507	-0.027	99	193766	10.0	10.3	
$ 102 2,4,6-Tribromophenol	330	11.603	11.630	-0.027	88	19294	10.0	9.68	
106 4-Bromophenyl phenyl ether	248	12.111	12.133	-0.022	79	41887	10.0	9.83	
108 Hexachlorobenzene	284	12.208	12.234	-0.026	97	43249	10.0	9.96	
112 Pentachlorophenol	266	12.603	12.630	-0.027	89	42777	20.0	17.1	
* 117 Phenanthrene-d10	188	12.940	12.962	-0.022	99	828183	40.0	40.0	
118 Phenanthrene	178	12.983	13.010	-0.027	98	249214	10.0	10.4	
119 Anthracene	178	13.079	13.106	-0.027	98	258540	10.0	10.4	
122 Carbazole	167	13.427	13.454	-0.027	96	238848	10.0	10.4	
124 Di-n-butyl phthalate	149	14.229	14.251	-0.022	100	292656	10.0	10.3	
129 Fluoranthene	202	15.326	15.353	-0.027	97	249377	10.0	10.2	
130 Benzidine	184	15.647	15.679	-0.032	99	167476	10.0	9.36	
131 Pyrene	202	15.759	15.786	-0.027	97	257922	10.0	10.2	
$ 132 Terphenyl-d14	244	16.155	16.176	-0.021	99	159235	10.0	9.86	
139 Butyl benzyl phthalate	149	17.198	17.219	-0.021	98	123448	10.0	9.75	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
143 Benzo[a]anthracene	228	18.161	18.187	-0.026	99	226576	10.0	9.93	
144 3,3'-Dichlorobenzidine	252	18.166	18.198	-0.032	98	81278	10.0	9.82	
* 145 Chrysene-d12	240	18.187	18.214	-0.027	99	804123	40.0	40.0	
146 Chrysene	228	18.230	18.268	-0.038	98	225894	10.0	10.1	
148 Bis(2-ethylhexyl) phthalat	149	18.407	18.423	-0.016	90	167643	10.0	9.81	
149 Di-n-octyl phthalate	149	19.632	19.653	-0.021	97	275855	10.0	9.59	
150 Benzo[b]fluoranthene	252	20.161	20.198	-0.037	99	193213	10.0	9.69	
151 Benzo[k]fluoranthene	252	20.209	20.247	-0.038	99	236640	10.0	10.4	
153 Benzo[a]pyrene	252	20.739	20.776	-0.037	96	192598	10.0	9.65	
* 154 Perylene-d12	264	20.856	20.883	-0.027	98	734654	40.0	40.0	
156 Indeno[1,2,3-cd]pyrene	276	23.162	23.226	-0.064	99	157238	10.0	9.43	
157 Dibenz(a,h)anthracene	278	23.236	23.295	-0.059	97	194817	10.0	10.7	
158 Benzo[g,h,i]perylene	276	23.841	23.921	-0.080	96	200691	10.0	10.6	
S 164 Phthalates, Total	1				0			60.6	

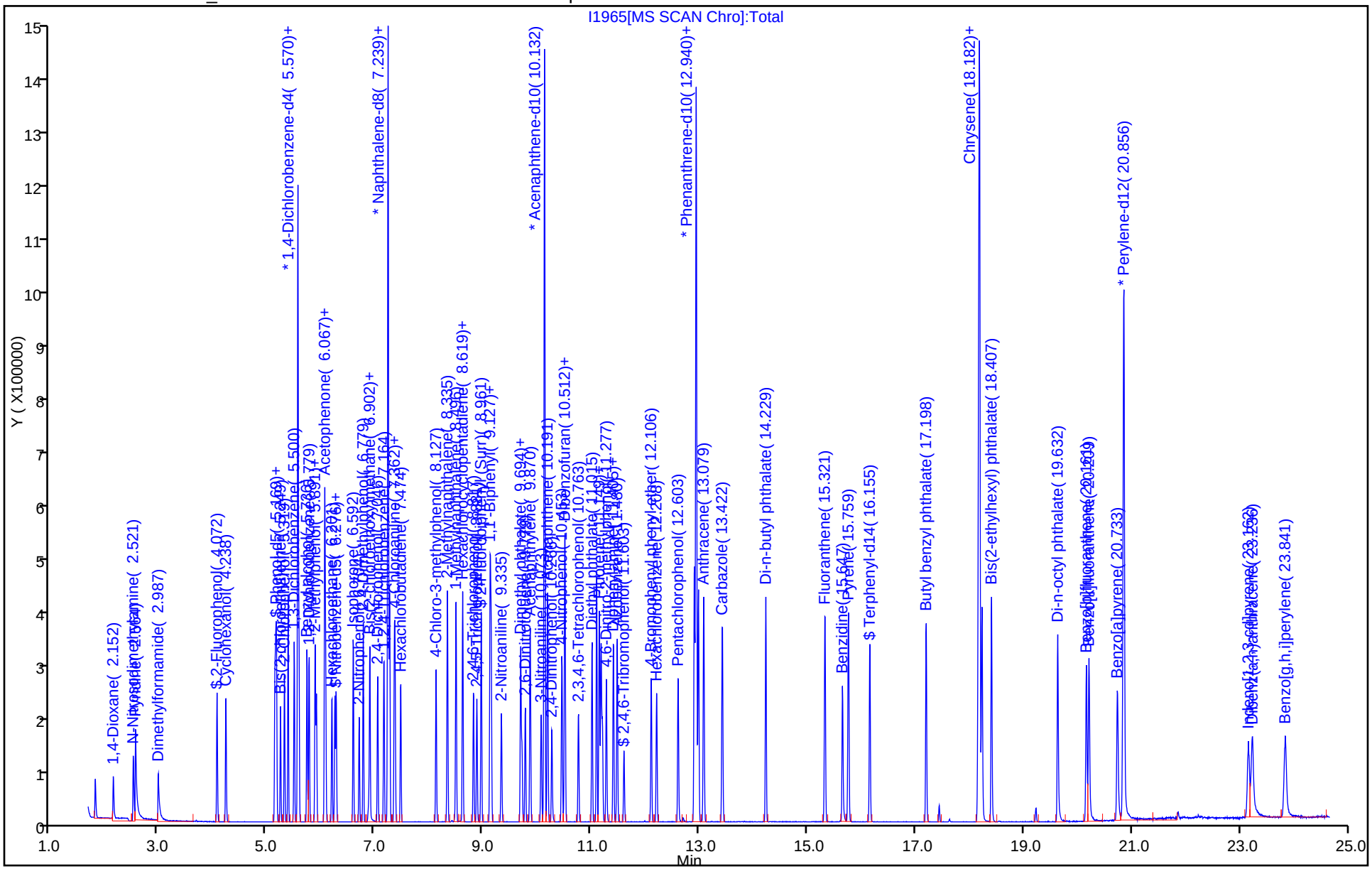
Reagents:

10 ppm 8270_00009 Amount Added: 1.00 Units: mL

Report Date: 10-Aug-2016 10:37:38 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1965.D				
Injection Date:	09-Aug-2016 15:10:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	IC			Worklist Smp#:	8
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	8
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 09-Aug-2016 15:43:30 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008148-009
Misc. Info.: IC
Operator ID: Instrument ID: SMSI
Sublist: chrom-BNA_SMSI*sub11

Method: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 10-Aug-2016 10:37:39 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK026

First Level Reviewer: kuessnerm Date: 10-Aug-2016 10:24:18

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88	2.168	2.168	0.000	97	27510	5.00	5.24	
3 N-Nitrosodimethylamine	74	2.532	2.543	-0.011	85	40346	5.00	5.08	
4 Pyridine	79	2.575	2.575	0.000	94	71236	5.00	5.09	
5 Dimethylformamide	44	2.992	2.997	-0.005	97	39374	5.00	5.24	
$ 10 2-Fluorophenol	112	4.072	4.088	-0.016	96	60793	5.00	5.09	
11 Cyclohexanol	57	4.238	4.254	-0.016	96	53644	5.00	5.15	
$ 16 Phenol-d5	99	5.142	5.163	-0.021	90	76194	5.00	5.20	
17 Phenol	94	5.153	5.179	-0.026	97	87564	5.00	5.41	
18 Aniline	93	5.169	5.190	-0.021	94	100405	5.00	5.34	
19 Bis(2-chloroethyl)ether	93	5.244	5.265	-0.021	99	63203	5.00	5.23	
21 2-Chlorophenol	128	5.319	5.335	-0.017	95	64368	5.00	5.23	
22 1,3-Dichlorobenzene	146	5.500	5.516	-0.016	94	68320	5.00	5.38	
* 23 1,4-Dichlorobenzene-d4	152	5.565	5.581	-0.016	98	312969	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.586	5.602	-0.016	96	67925	5.00	5.35	
25 Benzyl alcohol	108	5.736	5.757	-0.021	94	42942	5.00	5.03	
26 1,2-Dichlorobenzene	146	5.773	5.789	-0.016	93	64650	5.00	5.36	
27 2-Methylphenol	108	5.885	5.907	-0.022	92	59797	5.00	5.26	
28 2,2'-oxybis[1-chloropropan	45	5.907	5.928	-0.021	93	78771	5.00	5.41	
29 Acetophenone	105	6.057	6.083	-0.026	92	87121	5.00	5.43	
30 N-Nitrosodi-n-propylamine	70	6.062	6.094	-0.032	91	46166	5.00	5.36	
31 3 & 4 Methylphenol	107	6.078	6.105	-0.027	88	65501	5.00	5.18	
35 Hexachloroethane	117	6.196	6.212	-0.016	90	25729	5.00	5.21	
$ 37 Nitrobenzene-d5	82	6.249	6.271	-0.022	88	64723	5.00	5.20	
38 Nitrobenzene	77	6.276	6.297	-0.021	96	65575	5.00	5.21	
S 36 Total Cresols	100				0			10.4	
40 Isophorone	82	6.591	6.624	-0.033	99	125430	5.00	5.25	
41 2-Nitrophenol	139	6.698	6.720	-0.022	87	30623	5.00	4.83	
42 2,4-Dimethylphenol	107	6.773	6.800	-0.027	92	62491	5.00	5.17	
43 Bis(2-chloroethoxy)methane	93	6.896	6.918	-0.022	99	74340	5.00	5.32	
45 Benzoic acid	122	6.880	7.009	-0.129	87	21917	5.00	3.11	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
46 2,4-Dichlorophenol	162	7.041	7.067	-0.026	94	47939	5.00	5.25	
48 1,2,4-Trichlorobenzene	180	7.158	7.174	-0.016	93	52364	5.00	5.35	
* 49 Naphthalene-d8	136	7.233	7.255	-0.022	99	1282368	40.0	40.0	
50 Naphthalene	128	7.265	7.287	-0.022	99	186941	5.00	5.54	
52 4-Chloroaniline	127	7.351	7.378	-0.027	97	78434	5.00	5.29	
53 2,6-Dichlorophenol	162	7.362	7.388	-0.026	96	48050	5.00	5.44	
54 Hexachlorobutadiene	225	7.469	7.485	-0.016	89	26443	5.00	5.41	
60 4-Chloro-3-methylphenol	107	8.121	8.143	-0.022	97	54399	5.00	5.18	
62 2-Methylnaphthalene	142	8.330	8.357	-0.026	87	123397	5.00	5.46	
63 1-Methylnaphthalene	142	8.490	8.512	-0.022	93	115249	5.00	5.43	
64 Hexachlorocyclopentadiene	237	8.613	8.635	-0.022	89	15350	5.00	3.67	
65 1,2,4,5-Tetrachlorobenzene	216	8.613	8.640	-0.027	94	44743	5.00	5.34	
67 2,4,6-Trichlorophenol	196	8.817	8.838	-0.022	86	31732	5.00	5.08	
68 2,4,5-Trichlorophenol	196	8.875	8.897	-0.022	92	32531	5.00	5.09	
$ 69 2-Fluorobiphenyl (Surr)	172	8.956	8.982	-0.026	98	124084	5.00	5.48	
70 1,1'-Biphenyl	154	9.121	9.148	-0.027	95	145061	5.00	5.54	
71 2-Chloronaphthalene	162	9.137	9.170	-0.033	96	108188	5.00	5.52	
73 2-Nitroaniline	65	9.330	9.362	-0.032	97	33201	5.00	4.79	
77 Dimethyl phthalate	163	9.688	9.726	-0.038	98	126388	5.00	5.48	
78 1,3-Dinitrobenzene	168	9.710	9.747	-0.037	88	16113	5.00	4.25	
79 2,6-Dinitrotoluene	165	9.774	9.806	-0.032	92	26334	5.00	4.92	
80 Acenaphthylene	152	9.865	9.892	-0.027	98	171804	5.00	5.43	
81 3-Nitroaniline	138	10.068	10.106	-0.038	94	33525	5.00	4.97	
* 82 Acenaphthene-d10	164	10.132	10.154	-0.022	92	707489	40.0	40.0	
83 Acenaphthene	153	10.186	10.212	-0.026	95	114078	5.00	5.45	
84 2,4-Dinitrophenol	184	10.261	10.303	-0.042	91	19657	10.0	5.48	
85 4-Nitrophenol	109	10.448	10.496	-0.048	91	36743	10.0	9.72	
87 Dibenzofuran	168	10.501	10.533	-0.032	95	156864	5.00	5.65	
86 2,4-Dinitrotoluene	165	10.507	10.544	-0.037	88	35661	5.00	5.05	
90 2,3,4,6-Tetrachlorophenol	232	10.758	10.785	-0.027	88	24998	5.00	4.91	
92 Diethyl phthalate	149	11.004	11.047	-0.043	98	128123	5.00	5.39	
93 Fluorene	166	11.143	11.175	-0.032	96	126958	5.00	5.45	
94 4-Chlorophenyl phenyl ethe	204	11.175	11.202	-0.027	85	56032	5.00	5.46	
95 4-Nitroaniline	138	11.197	11.261	-0.064	88	32943	5.00	4.85	
98 4,6-Dinitro-2-methylphenol	198	11.272	11.325	-0.053	77	32919	10.0	7.92	
99 N-Nitrosodiphenylamine	169	11.400	11.437	-0.037	99	91097	5.00	5.26	
171 Diphenylamine	169	11.400	11.437	-0.037	94	91097	4.28	4.49	
100 Azobenzene	77	11.469	11.507	-0.038	99	142299	5.00	5.33	
$ 102 2,4,6-Tribromophenol	330	11.598	11.630	-0.032	87	13976	5.00	4.93	
106 4-Bromophenyl phenyl ether	248	12.101	12.133	-0.032	79	31216	5.00	5.17	
108 Hexachlorobenzene	284	12.202	12.234	-0.032	97	31729	5.00	5.16	
112 Pentachlorophenol	266	12.603	12.630	-0.027	89	28981	10.0	8.16	
* 117 Phenanthrene-d10	188	12.940	12.962	-0.022	99	1173177	40.0	40.0	
118 Phenanthrene	178	12.978	13.010	-0.032	97	183119	5.00	5.42	
119 Anthracene	178	13.074	13.106	-0.032	98	188073	5.00	5.33	
122 Carbazole	167	13.416	13.454	-0.038	96	173808	5.00	5.32	
124 Di-n-butyl phthalate	149	14.224	14.251	-0.027	100	212245	5.00	5.28	
129 Fluoranthene	202	15.315	15.353	-0.038	97	177913	5.00	5.15	
130 Benzidine	184	15.641	15.679	-0.038	99	108729	5.00	4.31	
131 Pyrene	202	15.754	15.786	-0.032	97	185251	5.00	5.18	
$ 132 Terphenyl-d14	244	16.149	16.176	-0.027	99	112486	5.00	4.94	
139 Butyl benzyl phthalate	149	17.192	17.219	-0.027	98	84603	5.00	4.74	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
143 Benzo[a]anthracene	228	18.155	18.187	-0.032	99	160843	5.00	5.01	
144 3,3'-Dichlorobenzidine	252	18.166	18.198	-0.032	98	54059	5.00	4.64	
* 145 Chrysene-d12	240	18.182	18.214	-0.032	99	1132774	40.0	40.0	
146 Chrysene	228	18.225	18.268	-0.043	98	158723	5.00	5.02	
148 Bis(2-ethylhexyl) phthalat	149	18.401	18.423	-0.022	90	117771	5.00	4.89	
149 Di-n-octyl phthalate	149	19.626	19.653	-0.027	97	188666	5.00	4.65	
150 Benzo[b]fluoranthene	252	20.156	20.198	-0.042	98	124979	5.00	4.57	
151 Benzo[k]fluoranthene	252	20.204	20.247	-0.043	99	162342	5.00	5.18	
153 Benzo[a]pyrene	252	20.728	20.776	-0.048	96	128860	5.00	4.71	
* 154 Perylene-d12	264	20.856	20.883	-0.027	98	1006913	40.0	40.0	
156 Indeno[1,2,3-cd]pyrene	276	23.151	23.226	-0.075	97	95188	5.00	4.16	M
157 Dibenz(a,h)anthracene	278	23.220	23.295	-0.075	97	109909	5.00	4.42	
158 Benzo[g,h,i]perylene	276	23.830	23.921	-0.091	96	119371	5.00	4.60	
S 164 Phthalates, Total	1				0			30.4	

QC Flag Legend

Review Flags

M - Manually Integrated

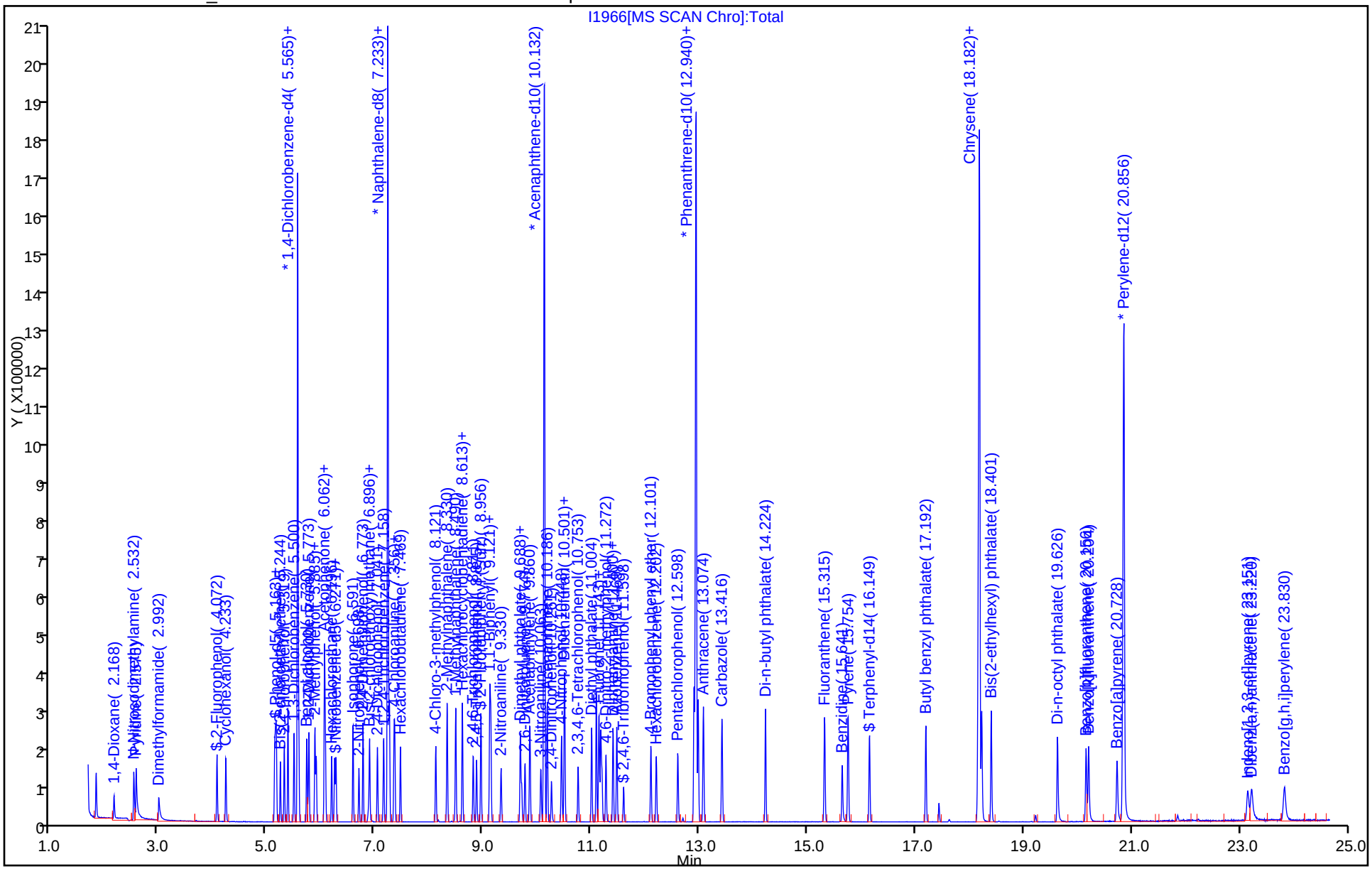
Reagents:

5 ppm 8270_00009 Amount Added: 1.00 Units: mL

Report Date: 10-Aug-2016 10:37:40 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D				
Injection Date:	09-Aug-2016 15:43:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	IC			Worklist Smp#:	9
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	9
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



TestAmerica St. Louis

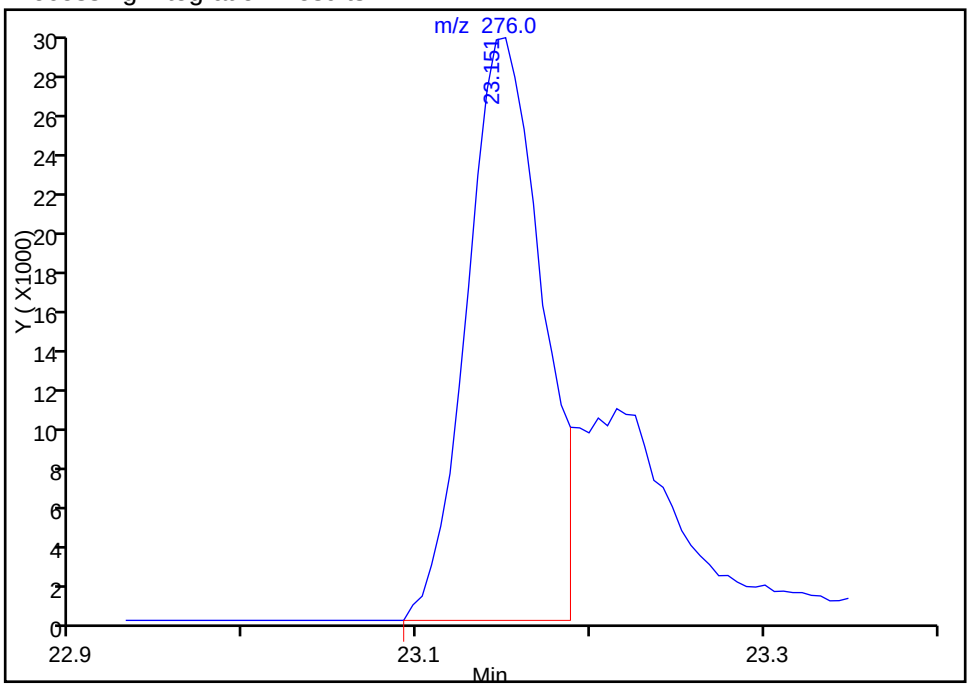
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D				
Injection Date:	09-Aug-2016 15:43:30	Instrument ID:	SMSI		
Lims ID:	IC				
Client ID:					
Operator ID:		ALS Bottle#:	9	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

156 Indeno[1,2,3-cd]pyrene, CAS: 193-39-5

Signal: 1

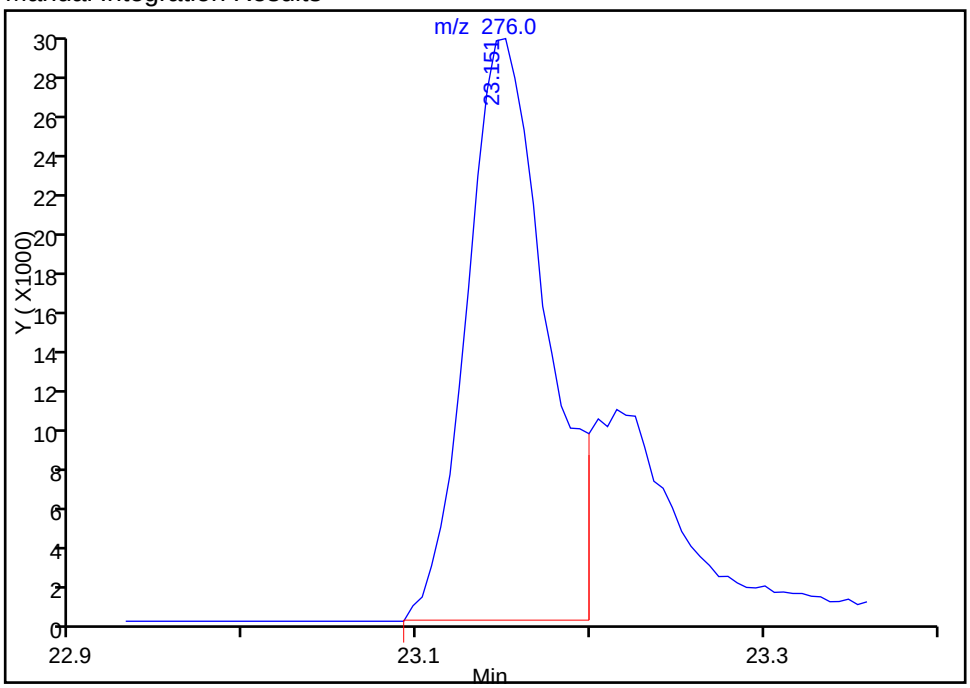
Processing Integration Results

RT: 23.15
Area: 89371
Amount: 3.939028
Amount Units: ug/ml



Manual Integration Results

RT: 23.15
Area: 95188
Amount: 4.164904
Amount Units: ug/ml



Reviewer: kuessnerm, 10-Aug-2016 10:24:18
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID (1): ICV 160-264049/10 Instrument ID (1): SMSI

GC Column (1): RXI5SiiMS ID: 0.25(mm) Date Analyzed (1): 08/09/2016 16:16

ANALYTE	RT	RESOLUTION (%)
Pyridine	2.55	100.0
1,4-Dichlorobenzene	5.59	100.0
2-Methylphenol	5.90	100.0
3 & 4 Methylphenol	6.09	100.0
Hexachloroethane	6.20	100.0
Nitrobenzene	6.28	100.0
Hexachlorobutadiene	7.47	100.0
2,4,6-Trichlorophenol	8.82	100.0
2,4,5-Trichlorophenol	8.89	100.0
2,4-Dinitrotoluene	10.53	100.0
Hexachlorobenzene	12.22	100.0
Pentachlorophenol	12.61	100.0

FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID (1): CCVIS 160-264877/3 Instrument ID (1): SMSI

GC Column (1): RXI5SiiMS ID: 0.25(mm) Date Analyzed (1): 08/15/2016 16:31

ANALYTE	RT	RESOLUTION (%)
Pyridine	2.53	100.0
2-Fluorophenol (Surr)	4.05	100.0
Phenol-d5 (Surr)	5.13	100.0
1,4-Dichlorobenzene	5.56	100.0
2-Methylphenol	5.87	100.0
3 & 4 Methylphenol	6.06	100.0
Hexachloroethane	6.16	100.0
Nitrobenzene-d5 (Surr)	6.23	100.0
Nitrobenzene	6.25	100.0
Hexachlorobutadiene	7.44	100.0
2,4,6-Trichlorophenol	8.78	100.0
2,4,5-Trichlorophenol	8.85	100.0
2-Fluorobiphenyl (Surr)	8.93	100.0
2,4-Dinitrotoluene	10.49	100.0
2,4,6-Tribromophenol (Surr)	11.58	100.0
Hexachlorobenzene	12.18	100.0
Pentachlorophenol	12.58	100.0
Terphenyl-d14 (Surr)	16.12	100.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-264049/10 Calibration Date: 08/09/2016 16:16

Instrument ID: SMSI Calib Start Date: 08/09/2016 12:25

GC Column: RXI5SiiMS ID: 0.25(mm) Calib End Date: 08/09/2016 15:43

Lab File ID: I1967.D Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,4-Dioxane	Ave	0.6715	0.6602	0.0100	49.2	50.0	-1.7	30.0
N-Nitrosodimethylamine	Ave	1.015	0.8839	0.0100	43.6	50.0	-12.9	30.0
Pyridine	Ave	1.788	1.786	0.0100	50.0	50.0	-0.0	30.0
Dimethylformamide	Ave	0.9600	0.9590	0.0100	49.9	50.0	-0.1	30.0
Cyclohexanol	Ave	1.332	1.337	0.0100	50.2	50.0	0.3	30.0
Phenol	Ave	2.070	2.106	0.8000	50.9	50.0	1.7	30.0
Aniline	Ave	2.402	2.418	0.0100	50.3	50.0	0.7	30.0
Bis(2-chloroethyl)ether	Ave	1.544	1.506	0.7000	48.8	50.0	-2.4	30.0
2-Chlorophenol	Ave	1.573	1.542	0.8000	49.0	50.0	-2.0	30.0
1,3-Dichlorobenzene	Ave	1.624	1.608	0.0100	49.5	50.0	-1.0	30.0
1,4-Dichlorobenzene	Ave	1.624	1.617	0.0100	49.8	50.0	-0.4	30.0
Benzyl alcohol	Ave	1.091	1.074	0.0100	49.2	50.0	-1.6	30.0
1,2-Dichlorobenzene	Ave	1.543	1.540	0.0100	49.9	50.0	-0.2	30.0
2-Methylphenol	Ave	1.454	1.466	0.6000	50.4	50.0	0.8	30.0
bis (2-chloroisopropyl) ether	Ave	1.860	1.872	0.0100	50.3	50.0	0.6	30.0
Acetophenone	Ave	0.5009	0.4866	0.0100	48.6	50.0	-2.8	30.0
N-Nitrosodi-n-propylamine	Ave	1.101	1.083	0.5000	49.2	50.0	-1.7	30.0
3 & 4 Methylphenol	Ave	1.616	1.598	0.6000	49.4	50.0	-1.1	30.0
Hexachloroethane	Ave	0.6311	0.6356	0.3000	50.4	50.0	0.7	30.0
Nitrobenzene	Ave	0.3924	0.3903	0.2000	49.7	50.0	-0.6	30.0
Isophorone	Ave	0.7449	0.7374	0.4000	49.5	50.0	-1.0	30.0
2-Nitrophenol	Ave	0.1977	0.1978	0.1000	50.0	50.0	0.0	30.0
2,4-Dimethylphenol	Ave	0.3772	0.3678	0.2000	48.8	50.0	-2.5	30.0
Bis(2-chloroethoxy)methane	Ave	0.4362	0.4302	0.0100	49.3	50.0	-1.4	30.0
Benzoic acid	Ave	0.2198	0.2252	0.0100	51.2	50.0	2.5	30.0
2,4-Dichlorophenol	Ave	0.2847	0.2827	0.0100	49.7	50.0	-0.7	30.0
1,2,4-Trichlorobenzene	Ave	0.3050	0.2924	0.0100	47.9	50.0	-4.1	30.0
Naphthalene	Ave	1.052	1.054	0.7000	50.1	50.0	0.2	30.0
4-Chloroaniline	Ave	0.4626	0.4586	0.0100	49.6	50.0	-0.9	30.0
2,6-Dichlorophenol	Ave	0.2757	0.2723	0.0100	49.4	50.0	-1.2	30.0
Hexachlorobutadiene	Ave	0.1526	0.1498	0.0100	49.1	50.0	-1.9	30.0
4-Chloro-3-methylphenol	Ave	0.3274	0.3252	0.2000	49.7	50.0	-0.7	30.0
2-Methylnaphthalene	Ave	0.7052	0.6906	0.4000	49.0	50.0	-2.1	30.0
1-Methylnaphthalene	Ave	0.6617	0.6539	0.0100	49.4	50.0	-1.2	30.0
1,2,4,5-Tetrachlorobenzene	Ave	0.4738	0.4671	0.0100	49.3	50.0	-1.4	30.0
Hexachlorocyclopentadiene	Ave	0.2364	0.2442	0.0500	51.6	50.0	3.3	30.0
2,4,6-Trichlorophenol	Ave	0.3531	0.3526	0.2000	49.9	50.0	-0.1	30.0
2,4,5-Trichlorophenol	Ave	0.3617	0.3730	0.2000	51.6	50.0	3.1	30.0
1,1'-Biphenyl	Ave	1.480	1.478	0.0100	49.9	50.0	-0.1	30.0
2-Chloronaphthalene	Ave	1.108	1.110	0.8000	50.1	50.0	0.2	30.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-264049/10 Calibration Date: 08/09/2016 16:16

Instrument ID: SMSI Calib Start Date: 08/09/2016 12:25

GC Column: RXI5SiiMS ID: 0.25(mm) Calib End Date: 08/09/2016 15:43

Lab File ID: I1967.D Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
2-Nitroaniline	Ave	0.3922	0.4032	0.0100	51.4	50.0	2.8	30.0
Dimethyl phthalate	Ave	1.303	1.286	0.0100	49.3	50.0	-1.3	30.0
1,3-Dinitrobenzene	Ave	0.2145	0.2198	0.0100	51.2	50.0	2.4	30.0
2,6-Dinitrotoluene	Ave	0.3023	0.3007	0.2000	49.7	50.0	-0.5	30.0
Acenaphthylene	Ave	1.790	1.855	0.9000	51.8	50.0	3.6	30.0
3-Nitroaniline	Ave	0.3812	0.3871	0.0100	50.8	50.0	1.5	30.0
Acenaphthene	Ave	1.183	1.196	0.0100	50.5	50.0	1.1	30.0
2,4-Dinitrophenol	Ave	0.2029	0.1871	0.0100	92.2	100	-7.8	30.0
4-Nitrophenol	Ave	0.2136	0.2209	0.0100	103	100	3.4	30.0
Dibenzofuran	Ave	1.570	1.534	0.8000	48.8	50.0	-2.3	30.0
2,4-Dinitrotoluene	Ave	0.3991	0.3986	0.2000	49.9	50.0	-0.1	30.0
2,3,4,6-Tetrachlorophenol	Ave	0.2880	0.2868	0.0100	49.8	50.0	-0.4	30.0
Diethyl phthalate	Ave	1.345	1.330	0.0100	49.4	50.0	-1.1	30.0
Fluorene	Ave	1.318	1.303	0.9000	49.5	50.0	-1.1	30.0
4-Chlorophenyl phenyl ether	Ave	0.5806	0.5645	0.4000	48.6	50.0	-2.8	30.0
4-Nitroaniline	Ave	0.3843	0.3871	0.0100	50.4	50.0	0.7	30.0
4,6-Dinitro-2-methylphenol	Ave	0.1418	0.1404	0.0100	99.0	100	-1.0	30.0
Diphenylamine	Ave	0.6910	0.6900	0.0100	42.7	42.8	-0.1	30.0
Diphenylamine + N-Nitrosodiphenylamine	Ave	0.5908	0.5900	0.0100	49.9	50.0	-0.1	30.0
Azobenzene	Ave	0.9108	0.9222	0.0100	50.6	50.0	1.2	30.0
4-Bromophenyl phenyl ether	Ave	0.2057	0.1974	0.0100	48.0	50.0	-4.0	30.0
Hexachlorobenzene	Ave	0.2098	0.2100	0.1000	50.0	50.0	0.0	30.0
Pentachlorophenol	Ave	0.1211	0.1273	0.0500	105	100	5.1	30.0
Phenanthrene	Ave	1.153	1.153	0.7000	50.0	50.0	0.0	30.0
Anthracene	Ave	1.204	1.199	0.7000	49.8	50.0	-0.4	30.0
Carbazole	Ave	1.114	1.108	0.0100	49.7	50.0	-0.6	30.0
Di-n-butyl phthalate	Ave	1.371	1.404	0.0100	51.2	50.0	2.4	30.0
Fluoranthene	Ave	1.179	1.180	0.6000	50.0	50.0	0.0	30.0
Benzidine	Ave	0.8903	0.9461	0.0100	53.1	50.0	6.3	30.0
Pyrene	Ave	1.262	1.230	0.6000	48.7	50.0	-2.5	30.0
Butyl benzyl phthalate	Ave	0.6298	0.6383	0.0100	50.7	50.0	1.3	30.0
Benzo[a]anthracene	Ave	1.135	1.141	0.8000	50.3	50.0	0.6	30.0
3,3'-Dichlorobenzidine	Ave	0.4117	0.4246	0.0100	51.6	50.0	3.1	30.0
Chrysene	Ave	1.116	1.103	0.7000	49.4	50.0	-1.2	30.0
Bis(2-ethylhexyl) phthalate	Ave	0.8504	0.8476	0.0100	49.8	50.0	-0.3	30.0
Di-n-octyl phthalate	Ave	1.432	1.481	0.0100	51.7	50.0	3.4	30.0
Benzo[b]fluoranthene	Ave	1.086	1.046	0.7000	48.2	50.0	-3.6	30.0
Benzo[k]fluoranthene	Ave	1.245	1.230	0.7000	49.4	50.0	-1.2	30.0
Benzo[a]pyrene	Ave	1.087	1.035	0.7000	47.6	50.0	-4.8	30.0
Indeno[1,2,3-cd]pyrene	Ave	0.9079	0.8864	0.5000	48.8	50.0	-2.4	30.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-264049/10 Calibration Date: 08/09/2016 16:16

Instrument ID: SMSI Calib Start Date: 08/09/2016 12:25

GC Column: RXI5SiiMS ID: 0.25(mm) Calib End Date: 08/09/2016 15:43

Lab File ID: I1967.D Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dibenz(a,h)anthracene	Ave	0.9881	0.9554	0.4000	48.3	50.0	-3.3	30.0
Benzo[g,h,i]perylene	Ave	1.030	1.079	0.5000	52.4	50.0	4.8	30.0

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1967.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 09-Aug-2016 16:16:30 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008148-010
Misc. Info.: ICV
Operator ID: Instrument ID: SMSI
Sublist: chrom-BNA_SMSK*sub8

Method: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 10-Aug-2016 10:37:39 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK026

First Level Reviewer: kuessnerm Date: 10-Aug-2016 10:35:34

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88	2.152	2.168	-0.016	94	166644	50.0	49.2	
3 N-Nitrosodimethylamine	74	2.521	2.543	-0.022	86	223108	50.0	43.6	
4 Pyridine	79	2.553	2.575	-0.022	92	450852	50.0	50.0	
5 Dimethylformamide	44	2.971	2.997	-0.026	98	242042	50.0	49.9	
11 Cyclohexanol	57	4.238	4.254	-0.016	97	337366	50.0	50.2	
17 Phenol	94	5.163	5.179	-0.016	98	531560	50.0	50.9	
18 Aniline	93	5.174	5.190	-0.016	97	610399	50.0	50.3	
19 Bis(2-chloroethyl)ether	93	5.254	5.265	-0.011	98	380227	50.0	48.8	
21 2-Chlorophenol	128	5.324	5.335	-0.011	95	389121	50.0	49.0	
22 1,3-Dichlorobenzene	146	5.506	5.516	-0.010	94	405751	50.0	49.5	
* 23 1,4-Dichlorobenzene-d4	152	5.570	5.581	-0.011	97	201923	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.591	5.602	-0.011	93	408048	50.0	49.8	
25 Benzyl alcohol	108	5.746	5.757	-0.011	93	270985	50.0	49.2	
26 1,2-Dichlorobenzene	146	5.779	5.789	-0.010	94	388766	50.0	49.9	
27 2-Methylphenol	108	5.896	5.907	-0.011	91	369942	50.0	50.4	
28 2,2'-oxybis[1-chloropropan	45	5.918	5.928	-0.010	93	472475	50.0	50.3	
29 Acetophenone	105	6.073	6.083	-0.010	94	513326	50.0	48.6	
30 N-Nitrosodi-n-propylamine	70	6.078	6.094	-0.016	88	273409	50.0	49.2	
31 3 & 4 Methylphenol	107	6.089	6.105	-0.016	95	403325	50.0	49.4	
35 Hexachloroethane	117	6.201	6.212	-0.011	91	160432	50.0	50.4	
38 Nitrobenzene	77	6.281	6.297	-0.016	96	411692	50.0	49.7	
40 Isophorone	82	6.608	6.624	-0.016	99	777870	50.0	49.5	
41 2-Nitrophenol	139	6.709	6.720	-0.011	89	208659	50.0	50.0	
42 2,4-Dimethylphenol	107	6.784	6.800	-0.016	91	387952	50.0	48.8	
43 Bis(2-chloroethoxy)methane	93	6.907	6.918	-0.011	100	453771	50.0	49.3	
45 Benzoic acid	122	6.977	7.009	-0.032	90	237558	50.0	51.2	
46 2,4-Dichlorophenol	162	7.052	7.067	-0.015	94	298212	50.0	49.7	
48 1,2,4-Trichlorobenzene	180	7.164	7.174	-0.010	94	308423	50.0	47.9	
* 49 Naphthalene-d8	136	7.239	7.255	-0.016	99	843918	40.0	40.0	
50 Naphthalene	128	7.271	7.287	-0.016	99	1111792	50.0	50.1	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
52 4-Chloroaniline	127	7.362	7.378	-0.016	97	483779	50.0	49.6	
53 2,6-Dichlorophenol	162	7.372	7.388	-0.016	96	287287	50.0	49.4	
54 Hexachlorobutadiene	225	7.474	7.485	-0.011	90	157994	50.0	49.1	
60 4-Chloro-3-methylphenol	107	8.132	8.143	-0.011	97	343043	50.0	49.7	
62 2-Methylnaphthalene	142	8.341	8.357	-0.015	85	728461	50.0	49.0	
63 1-Methylnaphthalene	142	8.501	8.512	-0.011	93	689783	50.0	49.4	
64 Hexachlorocyclopentadiene	237	8.624	8.635	-0.011	95	140394	50.0	51.6	
65 1,2,4,5-Tetrachlorobenzene	216	8.624	8.640	-0.016	94	268550	50.0	49.3	
67 2,4,6-Trichlorophenol	196	8.822	8.838	-0.016	87	202749	50.0	49.9	
68 2,4,5-Trichlorophenol	196	8.886	8.897	-0.011	93	214458	50.0	51.6	
70 1,1'-Biphenyl	154	9.132	9.148	-0.016	96	849603	50.0	49.9	
71 2-Chloronaphthalene	162	9.154	9.170	-0.016	96	638156	50.0	50.1	
73 2-Nitroaniline	65	9.346	9.362	-0.016	98	231804	50.0	51.4	
77 Dimethyl phthalate	163	9.710	9.726	-0.016	98	739399	50.0	49.3	
78 1,3-Dinitrobenzene	168	9.731	9.747	-0.016	86	126351	50.0	51.2	
79 2,6-Dinitrotoluene	165	9.790	9.806	-0.016	93	172919	50.0	49.7	
80 Acenaphthylene	152	9.876	9.892	-0.016	97	1066355	50.0	51.8	
81 3-Nitroaniline	138	10.090	10.106	-0.016	95	222577	50.0	50.8	
* 82 Acenaphthene-d10	164	10.138	10.154	-0.016	92	459978	40.0	40.0	
83 Acenaphthene	153	10.197	10.212	-0.015	95	687446	50.0	50.5	
84 2,4-Dinitrophenol	184	10.282	10.303	-0.021	93	215165	100.0	92.2	
85 4-Nitrophenol	109	10.475	10.496	-0.021	91	253963	100.0	103.4	
87 Dibenzofuran	168	10.517	10.533	-0.016	94	881796	50.0	48.8	
86 2,4-Dinitrotoluene	165	10.528	10.544	-0.016	91	229174	50.0	49.9	
90 2,3,4,6-Tetrachlorophenol	232	10.769	10.785	-0.016	89	164901	50.0	49.8	
92 Diethyl phthalate	149	11.026	11.047	-0.021	98	764473	50.0	49.4	
93 Fluorene	166	11.154	11.175	-0.021	96	749449	50.0	49.5	
94 4-Chlorophenyl phenyl ethe	204	11.186	11.202	-0.016	85	324576	50.0	48.6	
95 4-Nitroaniline	138	11.234	11.261	-0.027	89	222558	50.0	50.4	
98 4,6-Dinitro-2-methylphenol	198	11.298	11.325	-0.027	80	259336	100.0	99.0	
99 N-Nitrosodiphenylamine	169	11.421	11.437	-0.016	99	544829	50.0	49.9	
171 Diphenylamine	169	11.421	11.437	-0.016	95	544829	42.8	42.7	
100 Azobenzene	77	11.486	11.507	-0.021	99	851597	50.0	50.6	
106 4-Bromophenyl phenyl ether	248	12.117	12.133	-0.016	80	182323	50.0	48.0	
108 Hexachlorobenzene	284	12.218	12.234	-0.016	97	193890	50.0	50.0	
112 Pentachlorophenol	266	12.614	12.630	-0.016	89	235172	100.0	105.1	
* 117 Phenanthrene-d10	188	12.946	12.962	-0.016	99	738794	40.0	40.0	
118 Phenanthrene	178	12.994	13.010	-0.016	98	1065013	50.0	50.0	
119 Anthracene	178	13.090	13.106	-0.016	98	1107576	50.0	49.8	
122 Carbazole	167	13.432	13.454	-0.022	96	1022847	50.0	49.7	
124 Di-n-butyl phthalate	149	14.235	14.251	-0.016	100	1296813	50.0	51.2	
129 Fluoranthene	202	15.331	15.353	-0.022	97	1089302	50.0	50.0	
130 Benzidine	184	15.658	15.679	-0.021	99	866796	50.0	53.1	
131 Pyrene	202	15.770	15.786	-0.016	97	1126942	50.0	48.7	
139 Butyl benzyl phthalate	149	17.203	17.219	-0.016	98	584730	50.0	50.7	
143 Benzo[a]anthracene	228	18.171	18.187	-0.016	99	1045618	50.0	50.3	
144 3,3'-Dichlorobenzidine	252	18.177	18.198	-0.021	98	389013	50.0	51.6	
* 145 Chrysene-d12	240	18.193	18.214	-0.021	99	732915	40.0	40.0	
146 Chrysene	228	18.246	18.268	-0.022	98	1010157	50.0	49.4	
148 Bis(2-ethylhexyl) phthalat	149	18.412	18.423	-0.011	89	776516	50.0	49.8	
149 Di-n-octyl phthalate	149	19.637	19.653	-0.016	97	1356671	50.0	51.7	
150 Benzo[b]fluoranthene	252	20.177	20.198	-0.021	99	901655	50.0	48.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
151 Benzo[k]fluoranthene	252	20.225	20.247	-0.022	99	1060375	50.0	49.4	
153 Benzo[a]pyrene	252	20.755	20.776	-0.021	97	891677	50.0	47.6	
* 154 Perylene-d12	264	20.856	20.883	-0.027	98	689496	40.0	40.0	
156 Indeno[1,2,3-cd]pyrene	276	23.188	23.226	-0.038	98	763956	50.0	48.8	M
157 Dibenz(a,h)anthracene	278	23.258	23.295	-0.037	97	823453	50.0	48.3	M
158 Benzo[g,h,i]perylene	276	23.884	23.921	-0.037	97	930161	50.0	52.4	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

50 ppm 8270I_00019 Amount Added: 1.00 Units: mL

Report Date: 10-Aug-2016 10:37:42 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1967.D

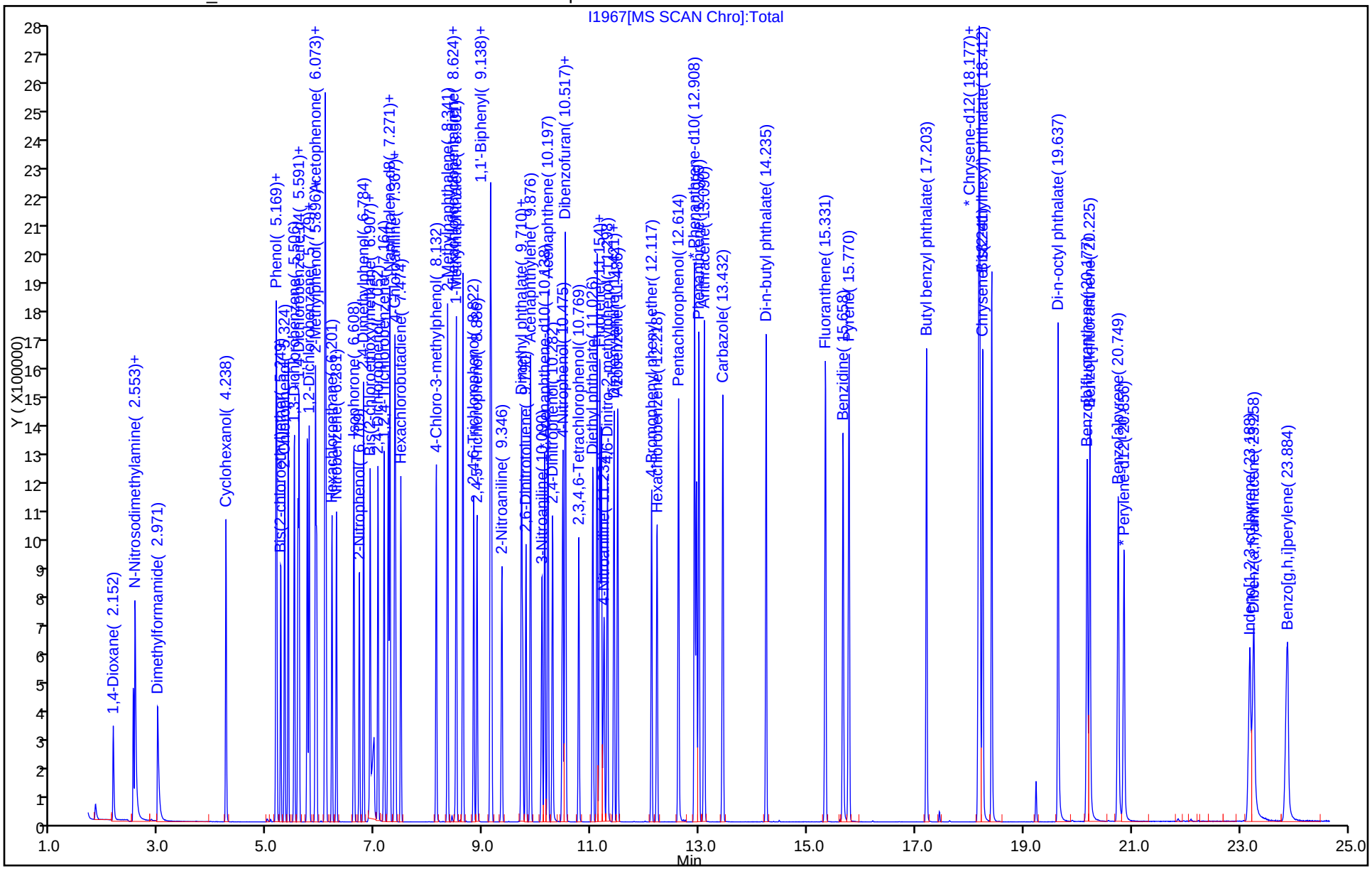
Injection Date: 09-Aug-2016 16:16:30 Instrument ID: SMSI Operator ID:

Lims ID: ICV Worklist Smp#: 10

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 10

Method: BNA_SMSI Limit Group: MSS-8270D



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

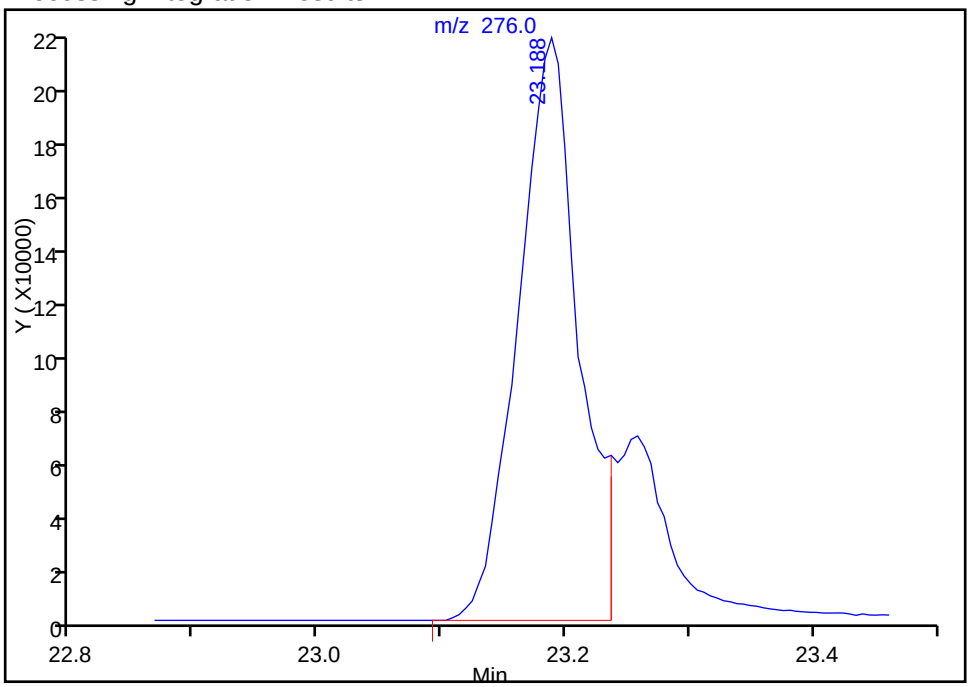
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1967.D				
Injection Date:	09-Aug-2016 16:16:30	Instrument ID:	SMSI		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

156 Indeno[1,2,3-cd]pyrene, CAS: 193-39-5

Signal: 1

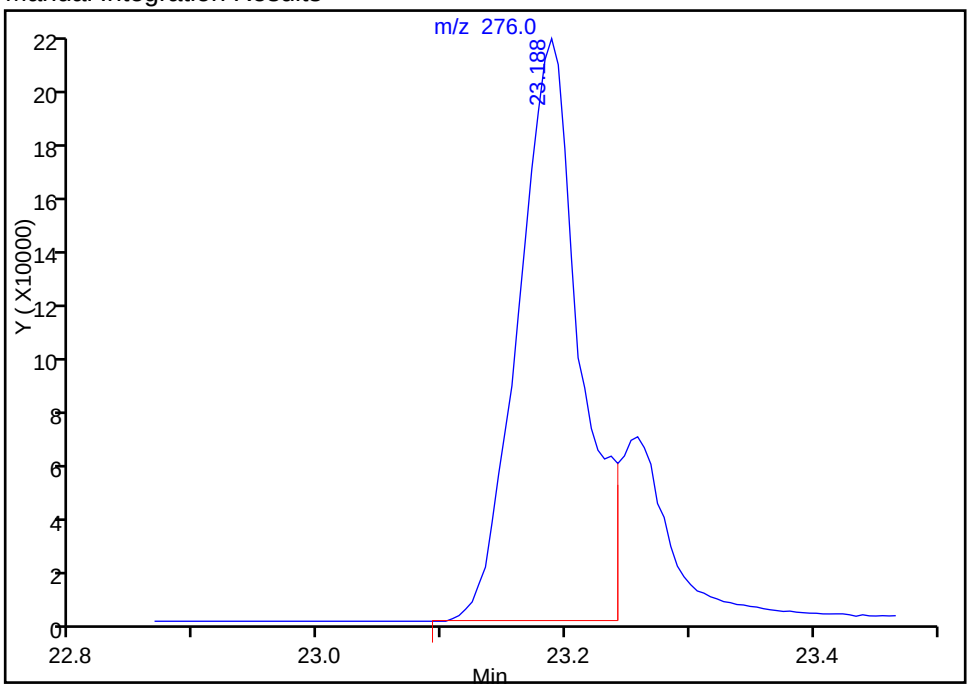
Processing Integration Results

RT: 23.19
Area: 747277
Amount: 47.749031
Amount Units: ug/ml



Manual Integration Results

RT: 23.19
Area: 763956
Amount: 48.814775
Amount Units: ug/ml



Reviewer: kuessnerm, 10-Aug-2016 10:35:34

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

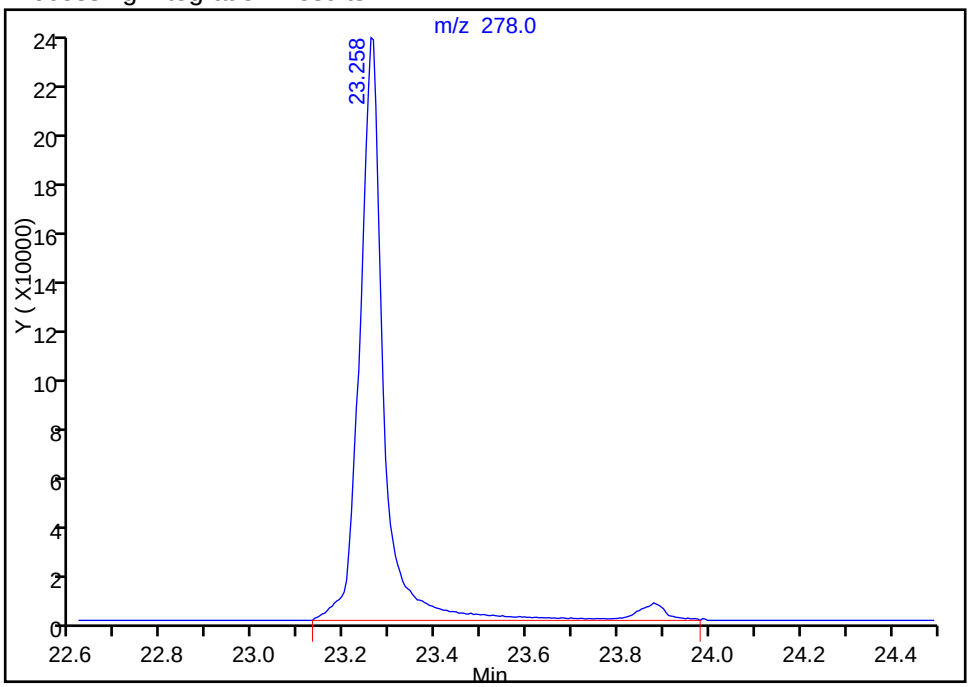
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1967.D				
Injection Date:	09-Aug-2016 16:16:30	Instrument ID:	SMSI		
Lims ID:	ICV				
Client ID:					
Operator ID:		ALS Bottle#:	10	Worklist Smp#:	10
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

157 Dibenz(a,h)anthracene, CAS: 53-70-3

Signal: 1

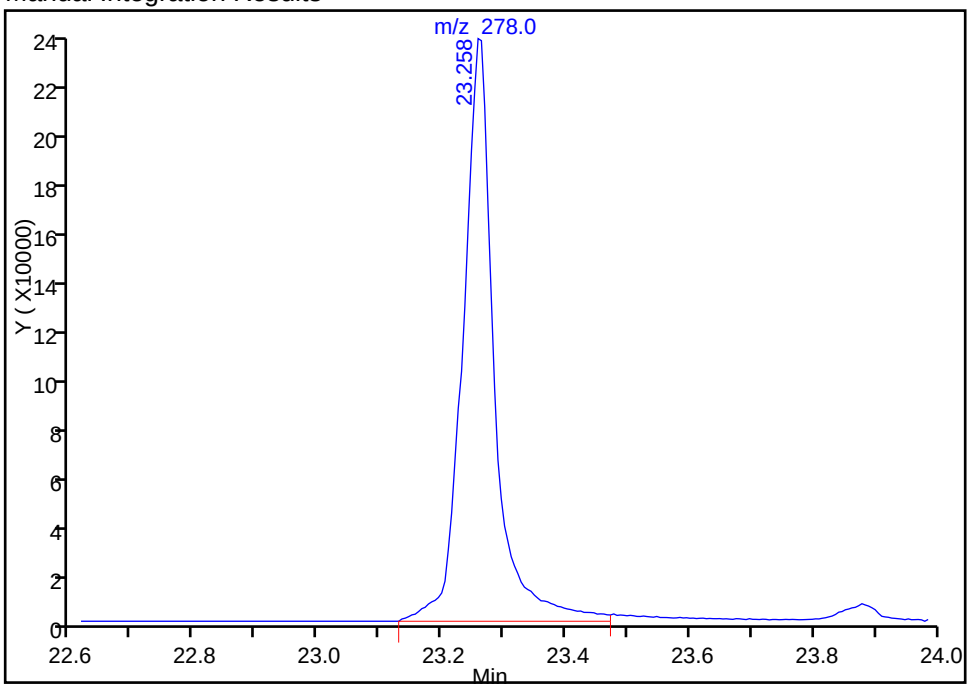
Processing Integration Results

RT: 23.26
Area: 876714
Amount: 51.475675
Amount Units: ug/ml



Manual Integration Results

RT: 23.26
Area: 823453
Amount: 48.348491
Amount Units: ug/ml



Reviewer: kuessnerm, 10-Aug-2016 10:35:34

Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-264877/3 Calibration Date: 08/15/2016 16:31

Instrument ID: SMSI Calib Start Date: 08/09/2016 12:25

GC Column: RXI5SiiMS ID: 0.25(mm) Calib End Date: 08/09/2016 15:43

Lab File ID: I2062.D Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,4-Dioxane	Ave	0.6715	0.6687	0.0100	49.8	50.0	-0.4	20.0
N-Nitrosodimethylamine	Ave	1.015	1.016	0.0100	50.1	50.0	0.2	20.0
Pyridine	Ave	1.788	1.795	0.0100	50.2	50.0	0.4	20.0
Dimethylformamide	Ave	0.9600	0.9634	0.0100	50.2	50.0	0.4	20.0
Cyclohexanol	Ave	1.332	1.351	0.0100	50.7	50.0	1.4	20.0
Aniline	Ave	2.402	2.501	0.0100	52.1	50.0	4.2	20.0
Phenol	Ave	2.070	2.177	0.8000	52.6	50.0	5.1	20.0
Bis(2-chloroethyl)ether	Ave	1.544	1.554	0.7000	50.3	50.0	0.7	20.0
2-Chlorophenol	Ave	1.573	1.574	0.8000	50.0	50.0	0.0	20.0
1,3-Dichlorobenzene	Ave	1.624	1.655	0.0100	50.9	50.0	1.9	20.0
1,4-Dichlorobenzene	Ave	1.624	1.656	0.0100	51.0	50.0	2.0	20.0
Benzyl alcohol	Ave	1.091	1.104	0.0100	50.6	50.0	1.2	20.0
1,2-Dichlorobenzene	Ave	1.543	1.554	0.0100	50.4	50.0	0.7	20.0
2-Methylphenol	Ave	1.454	1.477	0.6000	50.8	50.0	1.6	20.0
bis (2-chloroisopropyl) ether	Ave	1.860	1.867	0.0100	50.2	50.0	0.4	20.0
Acetophenone	Ave	0.5009	0.5222	0.0100	52.1	50.0	4.3	20.0
N-Nitrosodi-n-propylamine	Ave	1.101	1.153	0.5000	52.4	50.0	4.7	20.0
3 & 4 Methylphenol	Ave	1.616	1.686	0.6000	52.2	50.0	4.3	20.0
Hexachloroethane	Ave	0.6311	0.6495	0.3000	51.5	50.0	2.9	20.0
Nitrobenzene	Ave	0.3924	0.4042	0.2000	51.5	50.0	3.0	20.0
Isophorone	Ave	0.7449	0.7433	0.4000	49.9	50.0	-0.2	20.0
2-Nitrophenol	Ave	0.1977	0.1990	0.1000	50.3	50.0	0.7	20.0
2,4-Dimethylphenol	Ave	0.3772	0.3876	0.2000	51.4	50.0	2.8	20.0
Bis(2-chloroethoxy)methane	Ave	0.4362	0.4376	0.0100	50.2	50.0	0.3	20.0
Benzoic acid	Ave	0.2198	0.1904	0.0100	43.3	50.0	-13.4	20.0
2,4-Dichlorophenol	Ave	0.2847	0.2886	0.0100	50.7	50.0	1.4	20.0
1,2,4-Trichlorobenzene	Ave	0.3050	0.3085	0.0100	50.6	50.0	1.1	20.0
Naphthalene	Ave	1.052	1.076	0.7000	51.2	50.0	2.3	20.0
4-Chloroaniline	Ave	0.4626	0.4756	0.0100	51.4	50.0	2.8	20.0
2,6-Dichlorophenol	Ave	0.2757	0.2822	0.0100	51.2	50.0	2.4	20.0
Hexachlorobutadiene	Ave	0.1526	0.1557	0.0100	51.0	50.0	2.0	20.0
4-Chloro-3-methylphenol	Ave	0.3274	0.3277	0.2000	50.0	50.0	0.0	20.0
2-Methylnaphthalene	Ave	0.7052	0.7091	0.4000	50.3	50.0	0.5	20.0
1-Methylnaphthalene	Ave	0.6617	0.6607	0.0100	49.9	50.0	-0.1	20.0
Hexachlorocyclopentadiene	Ave	0.2364	0.2774	0.0500	58.7	50.0	17.3	20.0
1,2,4,5-Tetrachlorobenzene	Ave	0.4738	0.4987	0.0100	52.6	50.0	5.2	20.0
2,4,6-Trichlorophenol	Ave	0.3531	0.3506	0.2000	49.7	50.0	-0.7	20.0
2,4,5-Trichlorophenol	Ave	0.3617	0.3562	0.2000	49.2	50.0	-1.5	20.0
1,1'-Biphenyl	Ave	1.480	1.564	0.0100	52.9	50.0	5.7	20.0
2-Chloronaphthalene	Ave	1.108	1.157	0.8000	52.2	50.0	4.5	20.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-264877/3 Calibration Date: 08/15/2016 16:31

Instrument ID: SMSI Calib Start Date: 08/09/2016 12:25

GC Column: RXI5SiiMS ID: 0.25(mm) Calib End Date: 08/09/2016 15:43

Lab File ID: I2062.D Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
2-Nitroaniline	Ave	0.3922	0.4071	0.0100	51.9	50.0	3.8	20.0
Dimethyl phthalate	Ave	1.303	1.313	0.0100	50.4	50.0	0.7	20.0
1,3-Dinitrobenzene	Ave	0.2145	0.2245	0.0100	52.3	50.0	4.6	20.0
2,6-Dinitrotoluene	Ave	0.3023	0.2989	0.2000	49.4	50.0	-1.1	20.0
Acenaphthylene	Ave	1.790	1.814	0.9000	50.7	50.0	1.3	20.0
3-Nitroaniline	Ave	0.3812	0.3749	0.0100	49.2	50.0	-1.6	20.0
Acenaphthene	Ave	1.183	1.206	0.0100	51.0	50.0	1.9	20.0
2,4-Dinitrophenol	Ave	0.2029	0.2025	0.0100	99.8	100	-0.2	20.0
4-Nitrophenol	Ave	0.2136	0.2226	0.0100	104	100	4.2	20.0
Dibenzofuran	Ave	1.570	1.598	0.8000	50.9	50.0	1.8	20.0
2,4-Dinitrotoluene	Ave	0.3991	0.4142	0.2000	51.9	50.0	3.8	20.0
2,3,4,6-Tetrachlorophenol	Ave	0.2880	0.2843	0.0100	49.3	50.0	-1.3	20.0
Diethyl phthalate	Ave	1.345	1.341	0.0100	49.9	50.0	-0.3	20.0
Fluorene	Ave	1.318	1.336	0.9000	50.7	50.0	1.4	20.0
4-Chlorophenyl phenyl ether	Ave	0.5806	0.5892	0.4000	50.7	50.0	1.5	20.0
4-Nitroaniline	Ave	0.3843	0.3860	0.0100	50.2	50.0	0.4	20.0
4,6-Dinitro-2-methylphenol	Ave	0.1418	0.1565	0.0100	110	100	10.4	20.0
Diphenylamine	Ave	0.6910	0.7217	0.0100	44.6	42.8	4.4	20.0
Diphenylamine + N-Nitrosodiphenylamine	Ave	0.5908	0.6170	0.0100	52.2	50.0	4.4	20.0
Azobenzene	Ave	0.9108	0.9767	0.0100	53.6	50.0	7.2	20.0
4-Bromophenyl phenyl ether	Ave	0.2057	0.2142	0.0100	52.1	50.0	4.1	20.0
Hexachlorobenzene	Ave	0.2098	0.2201	0.1000	52.5	50.0	4.9	20.0
Pentachlorophenol	Ave	0.1211	0.1287	0.0500	106	100	6.3	20.0
Phenanthrene	Ave	1.153	1.184	0.7000	51.3	50.0	2.7	20.0
Anthracene	Ave	1.204	1.250	0.7000	51.9	50.0	3.8	20.0
Carbazole	Ave	1.114	1.144	0.0100	51.3	50.0	2.6	20.0
Di-n-butyl phthalate	Ave	1.371	1.423	0.0100	51.9	50.0	3.8	20.0
Fluoranthene	Ave	1.179	1.216	0.6000	51.6	50.0	3.2	20.0
Benzidine	Ave	0.8903	0.8612	0.0100	48.4	50.0	-3.3	20.0
Pyrene	Ave	1.262	1.267	0.6000	50.2	50.0	0.4	20.0
Butyl benzyl phthalate	Ave	0.6298	0.6154	0.0100	48.9	50.0	-2.3	20.0
Benzo[a]anthracene	Ave	1.135	1.132	0.8000	49.9	50.0	-0.3	20.0
3,3'-Dichlorobenzidine	Ave	0.4117	0.4208	0.0100	51.1	50.0	2.2	20.0
Chrysene	Ave	1.116	1.101	0.7000	49.3	50.0	-1.4	20.0
Bis(2-ethylhexyl) phthalate	Ave	0.8504	0.8097	0.0100	47.6	50.0	-4.8	20.0
Di-n-octyl phthalate	Ave	1.432	1.276	0.0100	44.5	50.0	-10.9	20.0
Benzo[b]fluoranthene	Ave	1.086	1.149	0.7000	52.9	50.0	5.8	20.0
Benzo[k]fluoranthene	Ave	1.245	1.409	0.7000	56.6	50.0	13.2	20.0
Benzo[a]pyrene	Ave	1.087	1.140	0.7000	52.4	50.0	4.9	20.0
Indeno[1,2,3-cd]pyrene	Ave	0.9079	0.7755	0.5000	42.7	50.0	-14.6	20.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-264877/3 Calibration Date: 08/15/2016 16:31

Instrument ID: SMSI Calib Start Date: 08/09/2016 12:25

GC Column: RXI5SiiMS ID: 0.25(mm) Calib End Date: 08/09/2016 15:43

Lab File ID: I2062.D Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dibenz(a,h)anthracene	Ave	0.9881	0.9061	0.4000	45.9	50.0	-8.3	20.0
Benzo[g,h,i]perylene	Ave	1.030	1.009	0.5000	49.0	50.0	-2.0	20.0
2-Fluorophenol (Surr)	Ave	1.527	1.520	0.0100	49.8	50.0	-0.5	20.0
Phenol-d5 (Surr)	Ave	1.872	1.921	0.0100	51.3	50.0	2.6	20.0
Nitrobenzene-d5 (Surr)	Ave	0.3882	0.4002	0.0100	51.5	50.0	3.1	20.0
2-Fluorobiphenyl (Surr)	Ave	1.281	1.297	0.0100	50.6	50.0	1.3	20.0
2,4,6-Tribromophenol (Surr)	Ave	0.1602	0.1576	0.0100	49.2	50.0	-1.6	20.0
Terphenyl-d14 (Surr)	Ave	0.8035	0.8083	0.0100	50.3	50.0	0.6	20.0

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2062.D
Lims ID: CCVIS
Client ID:
Sample Type: CCVIS
Inject. Date: 15-Aug-2016 16:31:30 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-003
Misc. Info.: CCVIS
Operator ID: Instrument ID: SMSI
Sublist: chrom-BNA_SMSI*sub11

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 15-Aug-2016 16:59:51 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK016

First Level Reviewer: kuessnerm Date: 15-Aug-2016 16:59:51

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88	2.125	2.125	0.000	96	192576	50.0	49.8	
3 N-Nitrosodimethylamine	74	2.500	2.500	0.000	84	292712	50.0	50.1	
4 Pyridine	79	2.526	2.526	0.000	93	516847	50.0	50.2	
5 Dimethylformamide	44	2.954	2.954	0.000	97	277442	50.0	50.2	
$ 10 2-Fluorophenol	112	4.051	4.051	0.000	96	437703	50.0	49.8	
11 Cyclohexanol	57	4.211	4.211	0.000	97	389090	50.0	50.7	
$ 16 Phenol-d5	99	5.131	5.131	0.000	93	553151	50.0	51.3	
17 Phenol	94	5.147	5.147	0.000	89	626884	50.0	52.6	
18 Aniline	93	5.147	5.147	0.000	83	720348	50.0	52.1	
19 Bis(2-chloroethyl)ether	93	5.222	5.222	0.000	98	447500	50.0	50.3	
21 2-Chlorophenol	128	5.292	5.292	0.000	95	453408	50.0	50.0	
22 1,3-Dichlorobenzene	146	5.468	5.468	0.000	94	476534	50.0	50.9	
* 23 1,4-Dichlorobenzene-d4	152	5.538	5.538	0.000	97	230377	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.559	5.559	0.000	93	477019	50.0	51.0	
25 Benzyl alcohol	108	5.714	5.714	0.000	93	318058	50.0	50.6	
26 1,2-Dichlorobenzene	146	5.746	5.746	0.000	94	447433	50.0	50.4	
27 2-Methylphenol	108	5.869	5.869	0.000	92	425312	50.0	50.8	
28 2,2'-oxybis[1-chloropropan	45	5.880	5.880	0.000	97	537626	50.0	50.2	
29 Acetophenone	105	6.041	6.041	0.000	92	623796	50.0	52.1	
30 N-Nitrosodi-n-propylamine	70	6.051	6.051	0.000	86	332098	50.0	52.4	
31 3 & 4 Methylphenol	107	6.062	6.062	0.000	96	485458	50.0	52.2	
35 Hexachloroethane	117	6.164	6.164	0.000	91	187039	50.0	51.5	
$ 37 Nitrobenzene-d5	82	6.228	6.228	0.000	88	477995	50.0	51.5	
38 Nitrobenzene	77	6.254	6.254	0.000	96	482772	50.0	51.5	
40 Isophorone	82	6.575	6.575	0.000	99	887861	50.0	49.9	
41 2-Nitrophenol	139	6.672	6.672	0.000	88	237703	50.0	50.3	
42 2,4-Dimethylphenol	107	6.757	6.757	0.000	91	462979	50.0	51.4	
43 Bis(2-chloroethoxy)methane	93	6.875	6.875	0.000	100	522665	50.0	50.2	
45 Benzoic acid	122	6.971	6.971	0.000	90	227462	50.0	43.3	
46 2,4-Dichlorophenol	162	7.019	7.019	0.000	95	344685	50.0	50.7	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
48 1,2,4-Trichlorobenzene	180	7.126	7.126	0.000	94	368470	50.0	50.6	
* 49 Naphthalene-d8	136	7.207	7.207	0.000	99	955619	40.0	40.0	
50 Naphthalene	128	7.233	7.233	0.000	99	1285558	50.0	51.2	
52 4-Chloroaniline	127	7.330	7.330	0.000	97	568086	50.0	51.4	
53 2,6-Dichlorophenol	162	7.340	7.340	0.000	97	337100	50.0	51.2	
54 Hexachlorobutadiene	225	7.437	7.437	0.000	90	185954	50.0	51.0	
60 4-Chloro-3-methylphenol	107	8.100	8.100	0.000	96	391456	50.0	50.0	
62 2-Methylnaphthalene	142	8.303	8.303	0.000	85	846999	50.0	50.3	
63 1-Methylnaphthalene	142	8.458	8.458	0.000	93	789214	50.0	49.9	
64 Hexachlorocyclopentadiene	237	8.581	8.581	0.000	95	177432	50.0	58.7	
65 1,2,4,5-Tetrachlorobenzene	216	8.586	8.586	0.000	94	318938	50.0	52.6	
67 2,4,6-Trichlorophenol	196	8.784	8.784	0.000	86	224252	50.0	49.7	
68 2,4,5-Trichlorophenol	196	8.849	8.849	0.000	92	227814	50.0	49.2	
$ 69 2-Fluorobiphenyl (Surr)	172	8.929	8.929	0.000	97	829537	50.0	50.6	
70 1,1'-Biphenyl	154	9.095	9.095	0.000	96	1000332	50.0	52.9	
71 2-Chloronaphthalene	162	9.111	9.111	0.000	95	739974	50.0	52.2	
73 2-Nitroaniline	65	9.309	9.309	0.000	97	260358	50.0	51.9	
77 Dimethyl phthalate	163	9.672	9.672	0.000	98	839738	50.0	50.4	
78 1,3-Dinitrobenzene	168	9.694	9.694	0.000	87	143593	50.0	52.3	
79 2,6-Dinitrotoluene	165	9.758	9.758	0.000	93	191198	50.0	49.4	
80 Acenaphthylene	152	9.833	9.833	0.000	97	1160431	50.0	50.7	
81 3-Nitroaniline	138	10.052	10.052	0.000	94	239807	50.0	49.2	
* 82 Acenaphthene-d10	164	10.095	10.095	0.000	93	511678	40.0	40.0	
83 Acenaphthene	153	10.159	10.159	0.000	95	771076	50.0	51.0	
84 2,4-Dinitrophenol	184	10.250	10.250	0.000	94	259080	100.0	99.8	
85 4-Nitrophenol	109	10.453	10.453	0.000	89	284791	100.0	104.2	
87 Dibenzofuran	168	10.475	10.475	0.000	98	1022077	50.0	50.9	
86 2,4-Dinitrotoluene	165	10.491	10.491	0.000	91	264921	50.0	51.9	
90 2,3,4,6-Tetrachlorophenol	232	10.731	10.731	0.000	89	181811	50.0	49.3	
92 Diethyl phthalate	149	10.988	10.988	0.000	98	857947	50.0	49.9	
93 Fluorene	166	11.111	11.111	0.000	96	854626	50.0	50.7	
94 4-Chlorophenyl phenyl ethe	204	11.143	11.143	0.000	86	376819	50.0	50.7	
95 4-Nitroaniline	138	11.213	11.213	0.000	88	246908	50.0	50.2	
98 4,6-Dinitro-2-methylphenol	198	11.271	11.271	0.000	80	314540	100.0	110.4	
99 N-Nitrosodiphenylamine	169	11.384	11.384	0.000	99	620048	50.0	52.2	
171 Diphenylamine	169	11.384	11.384	0.000	95	620048	42.8	44.6	
100 Azobenzene	77	11.448	11.448	0.000	99	981435	50.0	53.6	
$ 102 2,4,6-Tribromophenol	330	11.576	11.576	0.000	90	100815	50.0	49.2	
106 4-Bromophenyl phenyl ether	248	12.074	12.074	0.000	82	215254	50.0	52.1	
108 Hexachlorobenzene	284	12.175	12.175	0.000	98	221170	50.0	52.5	
112 Pentachlorophenol	266	12.577	12.577	0.000	90	258616	100.0	106.3	
* 117 Phenanthrene-d10	188	12.903	12.903	0.000	99	803900	40.0	40.0	
118 Phenanthrene	178	12.951	12.951	0.000	98	1189680	50.0	51.3	
119 Anthracene	178	13.047	13.047	0.000	98	1256336	50.0	51.9	
122 Carbazole	167	13.395	13.395	0.000	97	1149184	50.0	51.3	
124 Di-n-butyl phthalate	149	14.197	14.197	0.000	100	1429944	50.0	51.9	
129 Fluoranthene	202	15.288	15.288	0.000	98	1222303	50.0	51.6	
130 Benzidine	184	15.620	15.620	0.000	99	855120	50.0	48.4	
131 Pyrene	202	15.727	15.727	0.000	96	1257705	50.0	50.2	
$ 132 Terphenyl-d14	244	16.117	16.117	0.000	99	802659	50.0	50.3	
139 Butyl benzyl phthalate	149	17.166	17.166	0.000	98	611081	50.0	48.9	
143 Benzo[a]anthracene	228	18.128	18.128	0.000	99	1123671	50.0	49.9	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
144 3,3'-Dichlorobenzidine	252	18.139	18.139	0.000	99	417797	50.0	51.1	
* 145 Chrysene-d12	240	18.155	18.155	0.000	99	794375	40.0	40.0	
146 Chrysene	228	18.203	18.203	0.000	98	1092815	50.0	49.3	
148 Bis(2-ethylhexyl) phthalat	149	18.374	18.374	0.000	89	803957	50.0	47.6	
149 Di-n-octyl phthalate	149	19.605	19.605	0.000	97	1266532	50.0	44.5	
150 Benzo[b]fluoranthene	252	20.140	20.140	0.000	99	886965	50.0	52.9	
151 Benzo[k]fluoranthene	252	20.188	20.188	0.000	99	1088259	50.0	56.6	
153 Benzo[a]pyrene	252	20.712	20.712	0.000	96	880019	50.0	52.4	
* 154 Perylene-d12	264	20.813	20.813	0.000	98	617685	40.0	40.0	
156 Indeno[1,2,3-cd]pyrene	276	23.129	23.129	0.000	98	598772	50.0	42.7	M
157 Dibenz(a,h)anthracene	278	23.199	23.199	0.000	97	699635	50.0	45.9	M
158 Benzo[g,h,i]perylene	276	23.814	23.814	0.000	96	779219	50.0	49.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

50 ppm 8270_00080 Amount Added: 1.00 Units: mL

Report Date: 15-Aug-2016 16:59:52 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2062.D

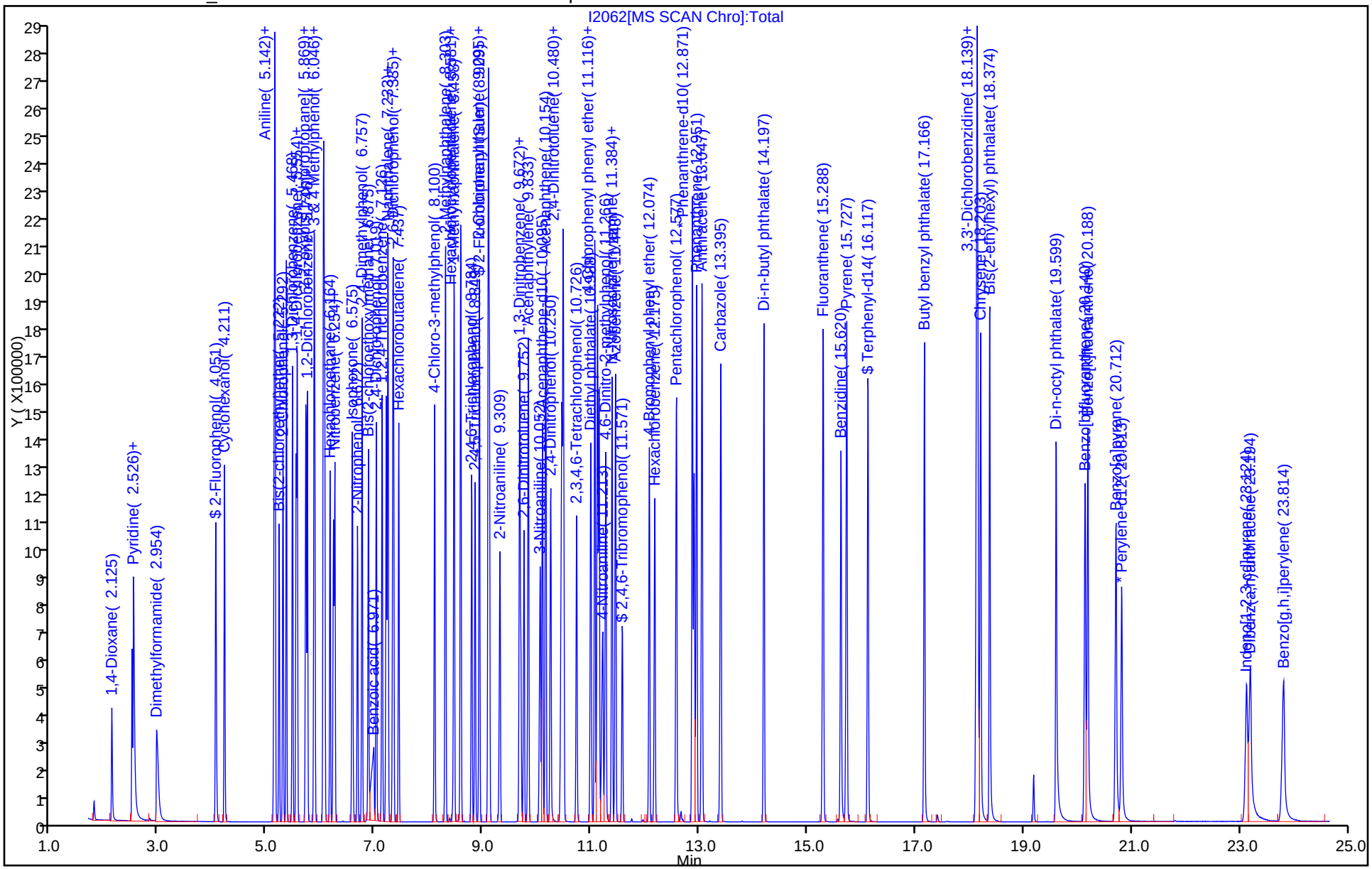
Injection Date: 15-Aug-2016 16:31:30 Instrument ID: SMSI Operator ID:

Lims ID: CCVIS Worklist Smp#: 3

Client ID:

Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 3

Method: BNA_SMSI Limit Group: MSS-8270D



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

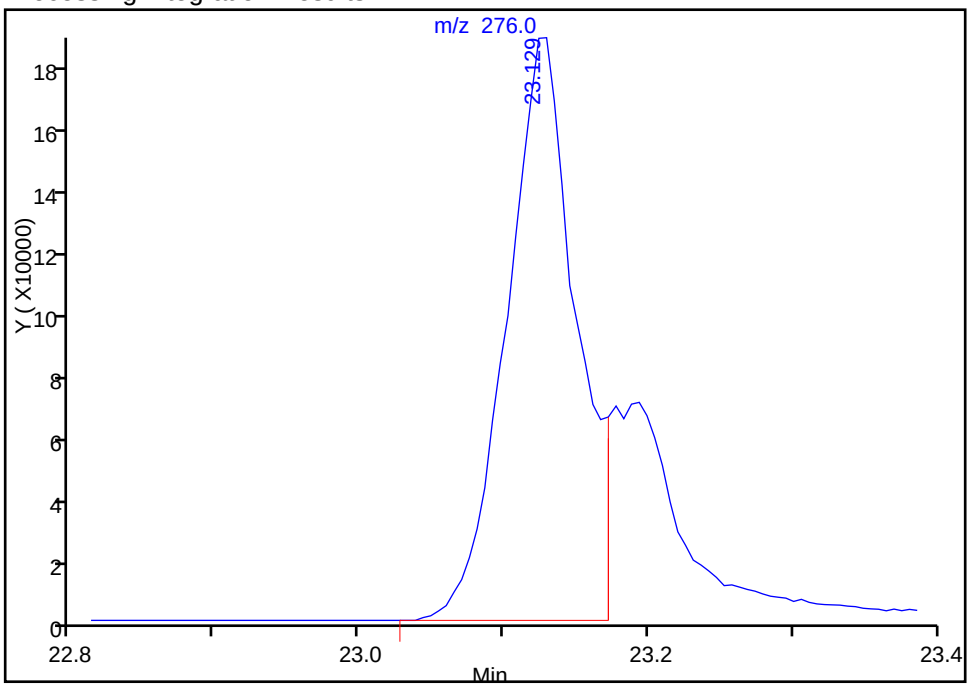
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2062.D				
Injection Date:	15-Aug-2016 16:31:30	Instrument ID:	SMSI		
Lims ID:	CCVIS				
Client ID:					
Operator ID:		ALS Bottle#:	3	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

156 Indeno[1,2,3-cd]pyrene, CAS: 193-39-5

Signal: 1

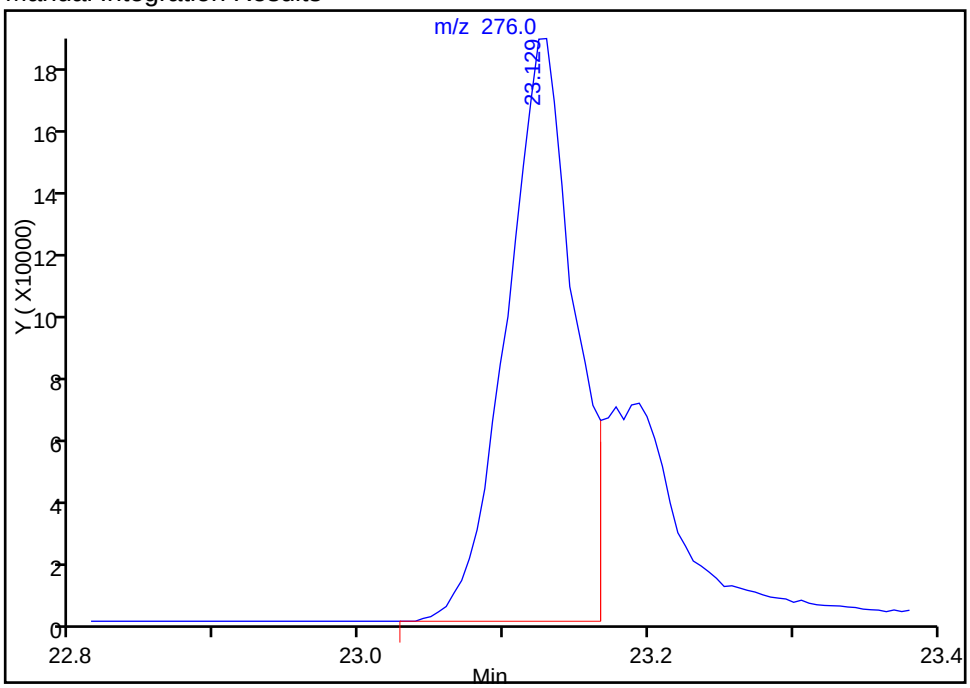
Processing Integration Results

RT: 23.13
Area: 619297
Amount: 44.171955
Amount Units: ug/ml



Manual Integration Results

RT: 23.13
Area: 598772
Amount: 42.707989
Amount Units: ug/ml



Reviewer: kuessnerm, 15-Aug-2016 16:59:51

Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

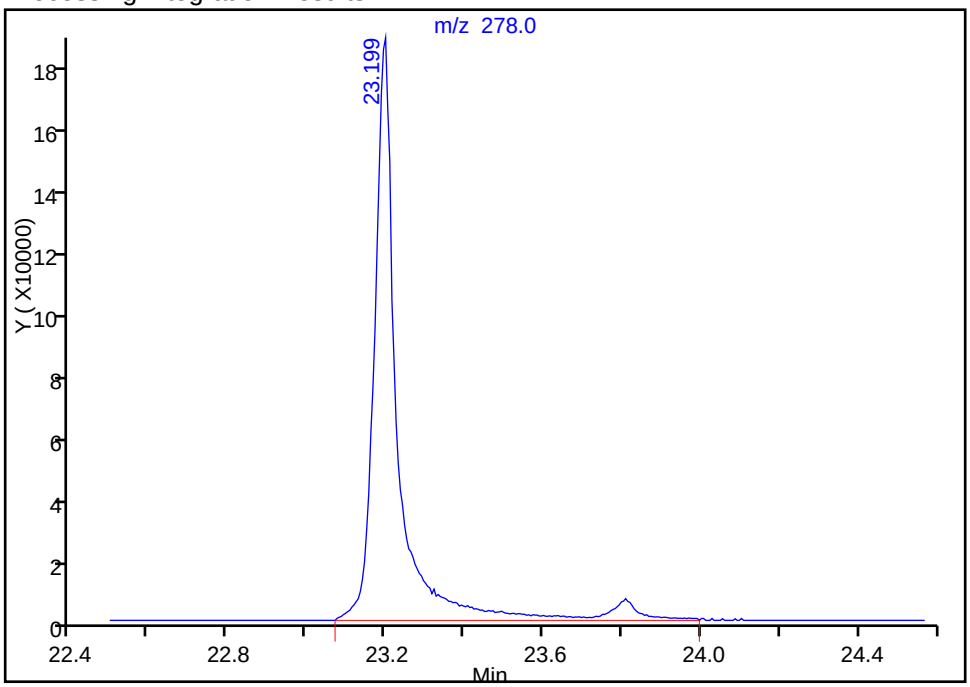
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2062.D				
Injection Date:	15-Aug-2016 16:31:30	Instrument ID:	SMSI		
Lims ID:	CCVIS				
Client ID:					
Operator ID:		ALS Bottle#:	3	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Column:		Detector	MS SCAN		

157 Dibenz(a,h)anthracene, CAS: 53-70-3

Signal: 1

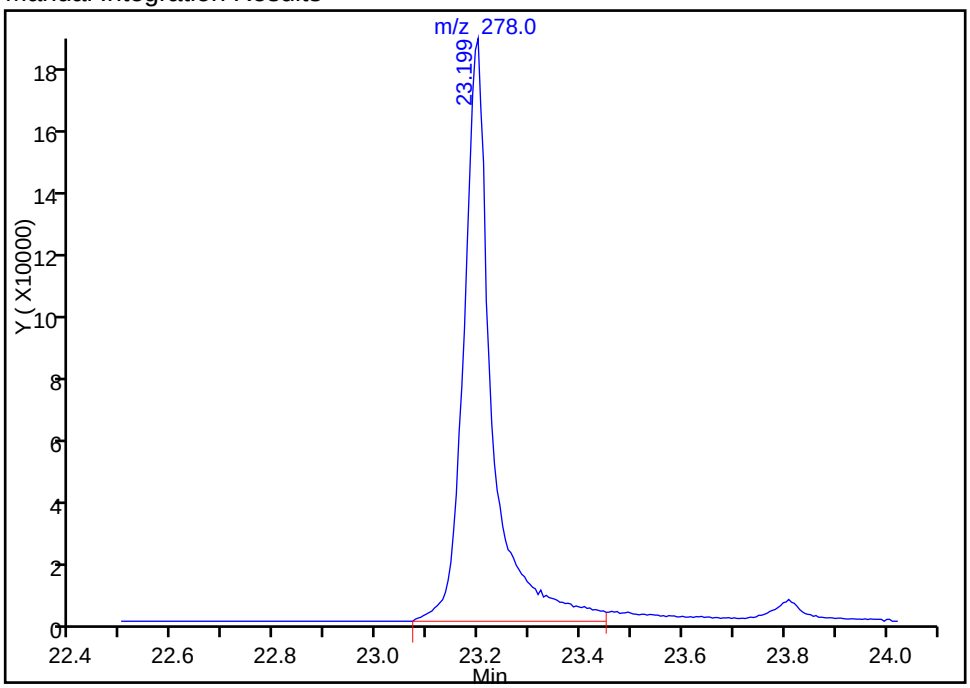
Processing Integration Results

RT: 23.20
Area: 760240
Amount: 49.826401
Amount Units: ug/ml



Manual Integration Results

RT: 23.20
Area: 699635
Amount: 45.854328
Amount Units: ug/ml



Reviewer: kuessnerm, 15-Aug-2016 16:59:51

Audit Action: Split an Integrated Peak Audit Reason: Incomplete Integration

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1959.D
Lims ID: DFTPP
Client ID:
Sample Type: DFTPP
Inject. Date: 09-Aug-2016 12:07:30 ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008148-002
Misc. Info.: DFTPP
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 09-Aug-2016 12:19:20 Calib Date: 30-Jun-2016 22:18:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160630-7808.b\I1704.D

Column 1 : Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: kuessnerm Date: 09-Aug-2016 12:19:20

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
14 Pentachlorophenol_T	266	4.981	4.981	0.000	92	57799	NR	NR	
51 Benzidine_T	184	7.362	7.362	0.000	99	513072	NR	NR	
168 DFTPP									
167 4,4'-DDE	246		8.290					ND	
166 4,4'-DDD	235		8.460					ND	
169 4,4'-DDT	235	8.699	8.699	0.000	98	185130	NR	NR	

QC Flag Legend

Processing Flags
NR - Missing Quant Standard

Reagents:

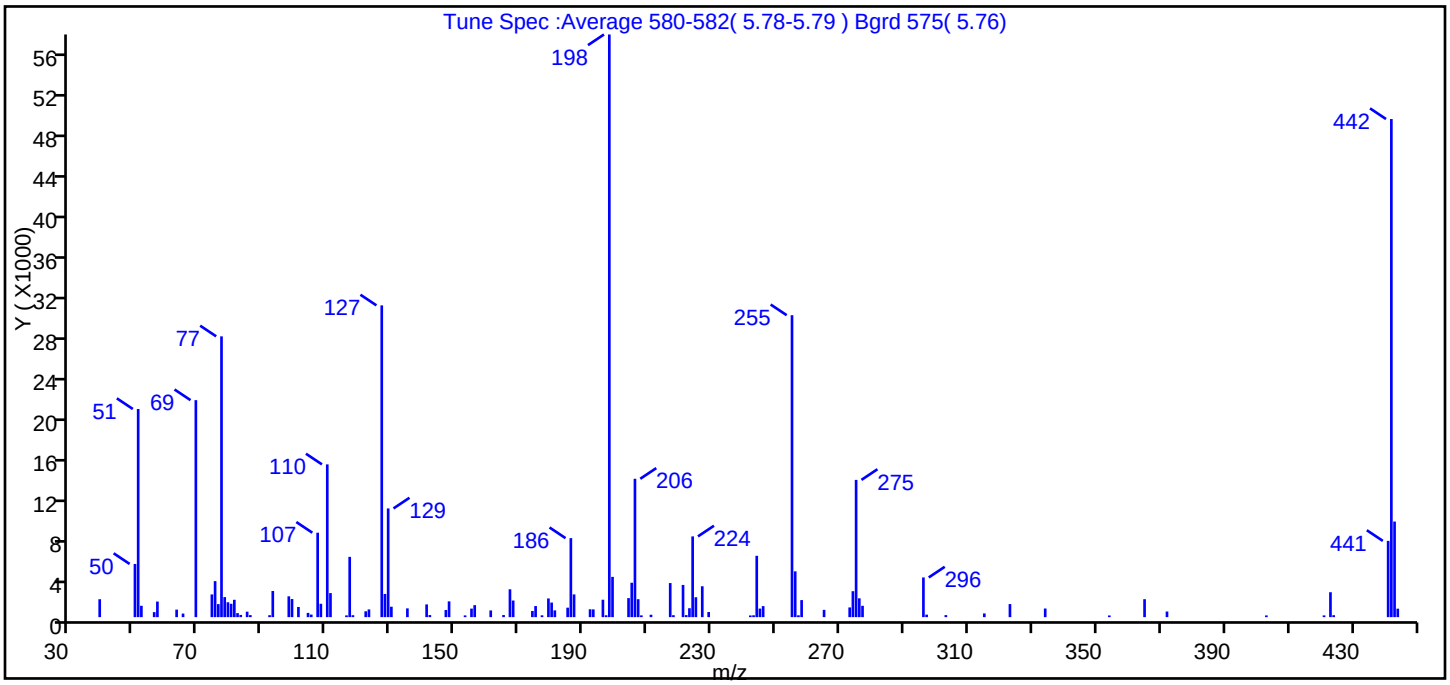
50 ppm Tuning_00026 Amount Added: 1.00 Units: mL

MS Tune Report

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1959.D				
Injection Date:	09-Aug-2016 12:07:30	Instrument ID:	SMSI		
Lims ID:	DFTPP				
Client ID:					
Operator ID:		ALS Bottle#:	2	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		
Tune Method:	DFTPP Method 8270				

168 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	Base peak, 100% relative abundance	100.0
51	30-60% of mass 198	35.7
68	<2% of mass 69	0.0 (0.0)
69	Present	37.2
70	<2% of mass 69	0.0 (0.0)
127	40-60% of mass 198	53.5
197	<1% of mass 198	0.3
199	5-9% of mass 198	6.9
275	10-30% of mass 198	23.6
365	>1% of mass 198	3.1
441	Present but less than mass 443	13.1 (79.8)
442	>40% of mass 198	85.5
443	17-23% of mass 442	16.4 (19.2)

Report Date: 09-Aug-2016 12:19:21 Chrom Revision: 2.2 20-Apr-2016 13:59:46

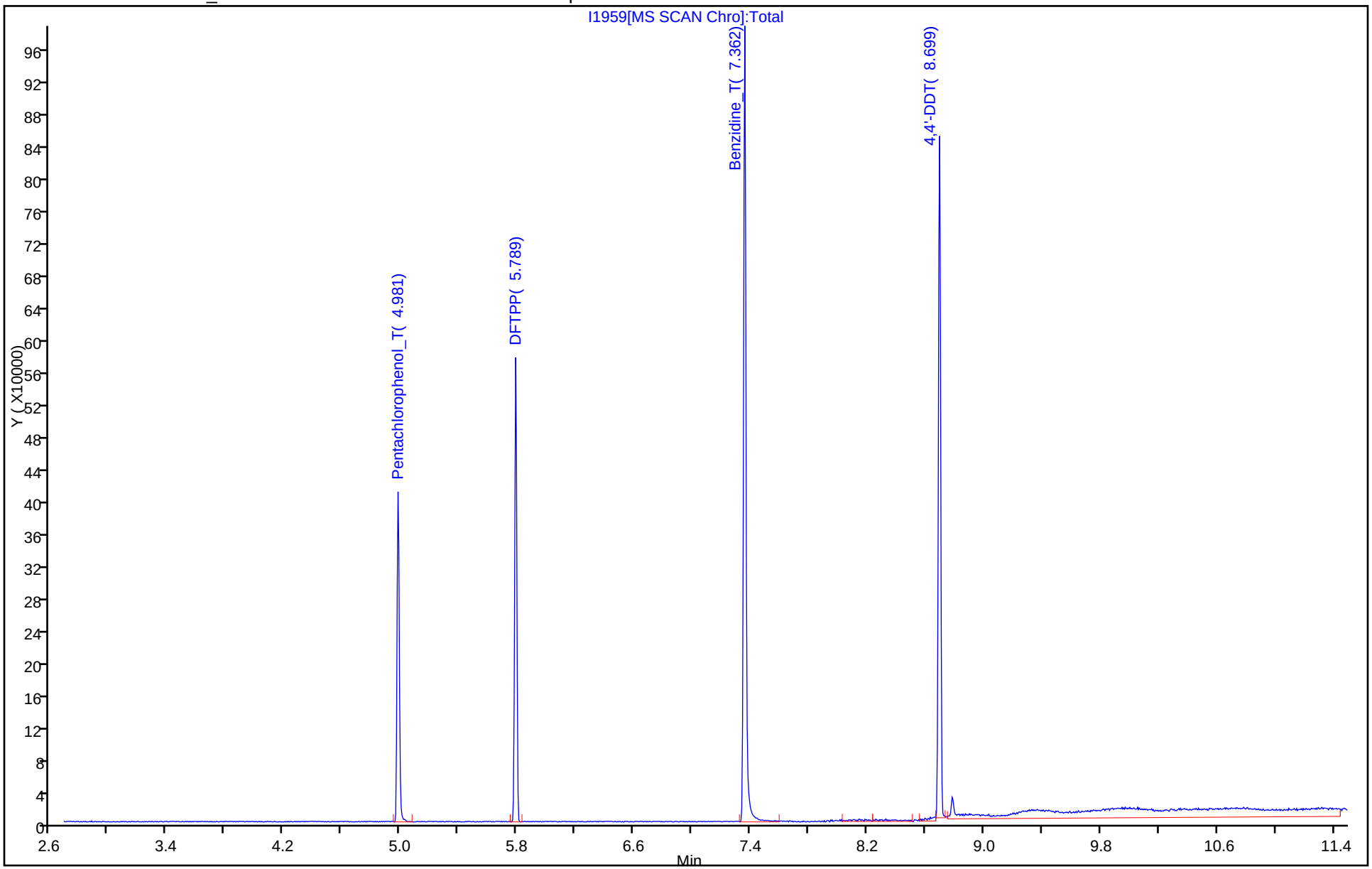
Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1959.D\BNA_SMSI.rslt\spectra.d
Injection Date: 09-Aug-2016 12:07:30
Spectrum: Tune Spec :Average 580-582(5.78-5.79) Bgrd 575(5.76)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 115

m/z	Y	m/z	Y	m/z	Y	m/z	Y
39.00	1781	108.00	1329	181.00	671	246.00	1098
50.00	5288	110.00	15190	185.00	943	255.00	30024
51.00	20696	111.00	2391	186.00	7856	256.00	4552
52.00	1129	116.00	175	187.00	2261	257.00	184
56.00	499	117.00	5996	192.00	782	258.00	1695
57.00	1550	118.00	192	193.00	770	265.00	725
63.00	748	122.00	582	196.00	1733	273.00	965
65.00	357	123.00	766	197.00	186	274.00	2580
69.00	21576	127.00	31000	198.00	57936	275.00	13647
74.00	2259	128.00	2306	199.00	4003	276.00	1872
75.00	3582	129.00	10810	204.00	1892	277.00	1126
76.00	1296	130.00	1036	205.00	3420	296.00	3946
77.00	27920	135.00	872	206.00	13759	297.00	249
78.00	1992	141.00	1266	207.00	1786	303.00	202
79.00	1481	142.00	206	208.00	175	315.00	368
80.00	1327	147.00	710	211.00	240	323.00	1299
81.00	1726	148.00	1570	217.00	3388	334.00	859
82.00	400	153.00	173	218.00	193	354.00	166
83.00	219	155.00	849	221.00	3203	365.00	1785
85.00	543	156.00	1193	222.00	203	372.00	560
86.00	200	161.00	667	223.00	888	403.00	171
92.00	192	165.00	210	224.00	8028	421.00	174
93.00	2597	167.00	2770	225.00	1980	423.00	2478
98.00	2071	168.00	1652	227.00	3072	424.00	192
99.00	1799	174.00	612	229.00	508	441.00	7582
101.00	1011	175.00	1103	242.00	167	442.00	49528
104.00	423	177.00	181	243.00	185	443.00	9505
105.00	256	179.00	1857	244.00	6098	444.00	842
107.00	8395	180.00	1448	245.00	851		

Report Date: 09-Aug-2016 12:19:21 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1959.D				
Injection Date:	09-Aug-2016 12:07:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	DFTPP			Worklist Smp#:	2
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	2
Method:	BNA_SMSI	Limit Group:	MSS-8270D		

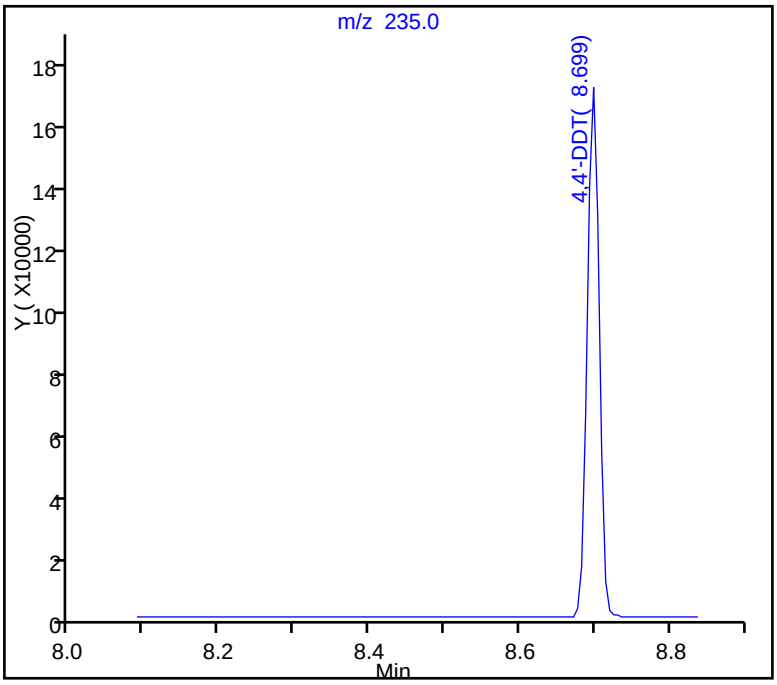


Breakdown Report

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1959.D				
Injection Date:	09-Aug-2016 12:07:30	Instrument ID:	SMSI		
Lims ID:	DFTPP				
Client ID:					
Operator ID:		ALS Bottle#:	2	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		

169 4,4'-DDT, Detector: MS SCAN



SW-846 Method

%Breakdown =
(Area Breakdown Cpnds/
Total Area Breakdown Cpnds) * 100

169 4,4'-DDT, Area = 185130
167 4,4'-DDE, Area = 0
166 4,4'-DDD, Area = 0

%Breakdown: 0.00%, Max Limit: 20.00%
Passed

Peak Tailing Report

TestAmerica St. Louis

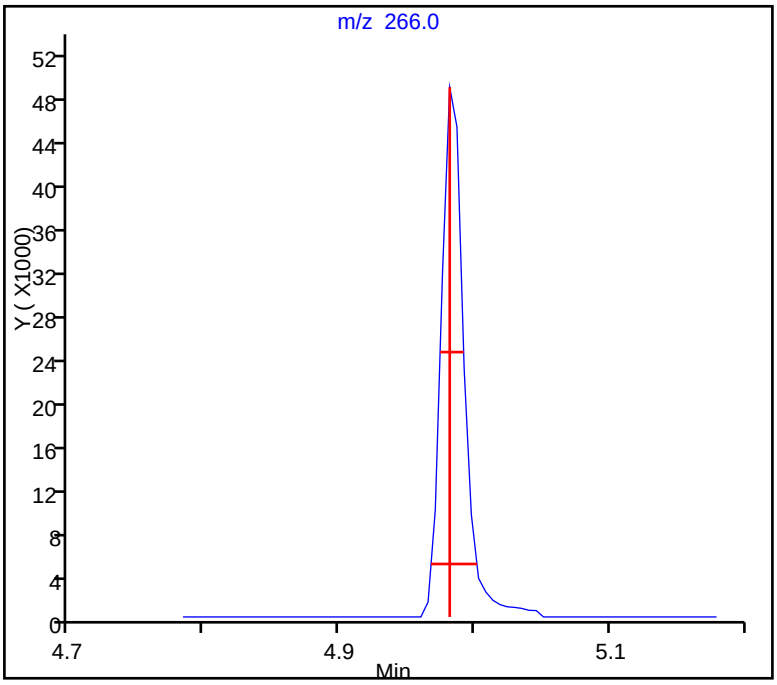
Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1959.D
Injection Date: 09-Aug-2016 12:07:30 Instrument ID: SMSI
Lims ID: DFTPP
Client ID:
Operator ID: ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: BNA_SMSI Limit Group: MSS-8270D

14 Pentachlorophenol_T, Detector: MS SCAN

Peak Tailing Factor =
BackWidth/FrontWidth @ 10% Peak Height

Back Width = 0.020 (min.)
Front Width = 0.014 (min.)

Tailing Factor = 1.5, Max. Tailing < 2.00
Passed



Peak Tailing Report

TestAmerica St. Louis

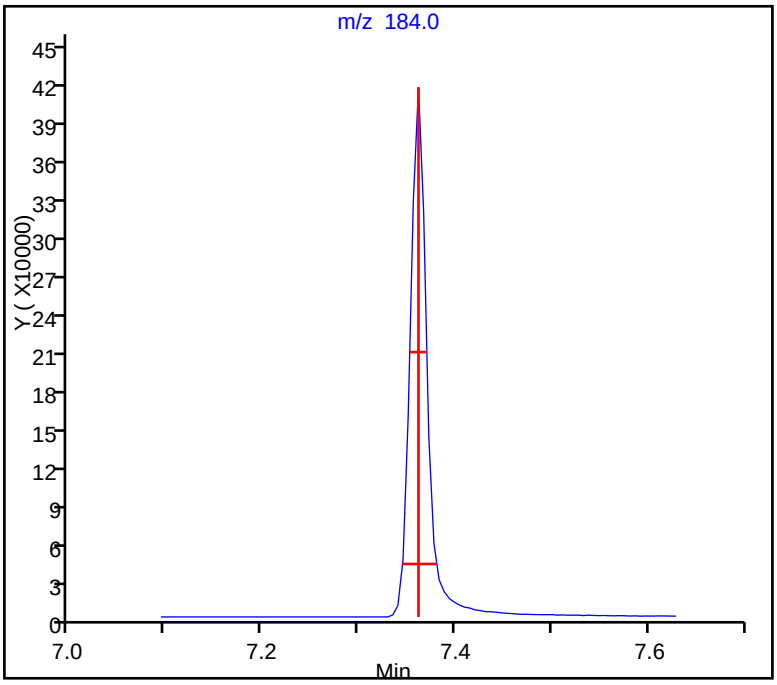
Data File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1959.D
Injection Date: 09-Aug-2016 12:07:30 Instrument ID: SMSI
Lims ID: DFTPP
Client ID:
Operator ID: ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: BNA_SMSI Limit Group: MSS-8270D

51 Benzidine_T, Detector: MS SCAN

Peak Tailing Factor =
BackWidth/FrontWidth @ 10% Peak Height

Back Width = 0.019 (min.)
Front Width = 0.017 (min.)

Tailing Factor = 1.2, Max. Tailing < 2.00
Passed



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2061.D				
Lims ID:	DFTPP				
Client ID:					
Sample Type:	DFTPP				
Inject. Date:	15-Aug-2016 16:12:30	ALS Bottle#:	2	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-0008205-002				
Misc. Info.:	DFTPP				
Operator ID:		Instrument ID:	SMSI		

Method:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m		
Limit Group:	MSS-8270D		
Last Update:	15-Aug-2016 16:38:04	Calib Date:	09-Aug-2016 15:43:30
Integrator:	RTE	ID Type:	Deconvolution ID
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D		

Column 1 :			Det: MS SCAN
Process Host:	XAWRK016		

First Level Reviewer: kuessnerm Date: 15-Aug-2016 16:38:04

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
14 Pentachlorophenol_T	266	4.955	4.955	0.000	92	38597	NR	NR	
51 Benzidine_T	184	7.335	7.335	0.000	99	369882	NR	NR	
168 DFTPP									
167 4,4'-DDE	246		8.290					ND	
166 4,4'-DDD	235		8.460					ND	
169 4,4'-DDT	235	8.672	8.672	0.000	98	141951	NR	NR	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Reagents:

50 ppm Tuning_00026 Amount Added: 1.00 Units: mL

Report Date: 15-Aug-2016 16:38:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

MS Tune Report

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2061.D

Injection Date: 15-Aug-2016 16:12:30 Instrument ID: SMSI

Lims ID: DFTPP

Client ID:

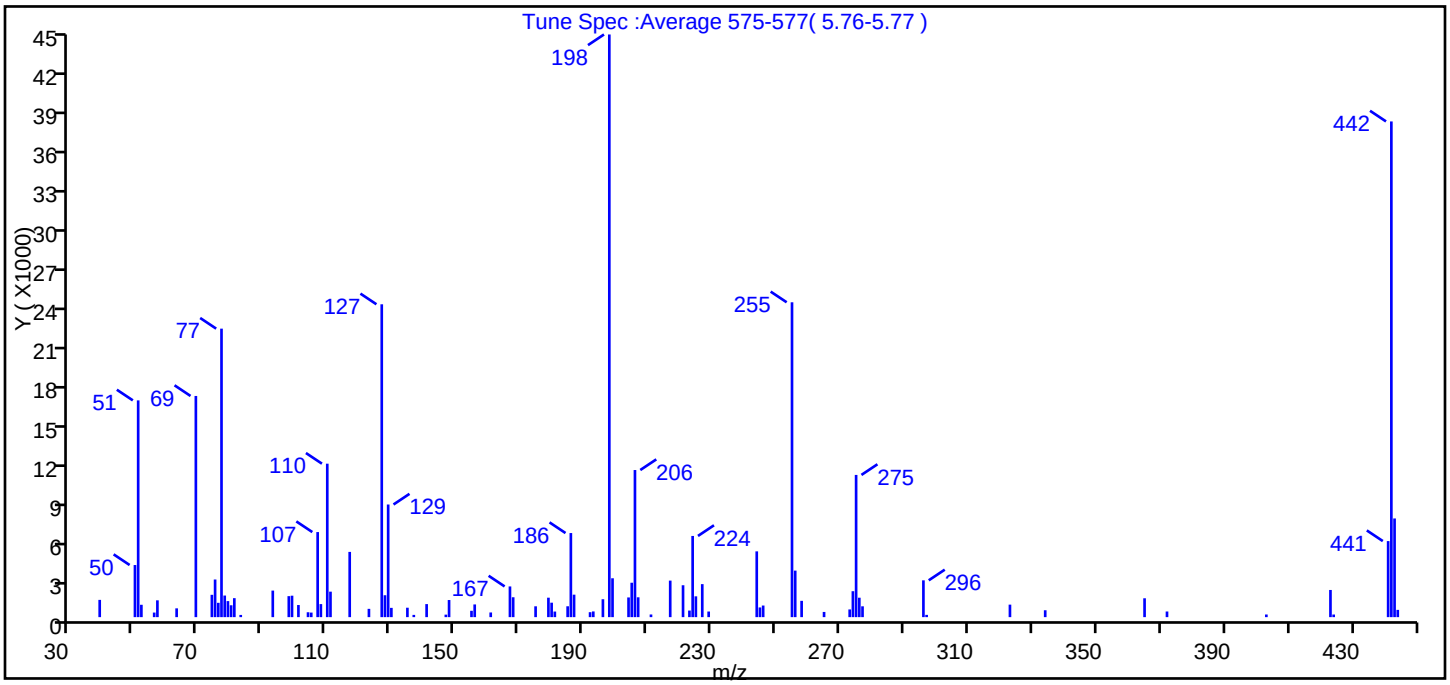
Operator ID: ALS Bottle#: 2 Worklist Smp#: 2

Injection Vol: 1.0 ul Dil. Factor: 1.0000

Method: BNA_SMSI Limit Group: MSS-8270D

Tune Method: DFTPP Method 8270

168 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	Base peak, 100% relative abundance	100.0
51	30-60% of mass 198	37.2
68	<2% of mass 69	0.0 (0.0)
69	Present	38.0
70	<2% of mass 69	0.0 (0.0)
127	40-60% of mass 198	53.7
197	<1% of mass 198	0.0
199	5-9% of mass 198	6.7
275	10-30% of mass 198	24.4
365	>1% of mass 198	3.2
441	Present but less than mass 443	13.1 (77.1)
442	>40% of mass 198	85.1
443	17-23% of mass 442	16.9 (19.9)

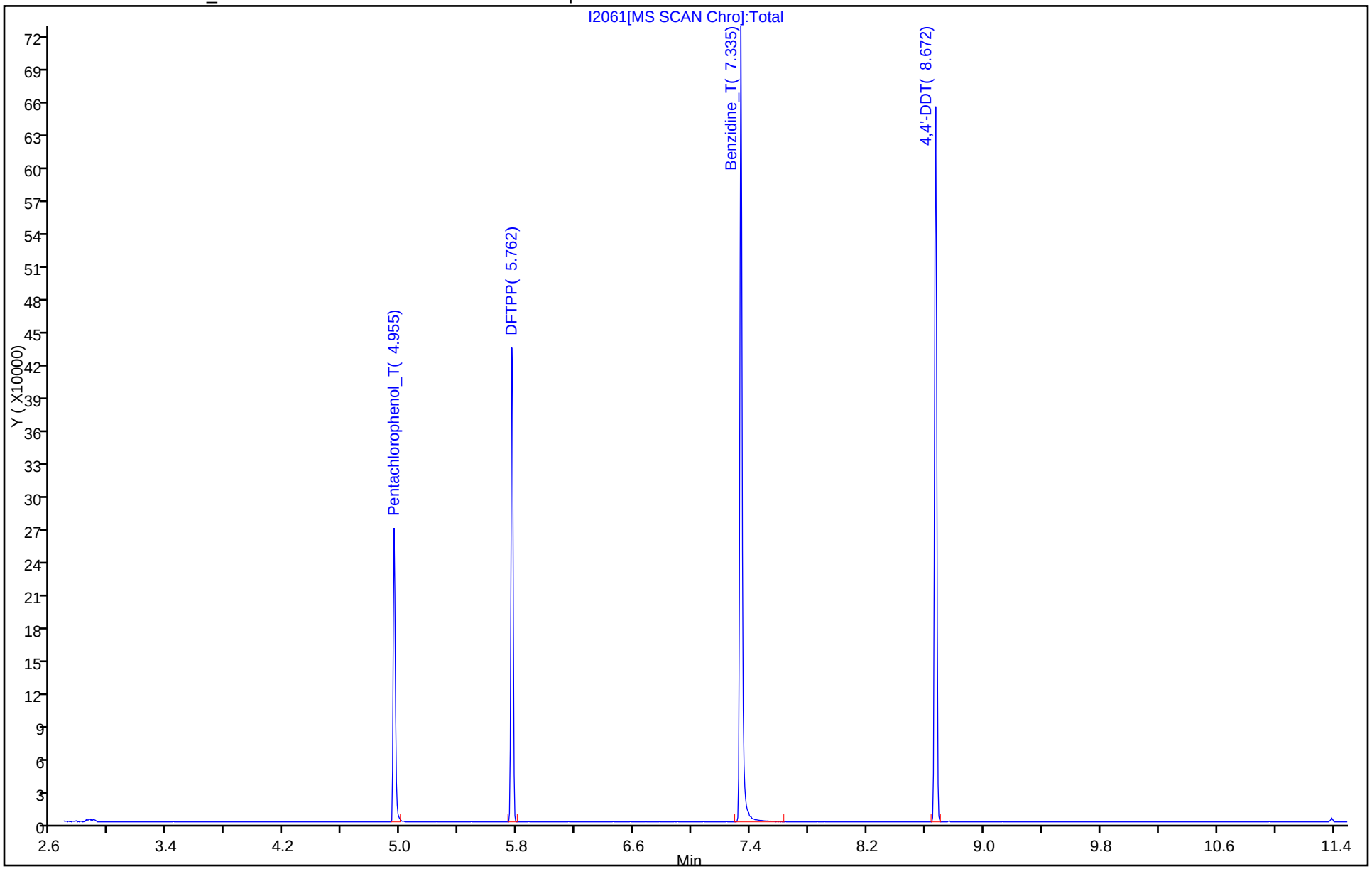
Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2061.D\BNA_SMSI.rslt\spectra.d
Injection Date: 15-Aug-2016 16:12:30
Spectrum: Tune Spec :Average 575-577(5.76-5.77)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 92

m/z	Y	m/z	Y	m/z	Y	m/z	Y
39.00	1315	107.00	6480	181.00	426	246.00	884
50.00	3970	108.00	994	185.00	828	255.00	23984
51.00	16512	110.00	11690	186.00	6406	256.00	3544
52.00	942	111.00	1941	187.00	1712	258.00	1242
56.00	349	117.00	4970	192.00	377	265.00	396
57.00	1281	123.00	632	193.00	435	273.00	587
63.00	670	127.00	23832	196.00	1364	274.00	1976
69.00	16848	128.00	1669	198.00	44384	275.00	10833
74.00	1701	129.00	8580	199.00	2961	276.00	1480
75.00	2867	130.00	707	204.00	1501	277.00	825
76.00	1091	135.00	718	205.00	2621	296.00	2804
77.00	21976	137.00	172	206.00	11206	297.00	173
78.00	1645	141.00	994	207.00	1512	323.00	953
79.00	1222	147.00	191	211.00	203	334.00	525
80.00	904	148.00	1304	217.00	2783	365.00	1437
81.00	1446	155.00	484	221.00	2430	372.00	430
83.00	169	156.00	968	223.00	502	403.00	202
93.00	2023	161.00	356	224.00	6185	423.00	2070
98.00	1599	167.00	2339	225.00	1586	424.00	200
99.00	1634	168.00	1515	227.00	2515	441.00	5794
101.00	923	175.00	826	229.00	428	442.00	37760
104.00	372	179.00	1482	244.00	5011	443.00	7517
105.00	347	180.00	1101	245.00	739	444.00	554

Report Date: 15-Aug-2016 16:38:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2061.D				
Injection Date:	15-Aug-2016 16:12:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	DFTPP			Worklist Smp#:	2
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	2
Method:	BNA_SMSI	Limit Group:	MSS-8270D		

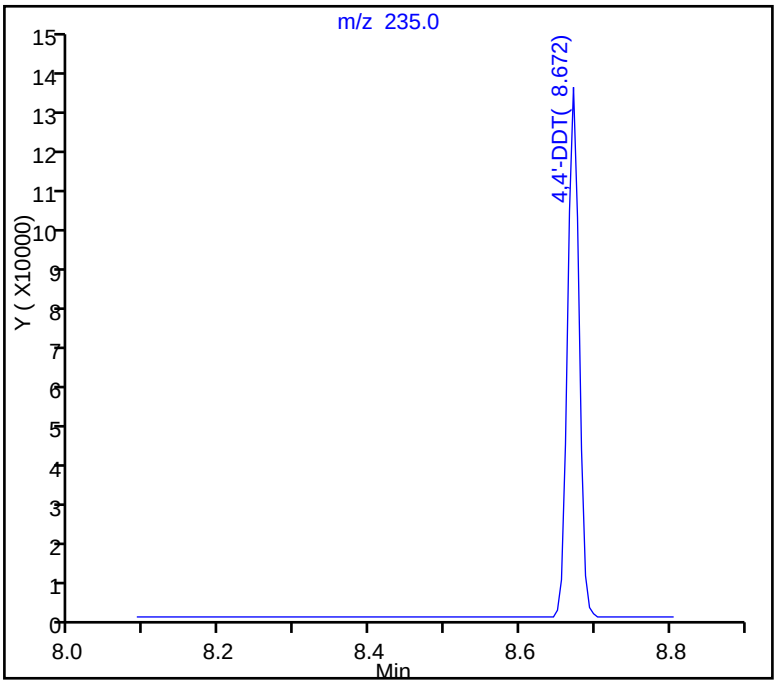


Breakdown Report

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2061.D				
Injection Date:	15-Aug-2016 16:12:30	Instrument ID:	SMSI		
Lims ID:	DFTPP				
Client ID:					
Operator ID:		ALS Bottle#:	2	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		

169 4,4'-DDT, Detector: MS SCAN



SW-846 Method

%Breakdown =
(Area Breakdown Cpnds/
Total Area Breakdown Cpnds) * 100

169 4,4'-DDT, Area = 141951
167 4,4'-DDE, Area = 0
166 4,4'-DDD, Area = 0

%Breakdown: 0.00%, Max Limit: 20.00%
Passed

Report Date: 15-Aug-2016 16:38:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

Peak Tailing Report

TestAmerica St. Louis

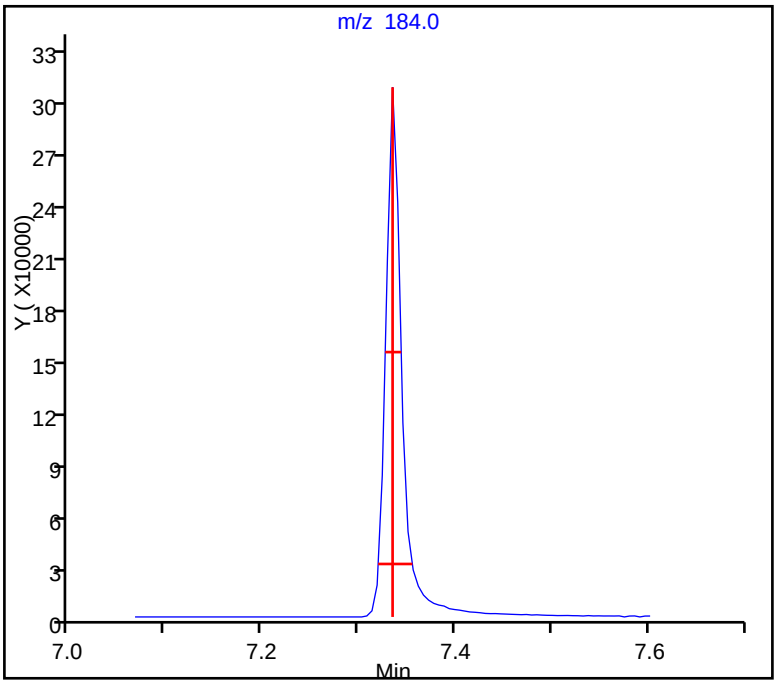
Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2061.D
Injection Date: 15-Aug-2016 16:12:30 Instrument ID: SMSI
Lims ID: DFTPP
Client ID:
Operator ID: ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: BNA_SMSI Limit Group: MSS-8270D

51 Benzidine_T, Detector: MS SCAN

Peak Tailing Factor =
BackWidth/FrontWidth @ 10% Peak Height

Back Width = 0.021 (min.)
Front Width = 0.015 (min.)

Tailing Factor = 1.4, Max. Tailing < 2.00
Passed



Peak Tailing Report

TestAmerica St. Louis

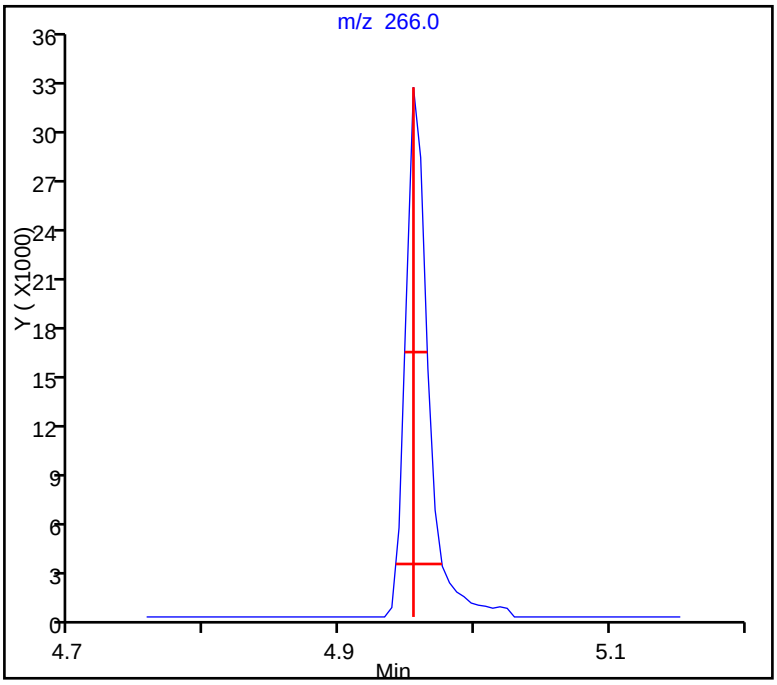
Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2061.D				
Injection Date:	15-Aug-2016 16:12:30	Instrument ID:	SMSI		
Lims ID:	DFTPP				
Client ID:					
Operator ID:		ALS Bottle#:	2	Worklist Smp#:	2
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	BNA_SMSI	Limit Group:	MSS-8270D		

14 Pentachlorophenol_T, Detector: MS SCAN

Peak Tailing Factor =
BackWidth/FrontWidth @ 10% Peak Height

Back Width = 0.021 (min.)
Front Width = 0.013 (min.)

Tailing Factor = 1.6, Max. Tailing < 2.00
Passed



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: LB 160-264502/1-B
Matrix: Solid (TCLP)
Lab File ID: I2063.D
Analysis Method: 8270D
Date Collected:
Extract. Method: 3510C
Date Extracted: 08/12/2016 15:52
Sample wt/vol: 200(mL)
Date Analyzed: 08/15/2016 17:03
Con. Extract Vol.: 1(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
Level: (low/med) Low
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 264877
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
106-46-7	1,4-Dichlorobenzene	0.0050	U	0.050	0.0050
121-14-2	2,4-Dinitrotoluene	0.0050	U	0.050	0.0050
118-74-1	Hexachlorobenzene	0.0050	U	0.050	0.0050
87-68-3	Hexachlorobutadiene	0.0050	U	0.050	0.0050
67-72-1	Hexachloroethane	0.0050	U	0.050	0.0050
95-48-7	2-Methylphenol	0.010	U	0.050	0.010
15831-10-4	3 & 4 Methylphenol	0.0050	U	0.10	0.0050
98-95-3	Nitrobenzene	0.0050	U	0.050	0.0050
87-86-5	Pentachlorophenol	0.010	U	0.25	0.010
110-86-1	Pyridine	0.025	U	0.10	0.025
95-95-4	2,4,5-Trichlorophenol	0.010	U	0.050	0.010
88-06-2	2,4,6-Trichlorophenol	0.010	U	0.050	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
118-79-6	2,4,6-Tribromophenol (Surr)	101	S	49-100
4165-60-0	Nitrobenzene-d5 (Surr)	93		51-98
4165-62-2	Phenol-d5 (Surr)	82		37-95
1718-51-0	Terphenyl-d14 (Surr)	112		60-113
321-60-8	2-Fluorobiphenyl (Surr)	92		45-94
367-12-4	2-Fluorophenol (Surr)	84		46-92

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2063.D
Lims ID: LB 160-264502/1-B
Client ID:
Sample Type: LB
Inject. Date: 15-Aug-2016 17:03:30 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-004
Misc. Info.: LB 160-264502/1-B
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:43:36 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:43:36

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 1,4-Dioxane	88		2.125					ND	
3 N-Nitrosodimethylamine	74		2.500					ND	
4 Pyridine	79		2.526					ND	
2 Methyl methacrylate	69		2.597					ND	
5 Dimethylformamide	44		2.954					ND	
6 Ethyl methacrylate	69		3.474					ND	
7 2-Picoline	93		3.795					ND	
9 Methyl methanesulfonate	80		3.889					ND	
8 N-Nitrosomethylethylamine	88		3.918					ND	
$ 10 2-Fluorophenol	112	4.045	4.051	-0.006	96	471700	75.0	62.7	
11 Cyclohexanol	57		4.211					ND	
12 N-Nitrosodiethylamine	102		4.715					ND	
13 Ethyl methanesulfonate	79		5.052					ND	
$ 16 Phenol-d5	99	5.121	5.131	-0.010	92	569609	75.0	61.8	
T 172 Benzaldehyde TIC	1		5.137					ND	
17 Phenol	94		5.147					ND	
18 Aniline	93		5.147					ND	
19 Bis(2-chloroethyl)ether	93		5.222					ND	
21 2-Chlorophenol	128		5.292					ND	
22 1,3-Dichlorobenzene	146		5.468					ND	
15 Benzaldehyde	77		5.485					ND	
* 23 1,4-Dichlorobenzene-d4	152	5.532	5.538	-0.006	98	196956	40.0	40.0	
24 1,4-Dichlorobenzene	146		5.559					ND	
20 Pentachloroethane	117		5.640					ND	
25 Benzyl alcohol	108		5.714					ND	
26 1,2-Dichlorobenzene	146		5.746					ND	
27 2-Methylphenol	108		5.869					ND	
28 2,2'-oxybis[1-chloropropan	45		5.880					ND	
29 Acetophenone	105		6.041					ND	
30 N-Nitrosodi-n-propylamine	70		6.051					ND	
31 3 & 4 Methylphenol	107		6.062					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
35 Hexachloroethane	117		6.164					ND	
$ 37 Nitrobenzene-d5	82	6.217	6.228	-0.011	87	540148	75.0	69.4	
38 Nitrobenzene	77		6.254					ND	
32 N-Nitrosopyrrolidine	100		6.448					ND	
S 36 Total Cresols	100		6.500					ND	
34 2-Toluidine	106		6.534					ND	
33 N-Nitrosomorpholine	116		6.542					ND	
40 Isophorone	82		6.575					ND	
41 2-Nitrophenol	139		6.672					ND	
42 2,4-Dimethylphenol	107		6.757					ND	
43 Bis(2-chloroethoxy)methane	93		6.875					ND	
39 N-Nitrosopiperidine	114		6.943					ND	
45 Benzoic acid	122		6.971					ND	
46 2,4-Dichlorophenol	162		7.019					ND	
47 alpha,alpha-Dimethyl phene	58		7.104					ND	
48 1,2,4-Trichlorobenzene	180		7.126					ND	
* 49 Naphthalene-d8	136	7.190	7.207	-0.017	100	801894	40.0	40.0	
50 Naphthalene	128		7.233					ND	
44 o,o',o''-Triethylphosphoro	198		7.298					ND	
52 4-Chloroaniline	127		7.330					ND	
53 2,6-Dichlorophenol	162		7.340					ND	
54 Hexachlorobutadiene	225		7.437					ND	
55 Hexachloropropene	213		7.876					ND	
T 174 Caprolactam TIC	1		7.982					ND	
60 4-Chloro-3-methylphenol	107		8.100					ND	
56 Benzothiazole	135		8.122					ND	
59 p-Phenylene diamine	108		8.243					ND	
62 2-Methylnaphthalene	142		8.303					ND	
58 N-Nitrosodi-n-butylamine	84		8.352					ND	
57 Caprolactam	55		8.374					ND	
63 1-Methylnaphthalene	142		8.458					ND	
64 Hexachlorocyclopentadiene	237		8.581					ND	
65 1,2,4,5-Tetrachlorobenzene	216		8.586					ND	
61 Safrole, Total	162		8.719					ND	
67 2,4,6-Trichlorophenol	196		8.784					ND	
68 2,4,5-Trichlorophenol	196		8.849					ND	
$ 69 2-Fluorobiphenyl (Surr)	172	8.918	8.929	-0.011	97	950948	75.0	69.0	
70 1,1'-Biphenyl	154		9.095					ND	
66 cis-Isosafrole	162		9.110					ND	
71 2-Chloronaphthalene	162		9.111					ND	
73 2-Nitroaniline	65		9.309					ND	
72 trans-Isosafrole	162		9.577					ND	
77 Dimethyl phthalate	163		9.672					ND	
78 1,3-Dinitrobenzene	168		9.694					ND	
S 74 Isosafrole	162		9.700					ND	
79 2,6-Dinitrotoluene	165		9.758					ND	
80 Acenaphthylene	152		9.833					ND	
75 1,4-Naphthoquinone	158		9.967					ND	
T 161 2,3,7,8-TCDD TIC	1		10.000					ND	
T 175 Acrylamide TIC	1		10.000					ND	
T 162 Resorcinol TIC	1		10.000					ND	
T 176 2,6-Dimethylphenol TIC	1		10.000					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
81 3-Nitroaniline	138		10.052					ND	
76 1,4-Dinitrobenzene	168		10.090					ND	
* 82 Acenaphthene-d10	164	10.079	10.095	-0.016	92	430780	40.0	40.0	
83 Acenaphthene	153		10.159					ND	
84 2,4-Dinitrophenol	184		10.250					ND	
85 4-Nitrophenol	109		10.453					ND	
87 Dibenzofuran	168		10.475					ND	
86 2,4-Dinitrotoluene	165		10.491					ND	
90 2,3,4,6-Tetrachlorophenol	232		10.731					ND	
88 Pentachlorobenzene	250		10.984					ND	
92 Diethyl phthalate	149		10.988					ND	
93 Fluorene	166		11.111					ND	
94 4-Chlorophenyl phenyl ethe	204		11.143					ND	
91 2-Naphthylamine	143		11.185					ND	
89 1-Naphthylamine	143		11.185					ND	
95 4-Nitroaniline	138		11.213					ND	
98 4,6-Dinitro-2-methylphenol	198		11.271					ND	
99 N-Nitrosodiphenylamine	169		11.384					ND	
171 Diphenylamine	169		11.384					ND	
100 Azobenzene	77		11.448					ND	
$ 102 2,4,6-Tribromophenol	330	11.560	11.576	-0.016	91	130456	75.0	75.6	
96 Thionazin	107		11.679					ND	
97 N-Nitro-o-toluidine	152		11.733					ND	
101 Tributyl phosphate	99		11.816					ND	
106 4-Bromophenyl phenyl ether	248		12.074					ND	
108 Hexachlorobenzene	284		12.175					ND	
103 Sulfotepp	97		12.305					ND	
104 1,3,5-Trinitrobenzene	213		12.492					ND	
110 Diallate Peak 1	86		12.535					ND	
105 Phorate	75		12.546					ND	
112 Pentachlorophenol	266		12.577					ND	
T 173 Atrazine TIC	1		12.603					ND	
109 Dimethoate	87		12.656					ND	
107 Phenacetin	108		12.667					ND	
163 Diallate Peak 2	86		12.731					ND	
* 117 Phenanthrene-d10	188	12.887	12.903	-0.016	99	706002	40.0	40.0	
118 Phenanthrene	178		12.951					ND	
119 Anthracene	178		13.047					ND	
113 Tris(2-chloroethyl)phospha	63		13.057					ND	
111 Atrazine	200		13.075					ND	
114 4-Aminobiphenyl	169		13.171					ND	
115 Pentachloronitrobenzene	237		13.193					ND	
116 Pronamide	173		13.348					ND	
122 Carbazole	167		13.395					ND	
120 Dinoseb	211		13.572					ND	
121 Disulfoton	88		13.572					ND	
124 Di-n-butyl phthalate	149		14.197					ND	
123 Methyl parathion	109		14.305					ND	
126 Ethyl Parathion	109		15.063					ND	
125 4-Nitroquinoline-1-oxide	190		15.143					ND	
129 Fluoranthene	202		15.288					ND	
127 Methapyrilene	97		15.305					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
128 Isodrin	193		15.616					ND	
130 Benzidine	184		15.620					ND	
131 Pyrene	202		15.727					ND	
138 Kepone	272		16.014					ND	
$ 132 Terphenyl-d14	244	16.112	16.117	-0.005	99	1080559	75.0	83.6	
133 Aramite Peak 1	185		16.739					ND	
134 Aramite Peak 2	185		16.894					ND	
135 p-Dimethylamino azobenzene	120		17.017					ND	
S 137 Aramite, Total	100		17.020					ND	
136 Chlorobenzilate	251		17.135					ND	
139 Butyl benzyl phthalate	149		17.166					ND	
142 Famphur	218		17.611					ND	
140 3,3'-Dimethylbenzidine	212		17.691					ND	
143 Benzo[a]anthracene	228		18.128					ND	
144 3,3'-Dichlorobenzidine	252		18.139					ND	
* 145 Chrysene-d12	240	18.128	18.155	-0.027	99	643095	40.0	40.0	
141 2-Acetylaminofluorene	181		18.194					ND	
146 Chrysene	228		18.203					ND	
148 Bis(2-ethylhexyl) phthalat	149		18.374					ND	
147 4,4'-Methylene bis(2-chlor	231		18.766					ND	
149 Di-n-octyl phthalate	149		19.605					ND	
150 Benzo[b]fluoranthene	252		20.140					ND	
151 Benzo[k]fluoranthene	252		20.188					ND	
153 Benzo[a]pyrene	252		20.712					ND	
159 7,12-Dimethylbenz(a)anthra	256		20.798					ND	
* 154 Perylene-d12	264	20.797	20.813	-0.016	98	464191	40.0	40.0	
152 Hexachlorophene	196		20.887					ND	
155 3-Methylcholanthrene	268		22.264					ND	
156 Indeno[1,2,3-cd]pyrene	276		23.129					ND	
157 Dibenz(a,h)anthracene	278		23.199					ND	
158 Benzo[g,h,i]perylene	276		23.814					ND	
S 164 Phthalates, Total	1		0.000					ND	
S 165 Diallate	86		0.000					ND	

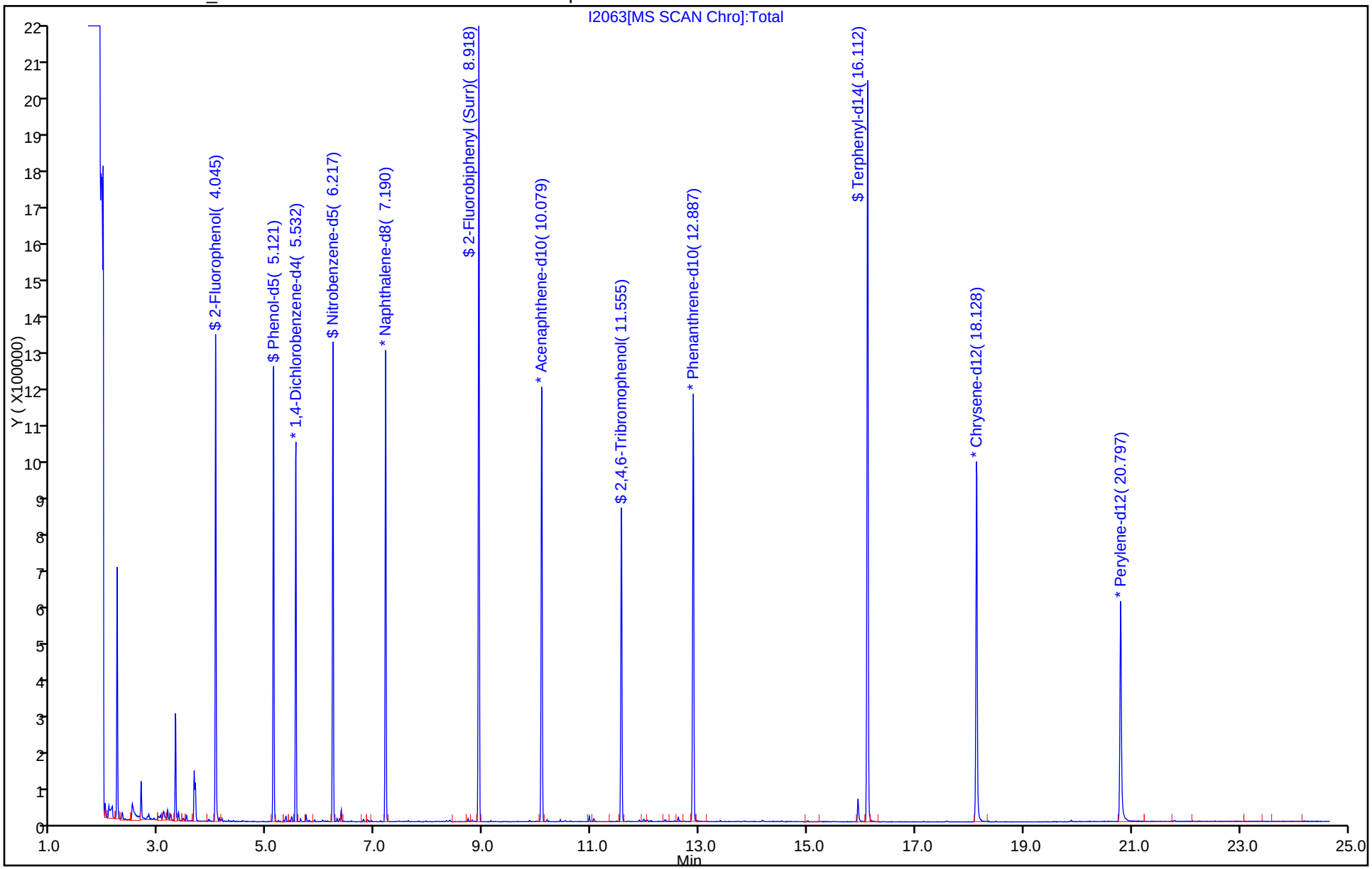
Reagents:

800 ppm I Std_00138 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 16-Aug-2016 09:43:36 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2063.D				
Injection Date:	15-Aug-2016 17:03:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	LB 160-264502/1-B			Worklist Smp#:	4
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2063.D
Lims ID: LB 160-264502/1-B
Client ID:
Sample Type: LB
Inject. Date: 15-Aug-2016 17:03:30 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-004
Misc. Info.: LB 160-264502/1-B
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:43:36 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:43:36

Compound	Amount Added	Amount Recovered	% Rec.
$ 10 2-Fluorophenol	75.0	62.7	83.63
$ 16 Phenol-d5	75.0	61.8	82.39
$ 37 Nitrobenzene-d5	75.0	69.4	92.54
$ 69 2-Fluorobiphenyl (Surr)	75.0	69.0	91.94
$ 102 2,4,6-Tribromophenol	75.0	75.6	100.80
$ 132 Terphenyl-d14	75.0	83.6	111.52

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: LCS 160-264673/2-A
Matrix: Solid
Lab File ID: I2064.D
Analysis Method: 8270D
Date Collected:
Extract. Method: 3510C
Date Extracted: 08/12/2016 15:52
Sample wt/vol: 200(mL)
Date Analyzed: 08/15/2016 17:36
Con. Extract Vol.: 1(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
Level: (low/med) Low
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 264877
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
106-46-7	1,4-Dichlorobenzene	0.385		0.050	0.0050
121-14-2	2,4-Dinitrotoluene	0.415		0.050	0.0050
118-74-1	Hexachlorobenzene	0.509		0.050	0.0050
87-68-3	Hexachlorobutadiene	0.388		0.050	0.0050
67-72-1	Hexachloroethane	0.379		0.050	0.0050
95-48-7	2-Methylphenol	0.401		0.050	0.010
15831-10-4	3 & 4 Methylphenol	0.361		0.10	0.0050
98-95-3	Nitrobenzene	0.404		0.050	0.0050
87-86-5	Pentachlorophenol	0.428		0.25	0.010
110-86-1	Pyridine	0.275		0.10	0.025
95-95-4	2,4,5-Trichlorophenol	0.441		0.050	0.010
88-06-2	2,4,6-Trichlorophenol	0.457		0.050	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
118-79-6	2,4,6-Tribromophenol (Surr)	92		49-100
4165-60-0	Nitrobenzene-d5 (Surr)	84		51-98
4165-62-2	Phenol-d5 (Surr)	78		37-95
1718-51-0	Terphenyl-d14 (Surr)	104		60-113
321-60-8	2-Fluorobiphenyl (Surr)	87		45-94
367-12-4	2-Fluorophenol (Surr)	79		46-92

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2064.D
Lims ID: LCS 160-264673/2-A
Client ID:
Sample Type: LCS
Inject. Date: 15-Aug-2016 17:36:30 ALS Bottle#: 5 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-005
Misc. Info.: LCS 160-264673/2-A
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:44:20 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:44:20

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
4 Pyridine	79	2.596	2.526	0.070	93	557492	100.0	55.0	
$ 10 2-Fluorophenol	112	4.067	4.051	0.016	96	511203	75.0	59.1	
$ 16 Phenol-d5	99	5.126	5.131	-0.005	92	617687	75.0	58.2	
* 23 1,4-Dichlorobenzene-d4	152	5.533	5.538	-0.005	97	226704	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.554	5.559	-0.005	93	709033	100.0	77.1	
27 2-Methylphenol	108	5.864	5.869	-0.005	90	660620	100.0	80.2	
31 3 & 4 Methylphenol	107	6.067	6.062	0.005	88	660967	100.0	72.2	
35 Hexachloroethane	117	6.158	6.164	-0.006	92	270869	100.0	75.7	
$ 37 Nitrobenzene-d5	82	6.223	6.228	-0.005	87	564722	75.0	62.8	
38 Nitrobenzene	77	6.249	6.254	-0.005	97	735799	100.0	80.9	
* 49 Naphthalene-d8	136	7.196	7.207	-0.011	100	927173	40.0	40.0	
54 Hexachlorobutadiene	225	7.431	7.437	-0.006	92	274618	100.0	77.6	
67 2,4,6-Trichlorophenol	196	8.779	8.784	-0.005	87	386744	100.0	91.4	
68 2,4,5-Trichlorophenol	196	8.843	8.849	-0.006	94	382079	100.0	88.2	
$ 69 2-Fluorobiphenyl (Surr)	172	8.924	8.929	-0.005	98	1006936	75.0	65.6	
* 82 Acenaphthene-d10	164	10.084	10.095	-0.011	93	479293	40.0	40.0	
86 2,4-Dinitrotoluene	165	10.480	10.491	-0.011	91	397217	100.0	83.1	
$ 102 2,4,6-Tribromophenol	330	11.560	11.576	-0.016	91	132233	75.0	68.9	
108 Hexachlorobenzene	284	12.170	12.175	-0.005	99	392814	100.0	101.8	
112 Pentachlorophenol	266	12.566	12.577	-0.011	89	190967	100.0	85.7	
* 117 Phenanthrene-d10	188	12.887	12.903	-0.016	99	736055	40.0	40.0	
$ 132 Terphenyl-d14	244	16.112	16.117	-0.005	99	1060262	75.0	77.8	
* 145 Chrysene-d12	240	18.129	18.155	-0.026	99	678760	40.0	40.0	
* 154 Perylene-d12	264	20.798	20.813	-0.015	97	493015	40.0	40.0	

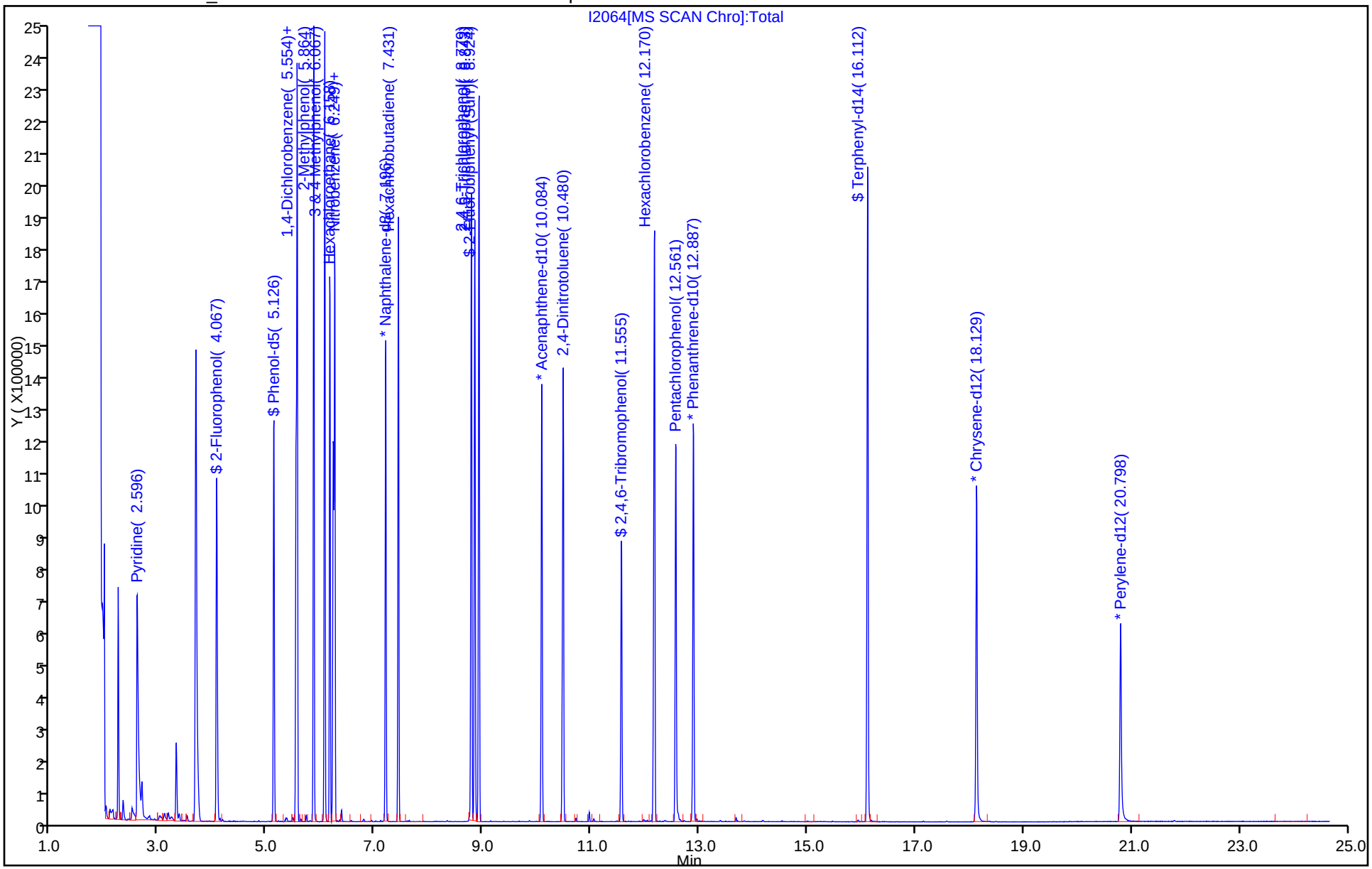
Reagents:

800 ppm I Std_00138 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 16-Aug-2016 09:44:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2064.D				
Injection Date:	15-Aug-2016 17:36:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	LCS 160-264673/2-A			Worklist Smp#:	5
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2064.D
Lims ID: LCS 160-264673/2-A
Client ID:
Sample Type: LCS
Inject. Date: 15-Aug-2016 17:36:30 ALS Bottle#: 5 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-005
Misc. Info.: LCS 160-264673/2-A
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:44:20 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:44:20

Compound	Amount Added	Amount Recovered	% Rec.
$ 10 2-Fluorophenol	75.0	59.1	78.74
$ 16 Phenol-d5	75.0	58.2	77.62
$ 37 Nitrobenzene-d5	75.0	62.8	83.68
$ 69 2-Fluorobiphenyl (Surr)	75.0	65.6	87.49
$ 102 2,4,6-Tribromophenol	75.0	68.9	91.83
$ 132 Terphenyl-d14	75.0	77.8	103.68

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: 160-18420-B-1-G MS
Matrix: Solid (TCLP)
Lab File ID: I2076.D
Analysis Method: 8270D
Date Collected: 07/28/2016 21:00
Extract. Method: 3510C
Date Extracted: 08/12/2016 15:52
Sample wt/vol: 200(mL)
Date Analyzed: 08/16/2016 00:15
Con. Extract Vol.: 1(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
Level: (low/med) Low
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 264877
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
106-46-7	1,4-Dichlorobenzene	0.356		0.050	0.0050
121-14-2	2,4-Dinitrotoluene	0.390		0.050	0.0050
118-74-1	Hexachlorobenzene	0.489		0.050	0.0050
87-68-3	Hexachlorobutadiene	0.348		0.050	0.0050
67-72-1	Hexachloroethane	0.342		0.050	0.0050
95-48-7	2-Methylphenol	0.377		0.050	0.010
15831-10-4	3 & 4 Methylphenol	0.337		0.10	0.0050
98-95-3	Nitrobenzene	0.387		0.050	0.0050
87-86-5	Pentachlorophenol	0.408		0.25	0.010
110-86-1	Pyridine	0.278		0.10	0.025
95-95-4	2,4,5-Trichlorophenol	0.412		0.050	0.010
88-06-2	2,4,6-Trichlorophenol	0.421		0.050	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
118-79-6	2,4,6-Tribromophenol (Surr)	84		49-100
4165-60-0	Nitrobenzene-d5 (Surr)	79		51-98
4165-62-2	Phenol-d5 (Surr)	70		37-95
1718-51-0	Terphenyl-d14 (Surr)	102		60-113
321-60-8	2-Fluorobiphenyl (Surr)	80		45-94
367-12-4	2-Fluorophenol (Surr)	67		46-92

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2076.D
Lims ID: 160-18420-B-1-G MS
Client ID:
Sample Type: MS
Inject. Date: 16-Aug-2016 00:15:30 ALS Bottle#: 17 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-017
Misc. Info.: 160-18420-B-1-G MS
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:51:33 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:52:06

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
4 Pyridine	79	2.612	2.526	0.086	93	694957	100.0	55.7	
$ 10 2-Fluorophenol	112	4.072	4.051	0.021	96	535471	75.0	50.2	
$ 16 Phenol-d5	99	5.131	5.131	0.000	92	688212	75.0	52.7	
* 23 1,4-Dichlorobenzene-d4	152	5.543	5.538	0.005	97	279168	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.565	5.559	0.006	94	805747	100.0	71.1	
27 2-Methylphenol	108	5.875	5.869	0.006	89	765592	100.0	75.5	
31 3 & 4 Methylphenol	107	6.078	6.062	0.016	88	759135	100.0	67.3	
35 Hexachloroethane	117	6.169	6.164	0.005	92	301544	100.0	68.5	
$ 37 Nitrobenzene-d5	82	6.233	6.228	0.005	87	647277	75.0	59.4	
38 Nitrobenzene	77	6.260	6.254	0.006	97	852191	100.0	77.3	
* 49 Naphthalene-d8	136	7.207	7.207	0.000	100	1123309	40.0	40.0	
54 Hexachlorobutadiene	225	7.442	7.437	0.005	91	298671	100.0	69.7	
67 2,4,6-Trichlorophenol	196	8.795	8.784	0.011	88	426926	100.0	84.1	
68 2,4,5-Trichlorophenol	196	8.854	8.849	0.005	94	428566	100.0	82.5	
$ 69 2-Fluorobiphenyl (Surr)	172	8.934	8.929	0.005	98	1110677	75.0	60.4	
* 82 Acenaphthene-d10	164	10.095	10.095	0.000	93	574843	40.0	40.0	
86 2,4-Dinitrotoluene	165	10.496	10.491	0.005	91	447473	100.0	78.0	
$ 102 2,4,6-Tribromophenol	330	11.571	11.576	-0.005	91	144895	75.0	62.9	
108 Hexachlorobenzene	284	12.181	12.175	0.006	100	440911	100.0	97.7	
112 Pentachlorophenol	266	12.577	12.577	0.000	89	212529	100.0	81.6	
* 117 Phenanthrene-d10	188	12.903	12.903	0.000	99	860444	40.0	40.0	
$ 132 Terphenyl-d14	244	16.128	16.117	0.011	100	1131528	75.0	76.3	
* 145 Chrysene-d12	240	18.145	18.155	-0.010	99	738167	40.0	40.0	
* 154 Perylene-d12	264	20.808	20.813	-0.005	98	521909	40.0	40.0	

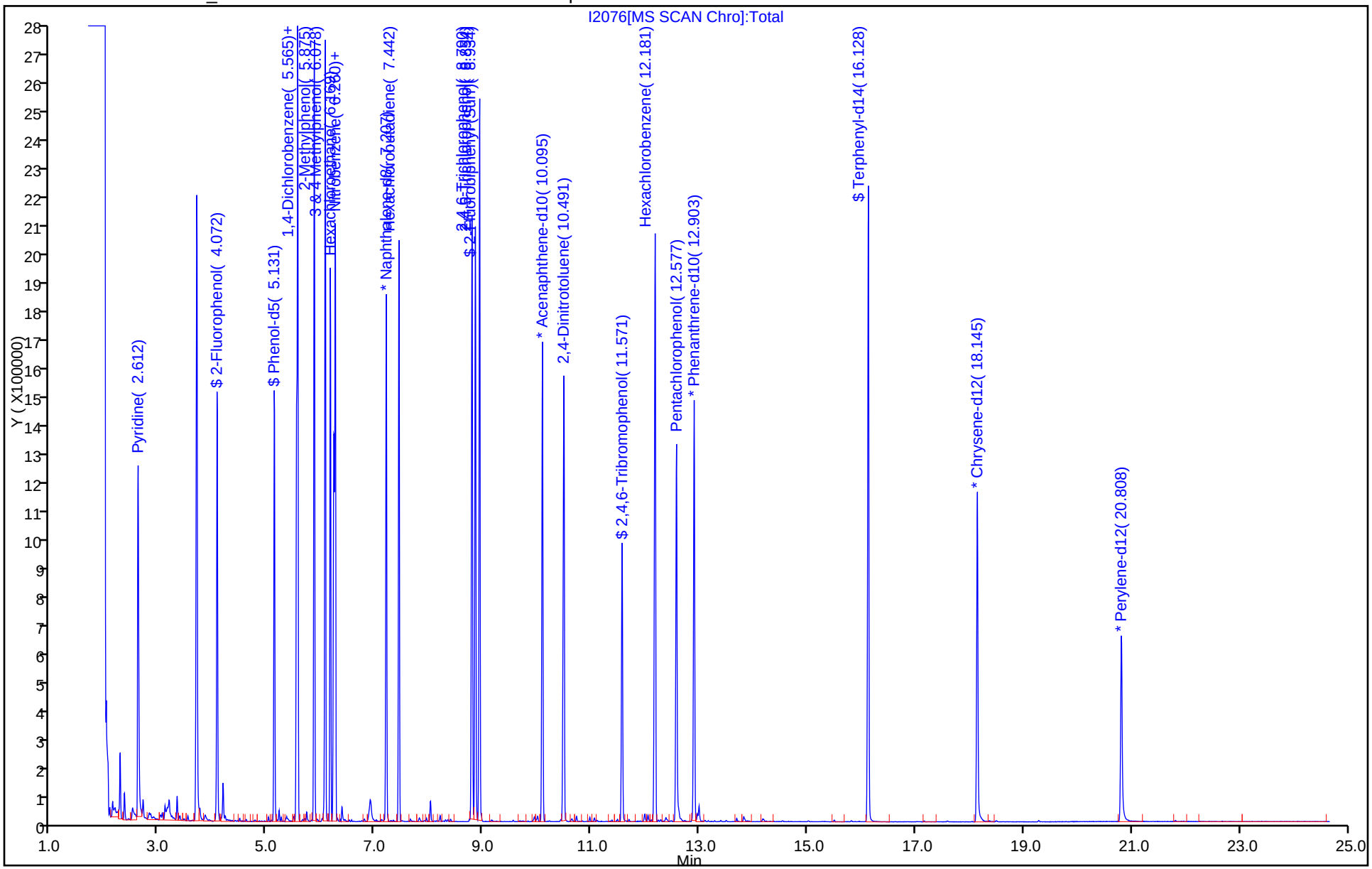
Reagents:

800 ppm I Std_00138 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 16-Aug-2016 09:52:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2076.D				
Injection Date:	16-Aug-2016 00:15:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	160-18420-B-1-G MS			Worklist Smp#:	17
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	17
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2076.D
Lims ID: 160-18420-B-1-G MS
Client ID:
Sample Type: MS
Inject. Date: 16-Aug-2016 00:15:30 ALS Bottle#: 17 Worklist Smp#: 17
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-017
Misc. Info.: 160-18420-B-1-G MS
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:51:33 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:52:06

Compound	Amount Added	Amount Recovered	% Rec.
$ 10 2-Fluorophenol	75.0	50.2	66.98
$ 16 Phenol-d5	75.0	52.7	70.23
$ 37 Nitrobenzene-d5	75.0	59.4	79.17
$ 69 2-Fluorobiphenyl (Surr)	75.0	60.4	80.47
$ 102 2,4,6-Tribromophenol	75.0	62.9	83.90
$ 132 Terphenyl-d14	75.0	76.3	101.74

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: 160-18420-B-1-H MSD
Matrix: Solid (TCLP)
Lab File ID: I2077.D
Analysis Method: 8270D
Date Collected: 07/28/2016 21:00
Extract. Method: 3510C
Date Extracted: 08/12/2016 15:52
Sample wt/vol: 200(mL)
Date Analyzed: 08/16/2016 00:48
Con. Extract Vol.: 1(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
Level: (low/med) Low
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 264877
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
106-46-7	1,4-Dichlorobenzene	0.345		0.050	0.0050
121-14-2	2,4-Dinitrotoluene	0.367		0.050	0.0050
118-74-1	Hexachlorobenzene	0.450		0.050	0.0050
87-68-3	Hexachlorobutadiene	0.347		0.050	0.0050
67-72-1	Hexachloroethane	0.335		0.050	0.0050
95-48-7	2-Methylphenol	0.376		0.050	0.010
15831-10-4	3 & 4 Methylphenol	0.337		0.10	0.0050
98-95-3	Nitrobenzene	0.375		0.050	0.0050
87-86-5	Pentachlorophenol	0.353		0.25	0.010
110-86-1	Pyridine	0.286		0.10	0.025
95-95-4	2,4,5-Trichlorophenol	0.397		0.050	0.010
88-06-2	2,4,6-Trichlorophenol	0.413		0.050	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
118-79-6	2,4,6-Tribromophenol (Surr)	76		49-100
4165-60-0	Nitrobenzene-d5 (Surr)	76		51-98
4165-62-2	Phenol-d5 (Surr)	68		37-95
1718-51-0	Terphenyl-d14 (Surr)	98		60-113
321-60-8	2-Fluorobiphenyl (Surr)	80		45-94
367-12-4	2-Fluorophenol (Surr)	64		46-92

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2077.D
Lims ID: 160-18420-B-1-H MSD
Client ID:
Sample Type: MSD
Inject. Date: 16-Aug-2016 00:48:30 ALS Bottle#: 18 Worklist Smp#: 18
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-018
Misc. Info.: 160-18420-B-1-H MSD
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:51:33 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:52:36

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
4 Pyridine	79	2.559	2.526	0.033	93	465756	100.0	57.2	
$ 10 2-Fluorophenol	112	4.062	4.051	0.011	96	332854	75.0	47.9	
$ 16 Phenol-d5	99	5.131	5.131	0.000	92	435604	75.0	51.1	
* 23 1,4-Dichlorobenzene-d4	152	5.543	5.538	0.005	97	182115	40.0	40.0	
24 1,4-Dichlorobenzene	146	5.565	5.559	0.006	93	509539	100.0	68.9	
27 2-Methylphenol	108	5.870	5.869	0.001	89	497327	100.0	75.1	
31 3 & 4 Methylphenol	107	6.073	6.062	0.011	88	496229	100.0	67.5	
35 Hexachloroethane	117	6.174	6.164	0.010	91	192778	100.0	67.1	
$ 37 Nitrobenzene-d5	82	6.233	6.228	0.005	87	406740	75.0	56.9	
38 Nitrobenzene	77	6.260	6.254	0.006	96	542494	100.0	75.1	
* 49 Naphthalene-d8	136	7.207	7.207	0.000	100	736460	40.0	40.0	
54 Hexachlorobutadiene	225	7.442	7.437	0.005	91	194939	100.0	69.4	
67 2,4,6-Trichlorophenol	196	8.795	8.784	0.011	87	278084	100.0	82.6	
68 2,4,5-Trichlorophenol	196	8.859	8.849	0.010	93	273676	100.0	79.4	
$ 69 2-Fluorobiphenyl (Surr)	172	8.934	8.929	0.005	98	730244	75.0	59.8	
* 82 Acenaphthene-d10	164	10.100	10.095	0.005	92	381314	40.0	40.0	
86 2,4-Dinitrotoluene	165	10.491	10.491	0.000	89	279167	100.0	73.4	
$ 102 2,4,6-Tribromophenol	330	11.577	11.576	0.001	89	86770	75.0	56.8	
108 Hexachlorobenzene	284	12.181	12.175	0.006	98	274534	100.0	89.9	
112 Pentachlorophenol	266	12.577	12.577	0.000	88	124578	100.0	70.7	
* 117 Phenanthrene-d10	188	12.903	12.903	0.000	99	582185	40.0	40.0	
$ 132 Terphenyl-d14	244	16.128	16.117	0.011	99	724622	75.0	73.3	
* 145 Chrysene-d12	240	18.145	18.155	-0.010	99	492109	40.0	40.0	
* 154 Perylene-d12	264	20.814	20.813	0.001	97	370233	40.0	40.0	

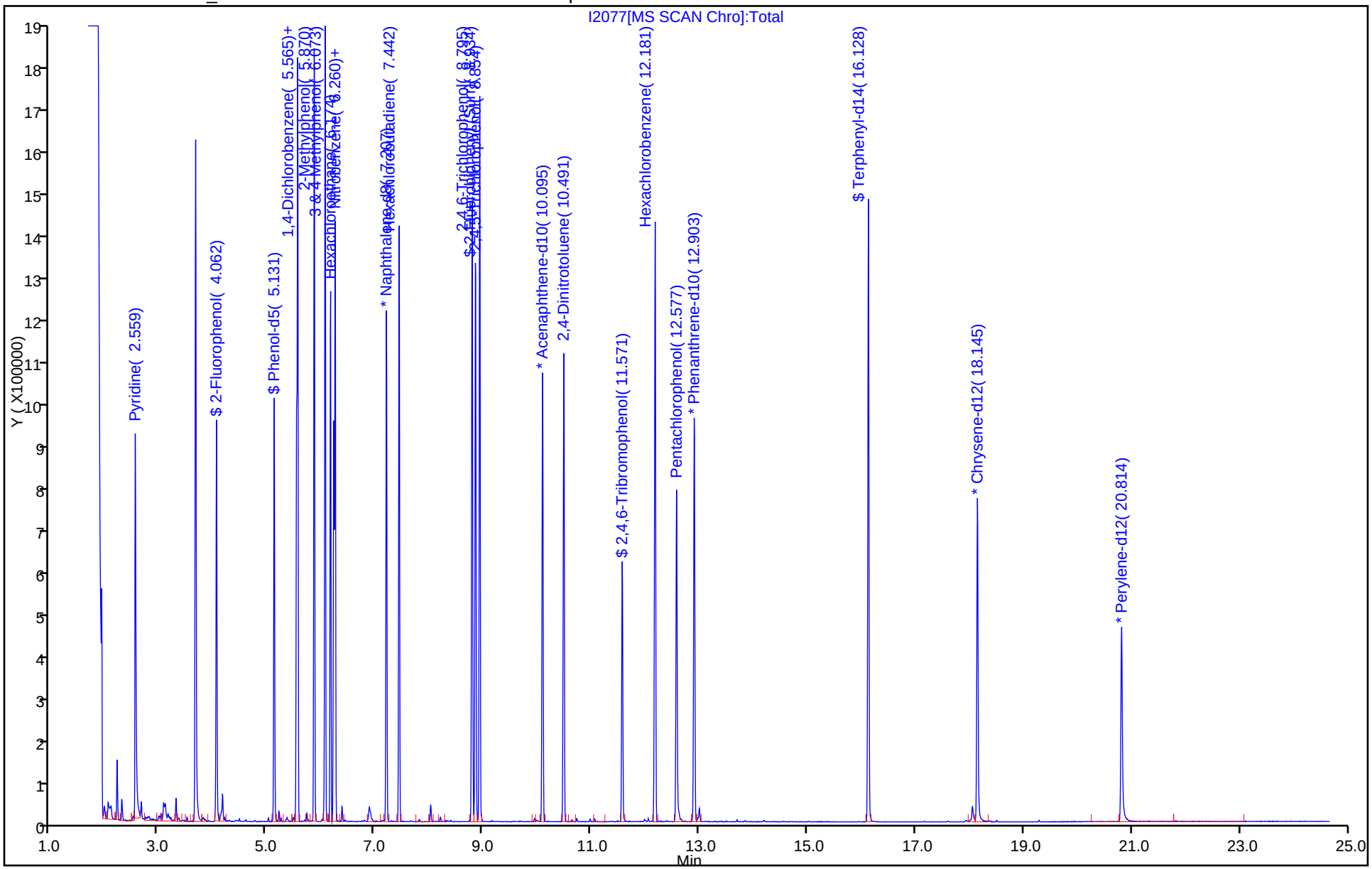
Reagents:

800 ppm I Std_00138 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 16-Aug-2016 09:52:36 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2077.D				
Injection Date:	16-Aug-2016 00:48:30	Instrument ID:	SMSI	Operator ID:	
Lims ID:	160-18420-B-1-H MSD			Worklist Smp#:	18
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	18
Method:	BNA_SMSI	Limit Group:	MSS-8270D		



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\I2077.D
Lims ID: 160-18420-B-1-H MSD
Client ID:
Sample Type: MSD
Inject. Date: 16-Aug-2016 00:48:30 ALS Bottle#: 18 Worklist Smp#: 18
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-0008205-018
Misc. Info.: 160-18420-B-1-H MSD
Operator ID: Instrument ID: SMSI

Method: \\ChromNA\StLouis\ChromData\SMSI\20160815-8205.b\BNA_SMSI.m
Limit Group: MSS-8270D
Last Update: 16-Aug-2016 09:51:33 Calib Date: 09-Aug-2016 15:43:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SMSI\20160809-8148.b\I1966.D

Column 1 : Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: kuessnerm Date: 16-Aug-2016 09:52:36

Compound	Amount Added	Amount Recovered	% Rec.
$ 10 2-Fluorophenol	75.0	47.9	63.82
$ 16 Phenol-d5	75.0	51.1	68.14
$ 37 Nitrobenzene-d5	75.0	56.9	75.88
$ 69 2-Fluorobiphenyl (Surr)	75.0	59.8	79.76
$ 102 2,4,6-Tribromophenol	75.0	56.8	75.74
$ 132 Terphenyl-d14	75.0	73.3	97.73

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SMSI Start Date: 08/09/2016 12:07

Analysis Batch Number: 264049 End Date: 08/09/2016 20:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 160-264049/2		08/09/2016 12:07	1	I1959.D	RXI5SiiMS 0.25(mm)
ICIS 160-264049/3		08/09/2016 12:25	1	I1960.D	RXI5SiiMS 0.25(mm)
IC 160-264049/4		08/09/2016 12:58	1	I1961.D	RXI5SiiMS 0.25(mm)
IC 160-264049/5		08/09/2016 13:31	1	I1962.D	RXI5SiiMS 0.25(mm)
IC 160-264049/6		08/09/2016 14:04	1	I1963.D	RXI5SiiMS 0.25(mm)
IC 160-264049/7		08/09/2016 14:37	1	I1964.D	RXI5SiiMS 0.25(mm)
IC 160-264049/8		08/09/2016 15:10	1	I1965.D	RXI5SiiMS 0.25(mm)
IC 160-264049/9		08/09/2016 15:43	1	I1966.D	RXI5SiiMS 0.25(mm)
ICV 160-264049/10		08/09/2016 16:16	1	I1967.D	RXI5SiiMS 0.25(mm)
ZZZZZ		08/09/2016 16:49	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/09/2016 17:22	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/09/2016 19:34	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/09/2016 20:07	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/09/2016 20:41	1		RXI5SiiMS 0.25(mm)

8270D

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SMSI Start Date: 08/15/2016 16:12

Analysis Batch Number: 264877 End Date: 08/16/2016 01:21

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 160-264877/2		08/15/2016 16:12	1	I2061.D	RXI5SiiMS 0.25(mm)
CCVIS 160-264877/3		08/15/2016 16:31	1	I2062.D	RXI5SiiMS 0.25(mm)
LB 160-264502/1-B		08/15/2016 17:03	1	I2063.D	RXI5SiiMS 0.25(mm)
LCS 160-264673/2-A		08/15/2016 17:36	1	I2064.D	RXI5SiiMS 0.25(mm)
ZZZZZ		08/15/2016 18:10	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/15/2016 18:42	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/15/2016 19:16	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/15/2016 19:49	1		RXI5SiiMS 0.25(mm)
160-18521-1		08/15/2016 20:22	1	I2069.D	RXI5SiiMS 0.25(mm)
160-18521-2		08/15/2016 20:56	1	I2070.D	RXI5SiiMS 0.25(mm)
ZZZZZ		08/15/2016 21:29	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/15/2016 22:02	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/15/2016 22:35	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/15/2016 23:08	1		RXI5SiiMS 0.25(mm)
ZZZZZ		08/15/2016 23:42	1		RXI5SiiMS 0.25(mm)
160-18420-B-1-G MS		08/16/2016 00:15	1	I2076.D	RXI5SiiMS 0.25(mm)
160-18420-B-1-H MSD		08/16/2016 00:48	1	I2077.D	RXI5SiiMS 0.25(mm)
ZZZZZ		08/16/2016 01:21	1		RXI5SiiMS 0.25(mm)

8270D

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264502 Batch Start Date: 08/11/16 13:18 Batch Analyst: Mcnutt, Joe W

Batch Method: 1311 Batch End Date: 08/12/16 12:31

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	NumbSolidPhases	NumbLiqPhases	NumbTotPhases	EFD_SampleWeight
LB 160-264502/1		1311, 3510C, 8270D			2000 mL		1	1	
160-18521-B-1	YMTFA74SE001	1311, 3510C, 8270D	P	100.65 g	2000 mL	1		1	5 g
160-18521-D-2	YMTFA75SE001	1311, 3510C, 8270D	P	100.33 g	2000 mL	1		1	5 g

Lab Sample ID	Client Sample ID	Method Chain	Basis	EFD_VolumeWaterAdd	EFD_InitialpH	EFD_AddHClpH>5	EFD_HeatHeld	EFD_SecondpHCheck	ExtractionFluidOne
LB 160-264502/1		1311, 3510C, 8270D							4.96 SU
160-18521-B-1	YMTFA74SE001	1311, 3510C, 8270D	P	96 mL	6.44 SU	3.50 mL	10 min	1.71 SU	4.96 SU
160-18521-D-2	YMTFA75SE001	1311, 3510C, 8270D	P	96 mL	6.44 SU	3.50 mL	10 min	1.61 SU	4.96 SU

Lab Sample ID	Client Sample ID	Method Chain	Basis	FiltCompDate	LeachatepH	LeachVolume	ExtractFluid	TCLP Fluid #1 00100	AnalysisComment
LB 160-264502/1		1311, 3510C, 8270D		8/12/16			1	2000 mL	pH<2 _M & _Hg
160-18521-B-1	YMTFA74SE001	1311, 3510C, 8270D	P	8/12/16	6.44 SU	10 mL	1	2000 mL	pH<2 _M & _Hg
160-18521-D-2	YMTFA75SE001	1311, 3510C, 8270D	P	8/12/16	5.80 SU	10 mL	1	2000 mL	pH<2 _M & _Hg

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264502 Batch Start Date: 08/11/16 13:18 Batch Analyst: Mcnutt, Joe W

Batch Method: 1311 Batch End Date: 08/12/16 12:31

Batch Notes	
1N HCl ID	901776
Balance ID	26950069
Batch Comment	(SPIKES) _M896089/896090 -Hg975881
Bottle Lot ID	06736
pH Buffer 1 ID	922485
pH Buffer 2 ID	922483
pH Buffer 3 ID	922484
First End time	08/12/16 9:18
Filter ID	1168557
Lot # of Nitric Acid	976042
pH Meter Calibration Slope	100.6
pH Meter ID	A111
Room Temperature Thermometer ID	91037040
Analyst ID - Spike Analyst	JWM
Analyst ID - Spike Witness Analyst	MFM
First Start time	08/11/16 1456
TCLP Fluid 1 ID	967739
TCLP Fluid 1 pH	4.96
Thermometer ID	0801024473
Tumbler Rotations per Minute	30
Uncorrected Maximum Temperature	24.2 Degrees C
Uncorrected Minimum Temperature	21.4 Degrees C

Basis	Basis Description
P	TCLP

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264673 Batch Start Date: 08/12/16 15:52 Batch Analyst: Saulters, Camme N

Batch Method: 3510C Batch End Date: 08/12/16 19:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	ReceivedpH	InitialAmount	FinalAmount	FirstAdjustpH	SecondAdjustpH	150ppmBNASurr 00040
LB 160-264502/1-A		3510C, 8270D		5 SU	200 mL	1 mL	1 SU	13 SU	500 uL
LCS 160-264673/2		3510C, 8270D		5 SU	200 mL	1 mL	1 SU	13 SU	500 uL
160-18521-B-1-B	YMTFA74SE001	3510C, 8270D	P	7 SU	200 mL	1 mL	1 SU	13 SU	500 uL
160-18521-D-2-B	YMTFA75SE001	3510C, 8270D	P	7 SU	200 mL	1 mL	1 SU	13 SU	500 uL
160-18420-B-1-B MS		3510C, 8270D	P	7 SU	200 mL	1 mL	1 SU	13 SU	500 uL
160-18420-B-1-B MSD		3510C, 8270D	P	7 SU	200 mL	1 mL	1 SU	13 SU	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	BNA_TCLP 00048					
LB 160-264502/1-A		3510C, 8270D							
LCS 160-264673/2		3510C, 8270D		1000 uL					
160-18521-B-1-B	YMTFA74SE001	3510C, 8270D	P						
160-18521-D-2-B	YMTFA75SE001	3510C, 8270D	P						
160-18420-B-1-B MS		3510C, 8270D	P	1000 uL					
160-18420-B-1-B MSD		3510C, 8270D	P	1000 uL					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264673 Batch Start Date: 08/12/16 15:52 Batch Analyst: Saulters, Camme N

Batch Method: 3510C Batch End Date: 08/12/16 19:00

Batch Notes	
Acid used for pH adjustment	1:1 di:sulfuric
Acid Used for pH Adjustment ID	936120
Balance ID	1126423545
Base used for pH adjustment	10N sodium hydroxide
Base Used to Adjust pH ID	823183
Concentration End Time	14:00 8/15/16
Concentration Start Time	13:00 8/15/16
Analyst ID - Concentration	kelsie richerson
N-evap ID	40656
N-evap Temperature	35 Degrees C
pH Paper ID	916510
Prep Solvent ID	969408
Prep Solvent Name	methylene chloride
Prep Solvent Volume Used	380 mL
Person's name who did the prep	camme saulters
Analyst ID - Spike Analyst	camme saulters
Analyst ID - Spike Witness Analyst	kelli agu
Sufficient volume for MS/MSD?	yes
Water Bath ID	5,1

Basis	Basis Description
P	TCLP

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Method 8082A

Polychlorinated Biphenyls (PCBs) (GC) by Method 8082A

FORM II
PCBS SURROGATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid Level: Low

GC Column (1): RTXCLP1 ID: 0.53(mm)

Client Sample ID	Lab Sample ID	DCB1	#
YMTFA74SE001	160-18521-1	67	
YMTFA75SE001	160-18521-2	91	
	MB 160-264775/1-A	101	
	LCS 160-264775/2-A	106	
	160-18504-E-1-B MS	76	J
	160-18504-E-1-C MSD	101	

	QC LIMITS
DCB = DCB Decachlorobiphenyl (Surr)	23-146

Column to be used to flag recovery values

FORM II 8082A

FORM III
PCBS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid Level: Low Lab File ID: VLCS906.D

Lab ID: LCS 160-264775/2-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC	QC LIMITS REC	#
PCB-1016	0.167	0.153	92	52-134	
PCB-1260	0.167	0.158	95	50-132	

Column to be used to flag recovery and RPD values

FORM III 8082A

FORM III
PCBS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid Level: Low Lab File ID: VSMP958.D

Lab ID: 160-18504-E-1-B MS Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	MS CONCENTRATION (mg/Kg)	MS % REC	QC LIMITS REC	#
PCB-1016	0.167	0.0095 U	0.156	93	23-140	J
PCB-1260	0.167	0.17	0.234	36	20-131	

Column to be used to flag recovery and RPD values

FORM III 8082A

FORM III
PCBS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid Level: Low Lab File ID: VSMP959.D

Lab ID: 160-18504-E-1-C MSD Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	MSD CONCENTRATION (mg/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
PCB-1016	0.166	0.168	101	7	30	23-140	J
PCB-1260	0.166	0.250	45	7	30	20-131	

Column to be used to flag recovery and RPD values

FORM III 8082A

FORM IV
PCBS METHOD BLANK SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: MB 160-264775/1-A

Matrix: Solid Date Extracted: 08/15/2016 11:07

Lab File ID:(1) VBLK905.D Lab File ID:(2) VBLK905.D

Date Analyzed:(1) 08/17/2016 11:06 Date Analyzed:(2) 08/17/2016 11:06

Instrument ID:(1) SGCV Instrument ID:(2) SGCV

GC Column:(1) RTXCLP1 ID: 0.53(mm) GC Column:(2) RTXCLP2 ID: 0.53(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	LCS 160-264775/2-A	08/17/2016 11:28	08/17/2016 11:28
	160-18504-E-1-B MS	08/19/2016 14:58	08/19/2016 14:58
	160-18504-E-1-C MSD	08/19/2016 15:20	08/19/2016 15:20
YMTFA74SE001	160-18521-1	08/19/2016 16:50	08/19/2016 16:50
YMTFA75SE001	160-18521-2	08/19/2016 17:13	08/19/2016 17:13

FORM VIII
PCBS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: ICIS 160-263102/19 Date Analyzed: 08/03/2016 17:06

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm)

Lab File ID (Standard): VICL659.D Heated Purge: (Y/N) N

Calibration ID: 11269

		BNB					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		808574174	3.09				
UPPER LIMIT		1617148348	3.11				
LOWER LIMIT		404287087	3.08				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 160-263102/22		819714699	3.09				
CCVIS 160-265137/3		539595349	3.11				
CCVIS 160-265549/3		533601040	3.11				

BNB = 1-Bromo-2-nitrobenzene

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.01 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8082A

FORM VIII
PCBS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: ICIS 160-263102/19 Date Analyzed: 08/03/2016 17:06

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm)

Lab File ID (Standard): VICL659.D Heated Purge: (Y/N) N

Calibration ID: 11270

		BNB					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		355323807	3.90				
UPPER LIMIT		710647614	3.91				
LOWER LIMIT		177661904	3.88				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 160-263102/22		357774945	3.90				
CCVIS 160-265137/3		324297997	3.91				
CCVIS 160-265549/3		290385215	3.91				

BNB = 1-Bromo-2-nitrobenzene

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.01 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8082A

FORM VIII
PCBS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: CCVIS 160-265137/3 Date Analyzed: 08/17/2016 10:21

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm)

Lab File ID (Standard): VCCV903.D Heated Purge: (Y/N) N

Calibration ID: 11269

		BNB					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		539595349	3.11				
UPPER LIMIT		1079190698	3.12				
LOWER LIMIT		269797675	3.10				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 160-265137/4		486395498	3.11				
MB 160-264775/1-A		511696617	3.11				
LCS 160-264775/2-A		511062593	3.11				
CCV 160-265137/15		659132192	3.11				
CCV 160-265137/16		520618765	3.11				

BNB = 1-Bromo-2-nitrobenzene

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.01 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8082A

FORM VIII
PCBS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: CCVIS 160-265137/3 Date Analyzed: 08/17/2016 10:21

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm)

Lab File ID (Standard): VCCV903.D Heated Purge: (Y/N) N

Calibration ID: 11270

		BNB					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		324297997	3.91				
UPPER LIMIT		648595994	3.92				
LOWER LIMIT		162148999	3.90				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 160-265137/4		275599963	3.91				
MB 160-264775/1-A		297255846	3.91				
LCS 160-264775/2-A		287648455	3.91				
CCV 160-265137/15		370756598	3.91				
CCV 160-265137/16		286719974	3.91				

BNB = 1-Bromo-2-nitrobenzene

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.01 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8082A

FORM VIII
PCBS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: CCVIS 160-265549/3 Date Analyzed: 08/19/2016 09:20

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm)

Lab File ID (Standard): VCCV943.D Heated Purge: (Y/N) N

Calibration ID: 11269

		BNB					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		533601040	3.11				
UPPER LIMIT		1067202080	3.12				
LOWER LIMIT		266800520	3.10				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 160-265549/4		501915157	3.11				
160-18504-E-1-B MS		912578913	3.11				
160-18504-E-1-C MSD		706218236	3.11				
160-18521-1	YMTFA74SE001	988740328	3.11				
160-18521-2	YMTFA75SE001	732888346	3.11				

BNB = 1-Bromo-2-nitrobenzene

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.01 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8082A

FORM VIII
PCBS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: CCVIS 160-265549/3 Date Analyzed: 08/19/2016 09:20

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm)

Lab File ID (Standard): VCCV943.D Heated Purge: (Y/N) N

Calibration ID: 11270

		BNB					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		290385215	3.91				
UPPER LIMIT		580770430	3.92				
LOWER LIMIT		145192608	3.90				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 160-265549/4		281793225	3.91				
160-18504-E-1-B MS		355646590	3.91				
160-18504-E-1-C MSD		392465738	3.91				
160-18521-1	YMTFA74SE001	413057970	3.91				
160-18521-2	YMTFA75SE001	411785601	3.91				

BNB = 1-Bromo-2-nitrobenzene

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.01 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8082A

FORM X
IDENTIFICATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: YMTFA74SE001 Lab Sample ID: 160-18521-1

Instrument ID (1): SGCV Instrument ID (2): SGCV

Date Analyzed (1): 08/19/2016 16:50 Date Analyzed (2): 08/19/2016 16:50

GC Column (1): RTXCLP1 ID: 0.53(mm) GC Column (2): RTXCLP2 ID: 0.53(mm)

ANALYTE	COL	PEAK	RT	RT WINDOW		CONCENTRATION		RPD
				FROM	TO	PEAK	MEAN	
PCB-1254	1	1	8.22	8.22	8.24	0.176	0.17	56.0
		2	8.62	8.62	8.64	0.234		
		3	9.20	9.19	9.21	0.109		
	2	2	10.08	10.08	10.10	0.229	0.31	
		3	10.69	10.69	10.71	0.143		
		4	11.38	11.37	11.39	0.551		
PCB-1260	1	1	9.47	9.46	9.48	0.254	0.24	10.0
		4	11.09	11.08	11.10	0.182		
		5	11.40	11.39	11.41	0.280		
	2	1	10.93	10.92	10.94	0.252	0.26	
		2	11.19	11.18	11.20	0.289		
		4	12.27	12.26	12.28	0.246		
		5	12.63	12.62	12.64	0.268		

FORM X
IDENTIFICATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: YMTFA75SE001 Lab Sample ID: 160-18521-2

Instrument ID (1): SGCV Instrument ID (2): SGCV

Date Analyzed (1): 08/19/2016 17:13 Date Analyzed (2): 08/19/2016 17:13

GC Column (1): RTXCLP1 ID: 0.53(mm) GC Column (2): RTXCLP2 ID: 0.53(mm)

ANALYTE	COL	PEAK	RT	RT WINDOW		CONCENTRATION		RPD
				FROM	TO	PEAK	MEAN	
PCB-1254	1	1	8.22	8.22	8.24	0.0242	0.028	93.8
		2	8.62	8.62	8.64	0.0371		
		3	9.20	9.19	9.21	0.0227		
	2	2	10.08	10.08	10.10	0.0563	0.077	
		3	10.69	10.69	10.71	0.0318		
		4	11.38	11.37	11.39	0.144		
PCB-1260	1	1	9.47	9.46	9.48	0.0686	0.085	5.4
		4	11.09	11.08	11.10	0.0678		
		5	11.40	11.39	11.41	0.119		
	2	1	10.94	10.92	10.94	0.0573	0.081	
		2	11.19	11.18	11.20	0.0938		
		4	12.27	12.26	12.28	0.0759		
		5	12.63	12.62	12.64	0.0954		

FORM X
IDENTIFICATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: Lab Sample ID: LCS 160-264775/2-A

Instrument ID (1): SGCV Instrument ID (2): SGCV

Date Analyzed (1): 08/17/2016 11:28 Date Analyzed (2): 08/17/2016 11:28

GC Column (1): RTXCLP1 ID: 0.53(mm) GC Column (2): RTXCLP2 ID: 0.53(mm)

ANALYTE	COL	PEAK	RT	RT WINDOW		CONCENTRATION		RPD
				FROM	TO	PEAK	MEAN	
PCB-1016	1	1	6.01	5.99	6.01	0.187	0.156	2.0
		2	6.78	6.77	6.79	0.128		
		3	6.99	6.98	7.00	0.160		
		4	7.64	7.63	7.65	0.142		
		5	8.23	8.22	8.24	0.163		
	2	1	6.74	6.73	6.75	0.142	0.153	
		2	7.46	7.45	7.47	0.158		
		3	8.20	8.19	8.21	0.151		
		4	8.42	8.41	8.43	0.164		
		5	9.16	9.15	9.17	0.149		
PCB-1260	1	1	9.47	9.46	9.48	0.161	0.158	0.6
		2	9.88	9.87	9.89	0.162		
		3	10.26	10.25	10.27	0.167		
		4	11.09	11.08	11.10	0.158		
		5	11.40	11.39	11.41	0.141		
	2	1	10.94	10.93	10.95	0.165	0.159	
		2	11.19	11.18	11.20	0.155		
		3	11.59	11.58	11.60	0.164		
		4	12.27	12.26	12.28	0.154		
		5	12.63	12.62	12.64	0.154		

FORM X
IDENTIFICATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: Lab Sample ID: 160-18504-E-1-B MS

Instrument ID (1): SGCV Instrument ID (2): SGCV

Date Analyzed (1): 08/19/2016 14:58 Date Analyzed (2): 08/19/2016 14:58

GC Column (1): RTXCLP1 ID: 0.53(mm) GC Column (2): RTXCLP2 ID: 0.53(mm)

ANALYTE	COL	PEAK	RT	RT WINDOW		CONCENTRATION		RPD
				FROM	TO	PEAK	MEAN	
PCB-1016	1	1	6.00	5.99	6.01	0.104	0.236	40.9
		2	6.78	6.77	6.79	0.125		
		4	7.64	7.63	7.65	0.186		
		5	8.22	8.21	8.23	0.529		
	2	1	6.74	6.73	6.75	0.129	0.156	
		2	7.45	7.44	7.46	0.143		
		3	8.20	8.19	8.21	0.143		
		4	8.42	8.41	8.43	0.126		
		5	9.16	9.14	9.16	0.239		
PCB-1260	1	1	9.47	9.46	9.48	0.285	0.234	25.7
		4	11.09	11.08	11.10	0.160		
		5	11.40	11.39	11.41	0.257		
	2	1	10.94	10.92	10.94	0.329	0.303	
		2	11.19	11.18	11.20	0.350		
		4	12.27	12.26	12.28	0.249		
		5	12.63	12.62	12.64	0.285		

FORM X
IDENTIFICATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: Lab Sample ID: 160-18504-E-1-C MSD

Instrument ID (1): SGCV Instrument ID (2): SGCV

Date Analyzed (1): 08/19/2016 15:20 Date Analyzed (2): 08/19/2016 15:20

GC Column (1): RTXCLP1 ID: 0.53(mm) GC Column (2): RTXCLP2 ID: 0.53(mm)

ANALYTE	COL	PEAK	RT	RT WINDOW		CONCENTRATION		RPD
				FROM	TO	PEAK	MEAN	
PCB-1016	1	1	6.00	5.99	6.01	0.173	0.272	47.2
		2	6.77	6.77	6.79	0.207		
		4	7.64	7.63	7.65	0.251		
		5	8.22	8.21	8.23	0.455		
	2	1	6.74	6.73	6.75	0.157	0.168	
		2	7.45	7.44	7.46	0.158		
		3	8.20	8.19	8.21	0.166		
		4	8.41	8.41	8.43	0.127		
		5	9.15	9.14	9.16	0.232		
PCB-1260	1	1	9.47	9.46	9.48	0.331	0.284	12.5
		4	11.09	11.08	11.10	0.199		
		5	11.40	11.39	11.41	0.320		
	2	1	10.93	10.92	10.94	0.261	0.250	
		2	11.19	11.18	11.20	0.283		
		4	12.27	12.26	12.28	0.218		
		5	12.63	12.62	12.64	0.238		

FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID: YMTFA74SE001
Lab Sample ID: 160-18521-1
Matrix: Solid
Lab File ID: VSMP963.D
Analysis Method: 8082A
Date Collected: 08/05/2016 07:50
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30.06(g)
Date Analyzed: 08/19/2016 16:50
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP1 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265549
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
12674-11-2	PCB-1016	0.0096	U	0.033	0.0096
11104-28-2	PCB-1221	0.0096	U	0.033	0.0096
11141-16-5	PCB-1232	0.0096	U	0.033	0.0096
53469-21-9	PCB-1242	0.0096	U	0.033	0.0096
12672-29-6	PCB-1248	0.0096	U	0.033	0.0096
11097-69-1	PCB-1254	0.17	J	0.033	0.0080
11096-82-5	PCB-1260	0.24		0.033	0.0080
37324-23-5	PCB-1262	0.0080	U	0.033	0.0080
1336-36-3	Polychlorinated biphenyls, Total	0.41		0.033	0.0080
11100-14-4	PCB-1268	0.0080	U	0.033	0.0080

CAS NO.	SURROGATE	%REC	Q	LIMITS
2051-24-3	DCB Decachlorobiphenyl (Surr)	67		23-146

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP963.D
Lims ID: 160-18521-E-1-A
Client ID: YMTFA74SE001
Sample Type: Client
Inject. Date: 19-Aug-2016 16:50:31 ALS Bottle#: 23 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 160-18521-e-1-a
Misc. Info.: 160-0008246-023
Operator ID: GLB Instrument ID: SGCV

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:43:51

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene						
1	3.107	3.105	0.001	988740328	50.4	
2	3.910	3.911	0.000	413057970	50.4	
8 PCB-1254						
1	8.220	8.228	-0.008	323830165	528.1	
1	8.620	8.628	-0.008	556609430	704.5	
1	9.197	9.201	-0.004	403270534	328.1	
1	0.000	9.879	-9.879	0	0	
1	0.000	10.259	-10.259	0	0	
2	0.000	9.795	-9.795	0	0	
2	10.080	10.085	-0.005	320821630	687.0	
2	10.690	10.695	-0.005	304223749	429.7	
2	11.375	11.383	-0.008	609974885	1657.1	
2	0.000	11.597	-11.597	0	0	
					RPD = 55.98	
10 PCB-1260						
1	9.467	9.470	-0.003	753794842	762.4	
1	0.000	9.877	-9.877	0	0	
1	0.000	10.254	-10.254	0	0	
1	11.088	11.090	-0.002	1149730500	547.9	
1	11.398	11.402	-0.004	724661850	841.9	
2	10.934	10.934	0.000	455220329	756.4	
2	11.189	11.189	0.000	671019905	868.7	
2	0.000	11.591	-11.591	0	0	
2	12.265	12.266	-0.001	863618294	739.0	
2	12.630	12.631	-0.001	545470125	806.2	
					RPD = 9.95	

Report Date: 22-Aug-2016 06:48:27 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP963.D

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ng/ml	Flags
$ 4 DCB Decachlorobiphenyl (Surr)						
1	12.535	12.534	0.001	203014607	13.5	
2	13.765	13.769	-0.004	117648796	18.0	
					RPD = 28.39	
S 7 Polychlorinated biphenyls, Total						
1					1237.6	
2					1717.2	
					RPD = 32.46	

Reagents:

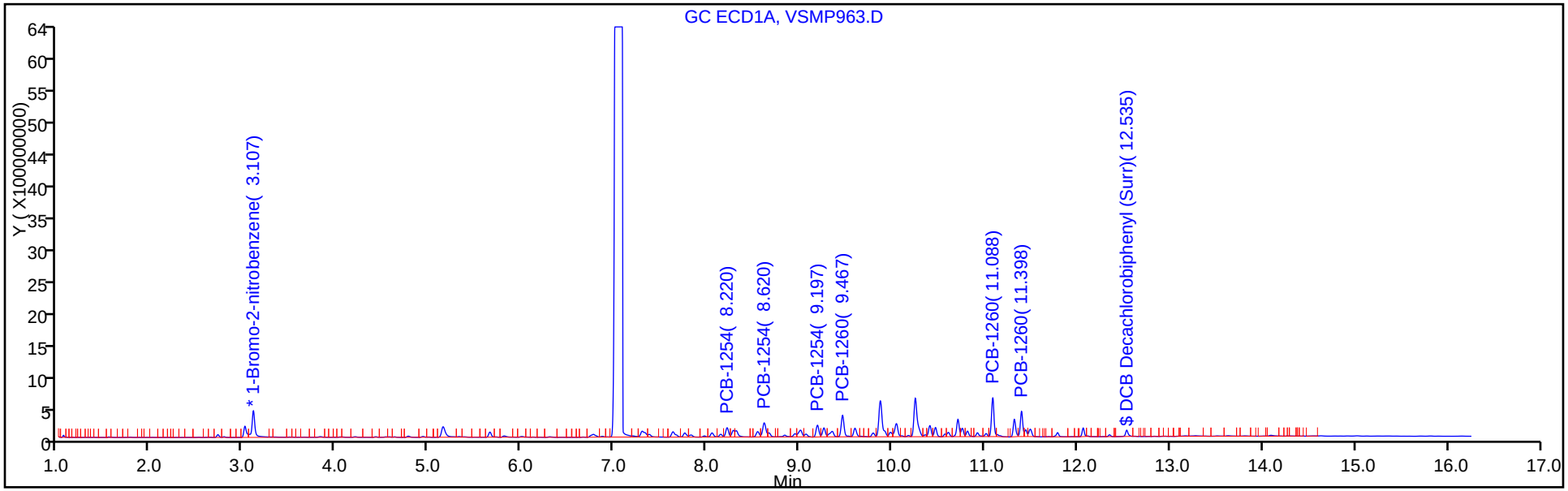
8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 22-Aug-2016 06:48:28 Chrom Revision: 2.2 20-Apr-2016 13:59:46

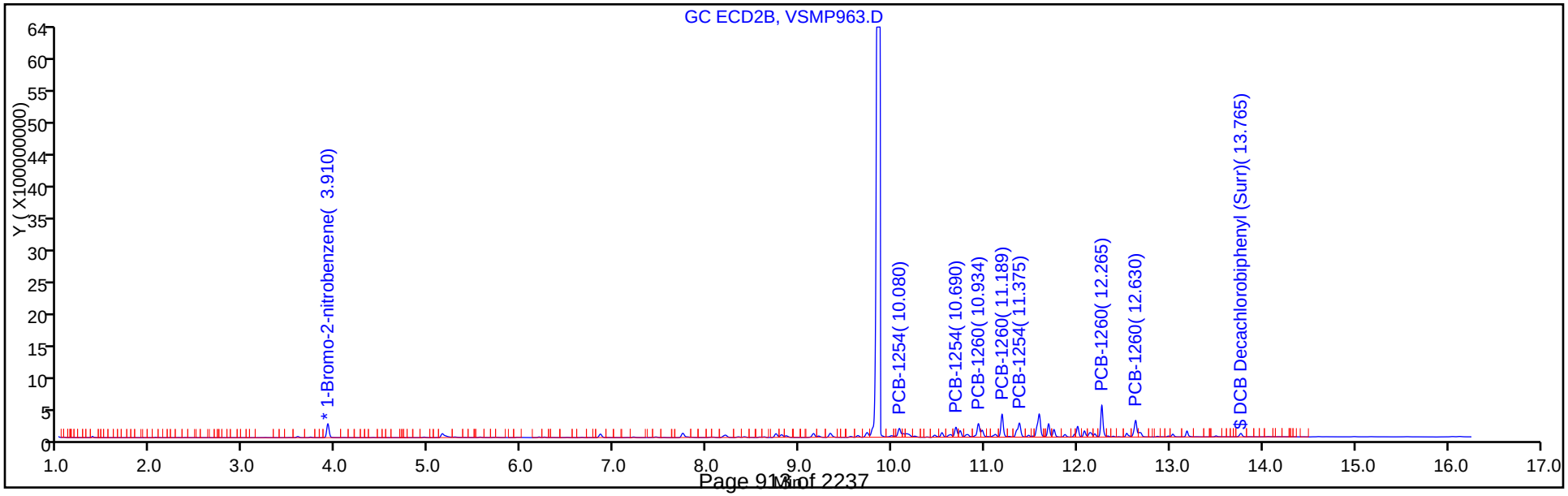
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP963.D				
Injection Date:	19-Aug-2016 16:50:31	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	160-18521-E-1-A	Lab Sample ID:	160-18521-1	Worklist Smp#:	23
Client ID:	YMTFA74SE001				
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	23
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP963.D				
Lims ID:	160-18521-E-1-A				
Client ID:	YMTFA74SE001				
Sample Type:	Client				
Inject. Date:	19-Aug-2016 16:50:31	ALS Bottle#:	23	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18521-e-1-a				
Misc. Info.:	160-0008246-023				
Operator ID:	GLB	Instrument ID:	SGCV		

Method:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m		
Limit Group:	GC 8082A_ICAL_IS		
Last Update:	22-Aug-2016 06:46:28	Calib Date:	03-Aug-2016 17:51:52
Integrator:	Falcon		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK001	

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:43:51

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	13.5	67.29

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	18.0	89.56

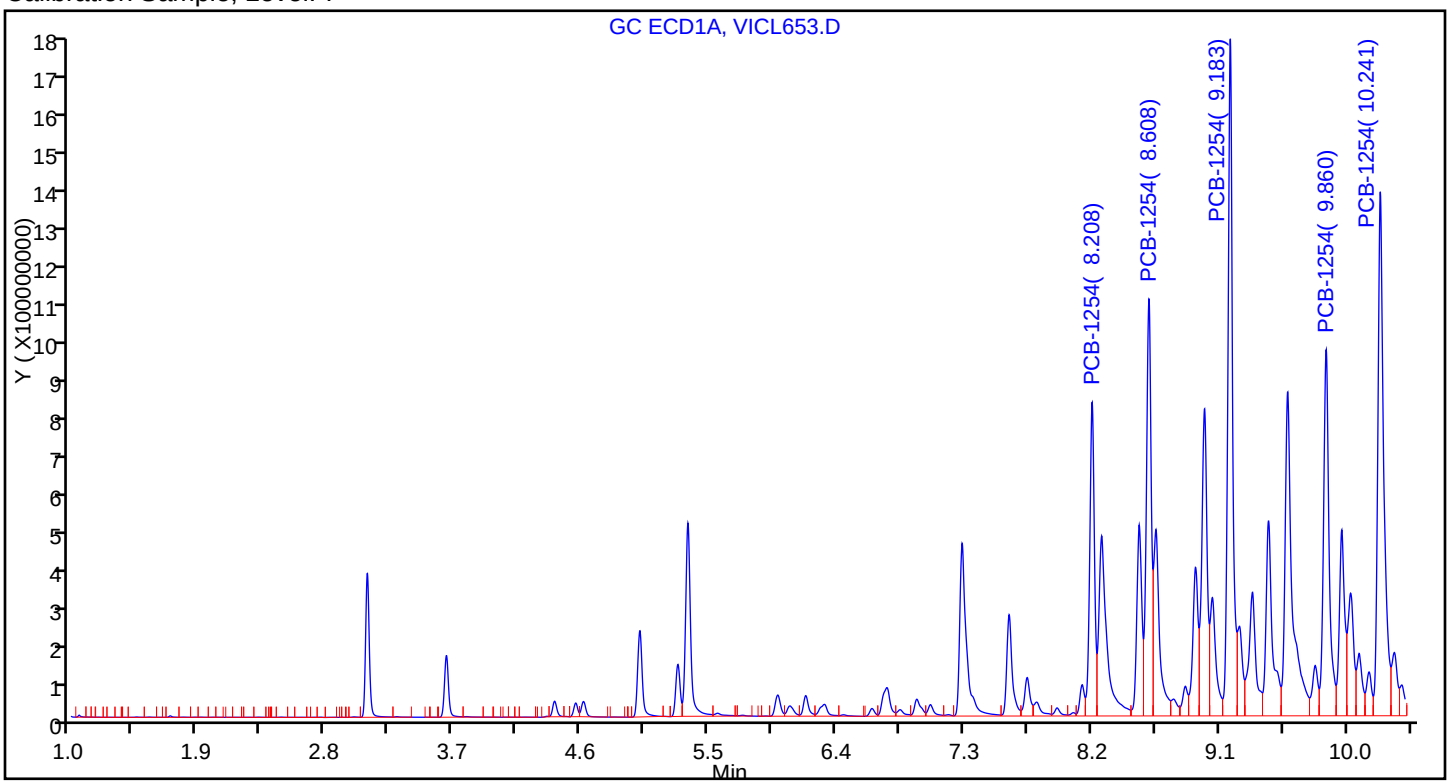
Report Date: 22-Aug-2016 06:48:28 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

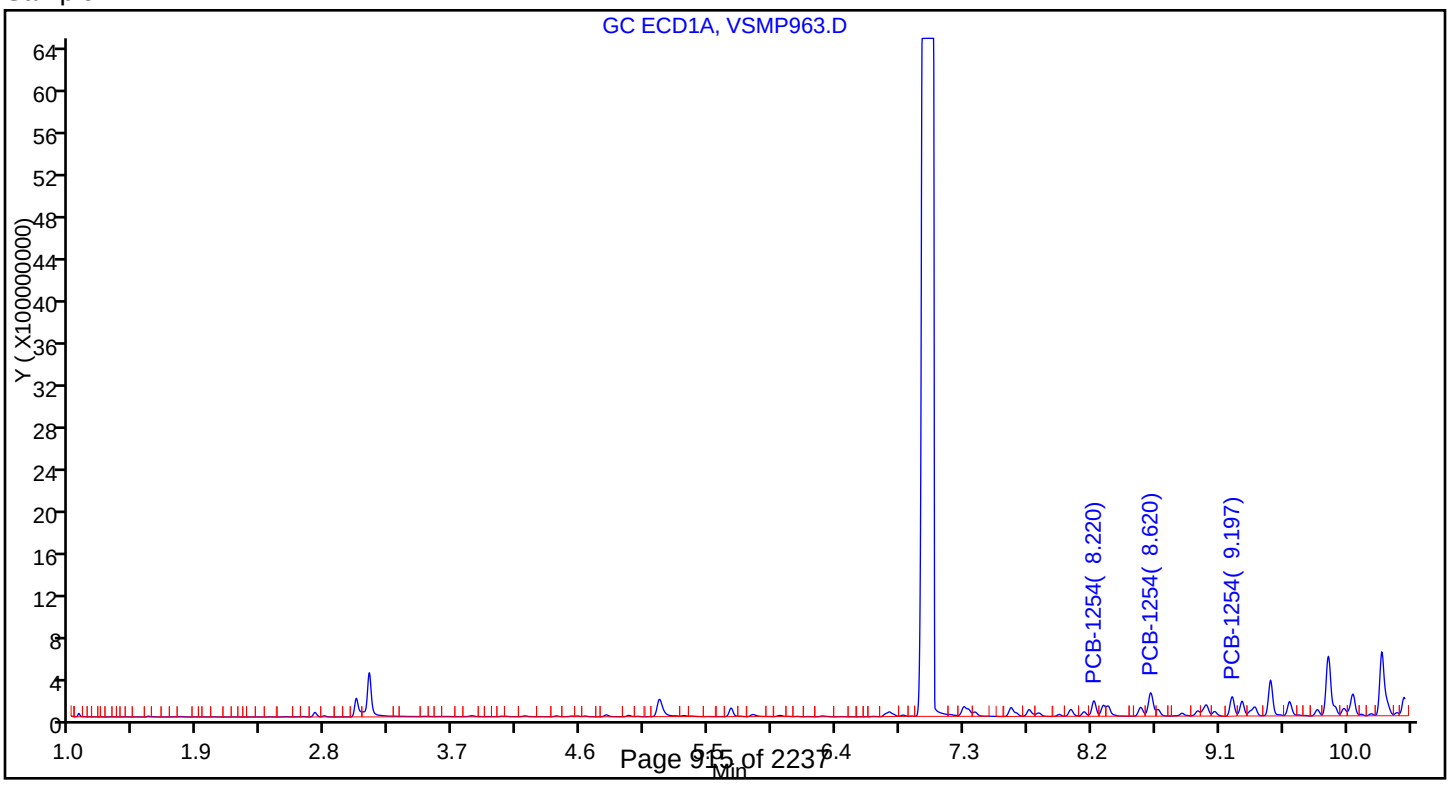
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP963.D				
Injection Date:	19-Aug-2016 16:50:31	Instrument ID:	SGCV		
Lims ID:	160-18521-E-1-A	Lab Sample ID:	160-18521-1		
Client ID:	YMTFA74SE001				
Operator ID:	GLB	ALS Bottle#:	23	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

8 PCB-1254, CAS: 11097-69-1

Calibration Sample, Level: 7



Sample



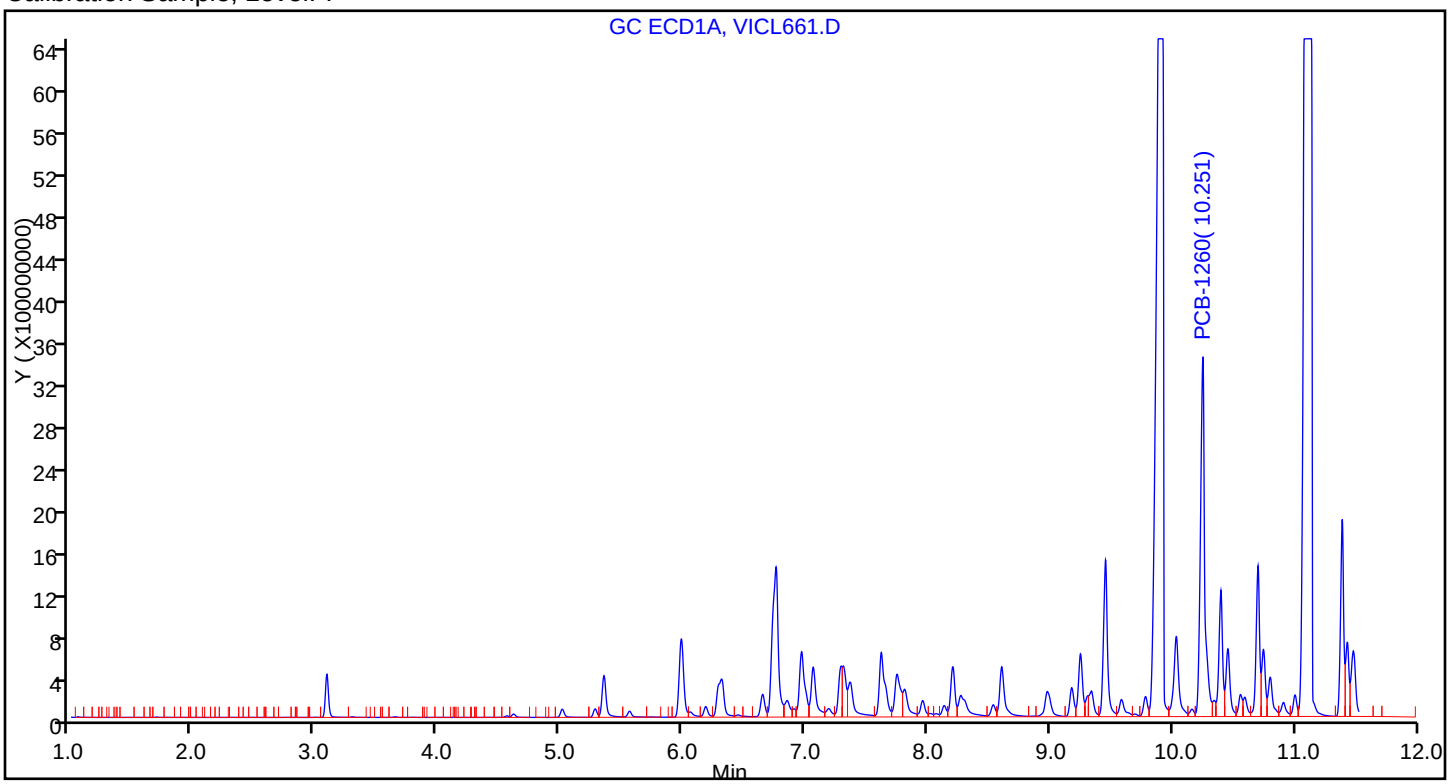
Report Date: 22-Aug-2016 06:48:28 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

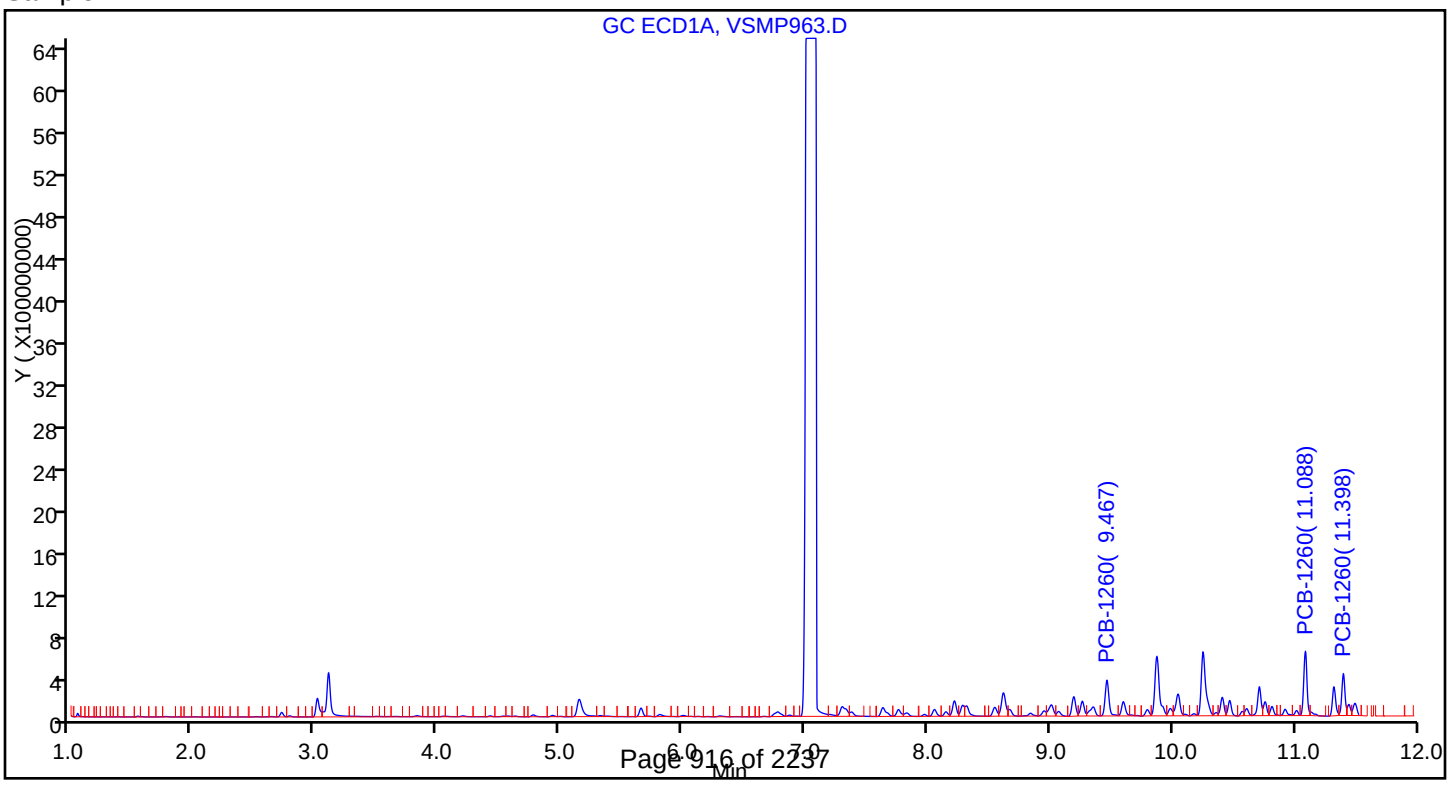
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP963.D				
Injection Date:	19-Aug-2016 16:50:31	Instrument ID:	SGCV		
Lims ID:	160-18521-E-1-A	Lab Sample ID:	160-18521-1		
Client ID:	YMTFA74SE001				
Operator ID:	GLB	ALS Bottle#:	23	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

10 PCB-1260, CAS: 11096-82-5

Calibration Sample, Level: 7



Sample



FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID: YMTFA75SE001
Lab Sample ID: 160-18521-2
Matrix: Solid
Lab File ID: VSMP964.D
Analysis Method: 8082A
Date Collected: 08/05/2016 09:25
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30.05(g)
Date Analyzed: 08/19/2016 17:13
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP1 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265549
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
12674-11-2	PCB-1016	0.0096	U	0.033	0.0096
11104-28-2	PCB-1221	0.0096	U	0.033	0.0096
11141-16-5	PCB-1232	0.0096	U	0.033	0.0096
53469-21-9	PCB-1242	0.0096	U	0.033	0.0096
12672-29-6	PCB-1248	0.0096	U	0.033	0.0096
11097-69-1	PCB-1254	0.028	J	0.033	0.0080
37324-23-5	PCB-1262	0.0080	U	0.033	0.0080
1336-36-3	Polychlorinated biphenyls, Total	0.11		0.033	0.0080
11100-14-4	PCB-1268	0.0080	U	0.033	0.0080

CAS NO.	SURROGATE	%REC	Q	LIMITS
2051-24-3	DCB Decachlorobiphenyl (Surr)	91		23-146

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D
Lims ID: 160-18521-B-2-C
Client ID: YMTFA75SE001
Sample Type: Client
Inject. Date: 19-Aug-2016 17:13:04 ALS Bottle#: 24 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 160-18521-b-2-c
Misc. Info.: 160-0008246-024
Operator ID: GLB Instrument ID: SGCV

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:44:52

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene						
1	3.106	3.105	0.001	732888346	50.4	
2	3.910	3.911	-0.001	411785601	50.4	
8 PCB-1254						
1	8.223	8.228	-0.005	33114300	72.9	
1	8.621	8.628	-0.007	65281086	111.5	
1	9.196	9.201	-0.005	62182848	68.2	
1	0.000	9.879	-9.879	0	0	
1	0.000	10.259	-10.259	0	0	
2	0.000	9.795	-9.795	0	0	
2	10.080	10.085	-0.005	78761141	169.2	
2	10.690	10.695	-0.005	67494616	95.6	
2	11.377	11.383	-0.006	159153719	433.7	
2	0.000	11.597	-11.597	0	0	
					RPD = 93.77	
10 PCB-1260						
1	9.466	9.470	-0.004	143234744	206.3	
1	0.000	9.877	-9.877	0	0	
1	0.000	10.254	-10.254	0	0	
1	11.088	11.090	-0.002	286038710	203.8	
1	11.398	11.402	-0.004	218865869	356.7	
2	10.935	10.934	0.001	103318059	172.2	
2	11.190	11.189	0.001	217100133	281.9	
2	0.000	11.591	-11.591	0	0	
2	12.267	12.266	0.001	265899401	228.2	
2	12.630	12.631	-0.001	193277706	286.5	
					RPD = 5.36	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ng/ml	Flags
$ 4 DCB Decachlorobiphenyl (Surr)						
1	12.534	12.534	0.000	210774666	18.3	
2	13.768	13.769	-0.001	144944588	22.1	
					RPD = 18.77	
S 7 Polychlorinated biphenyls, Total						
1					339.8	
2					475.1	
					RPD = 33.21	

Reagents:

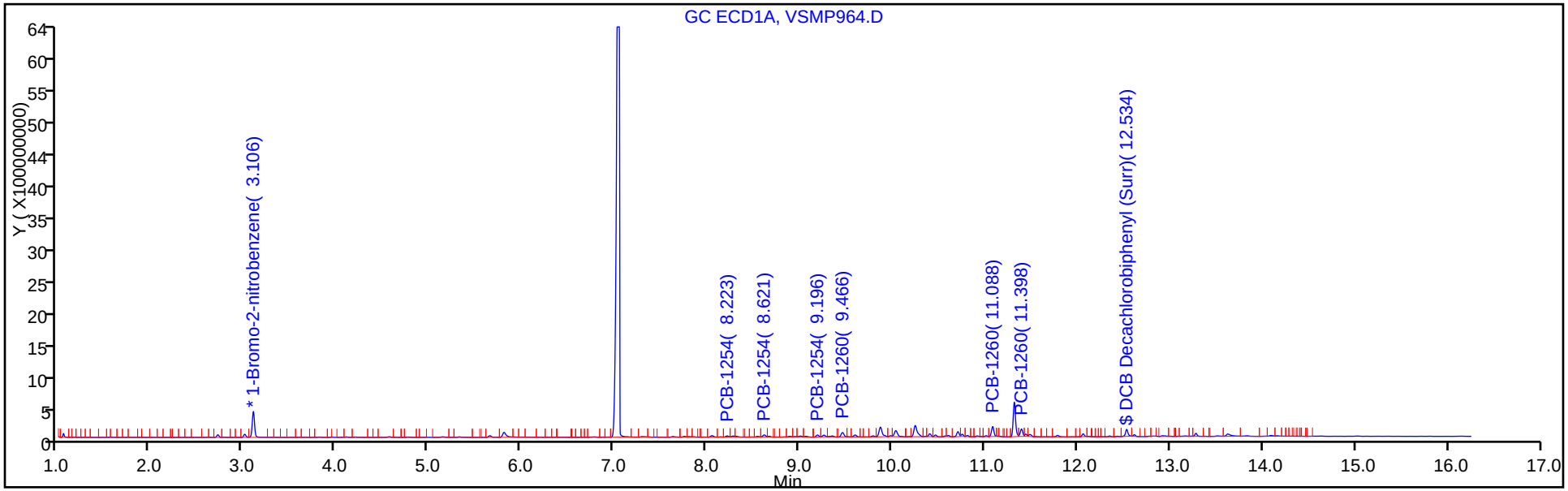
8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 22-Aug-2016 06:48:32 Chrom Revision: 2.2 20-Apr-2016 13:59:46

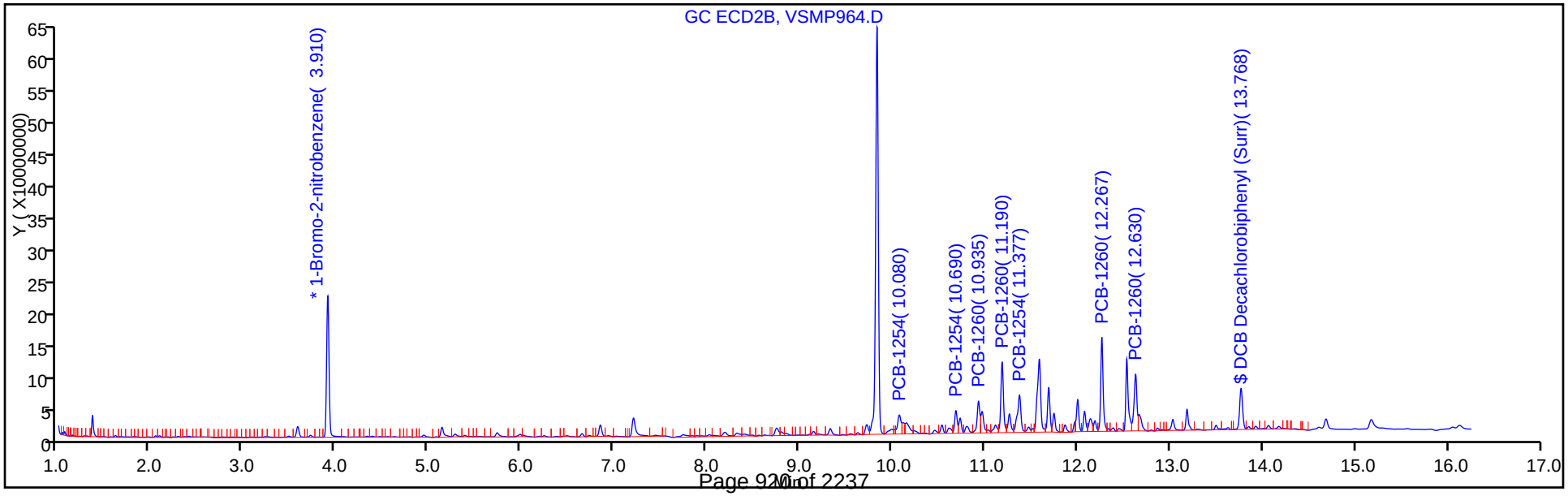
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D				
Injection Date:	19-Aug-2016 17:13:04	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	160-18521-B-2-C	Lab Sample ID:	160-18521-2	Worklist Smp#:	24
Client ID:	YMTFA75SE001				
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	24
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D				
Lims ID:	160-18521-B-2-C				
Client ID:	YMTFA75SE001				
Sample Type:	Client				
Inject. Date:	19-Aug-2016 17:13:04	ALS Bottle#:	24	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18521-b-2-c				
Misc. Info.:	160-0008246-024				
Operator ID:	GLB	Instrument ID:	SGCV		
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	22-Aug-2016 06:46:28	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK001				
First Level Reviewer: bonkoskig		Date:	22-Aug-2016 06:44:52		

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	18.3	91.18

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	22.1	110.07

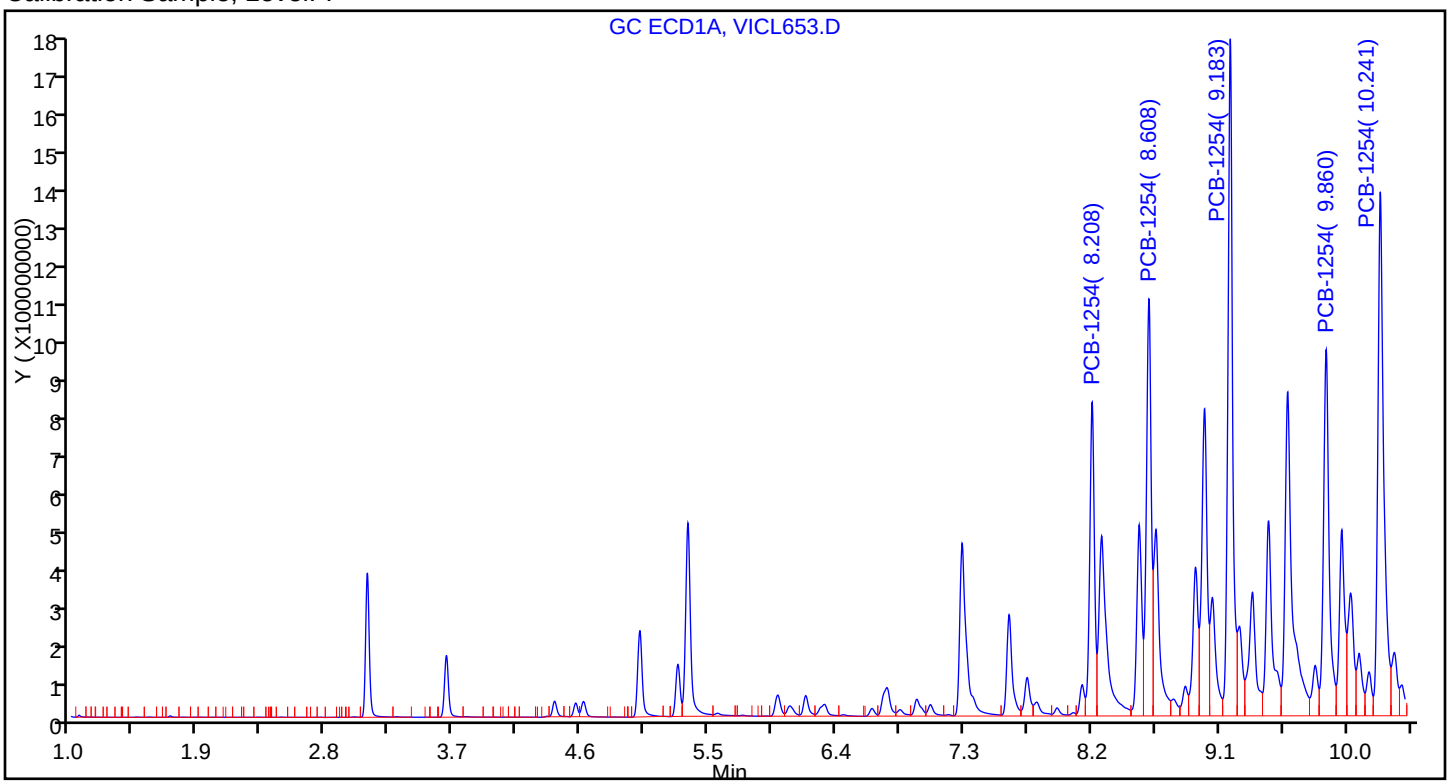
Report Date: 22-Aug-2016 06:48:32 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

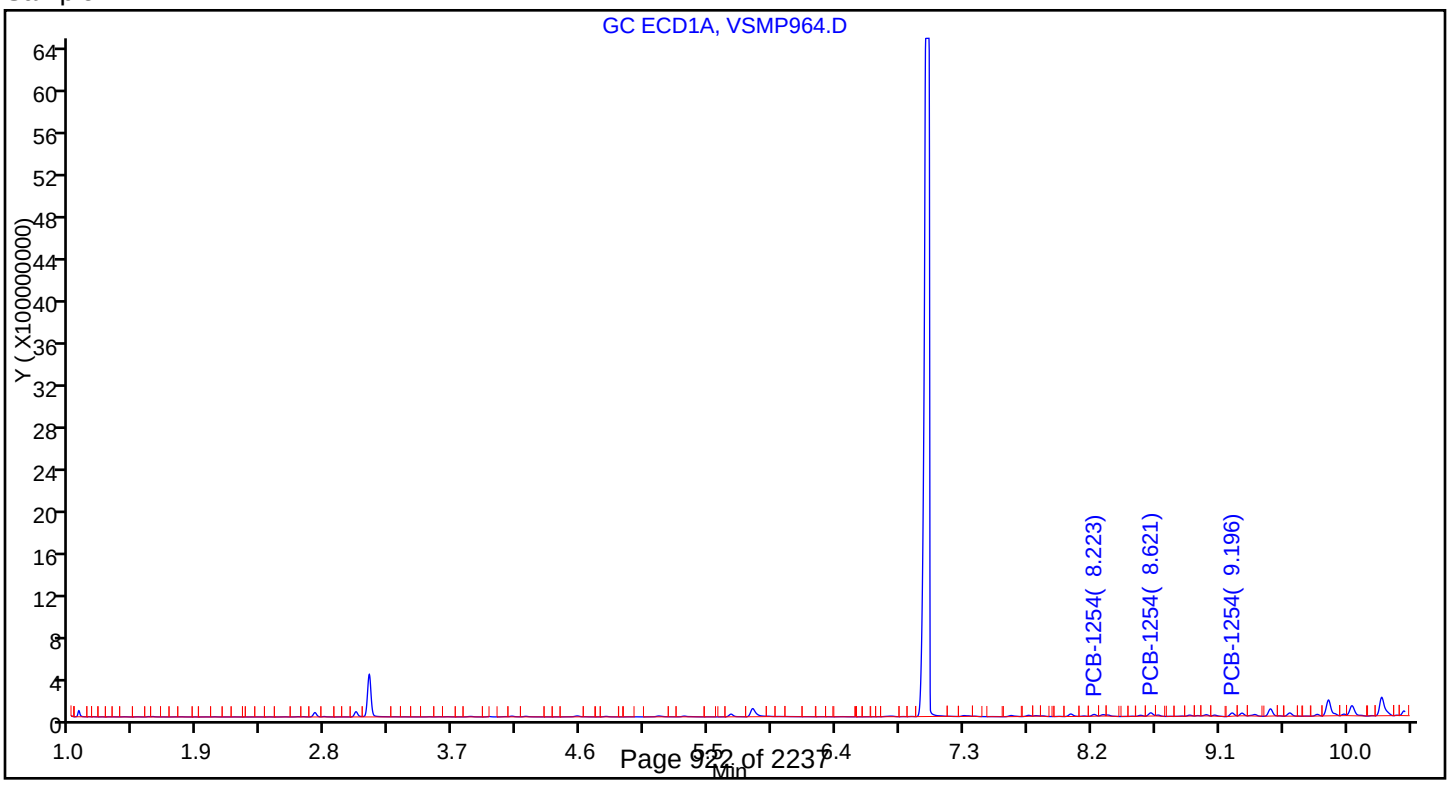
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D				
Injection Date:	19-Aug-2016 17:13:04	Instrument ID:	SGCV		
Lims ID:	160-18521-B-2-C	Lab Sample ID:	160-18521-2		
Client ID:	YMTFA75SE001				
Operator ID:	GLB	ALS Bottle#:	24	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

8 PCB-1254, CAS: 11097-69-1

Calibration Sample, Level: 7



Sample



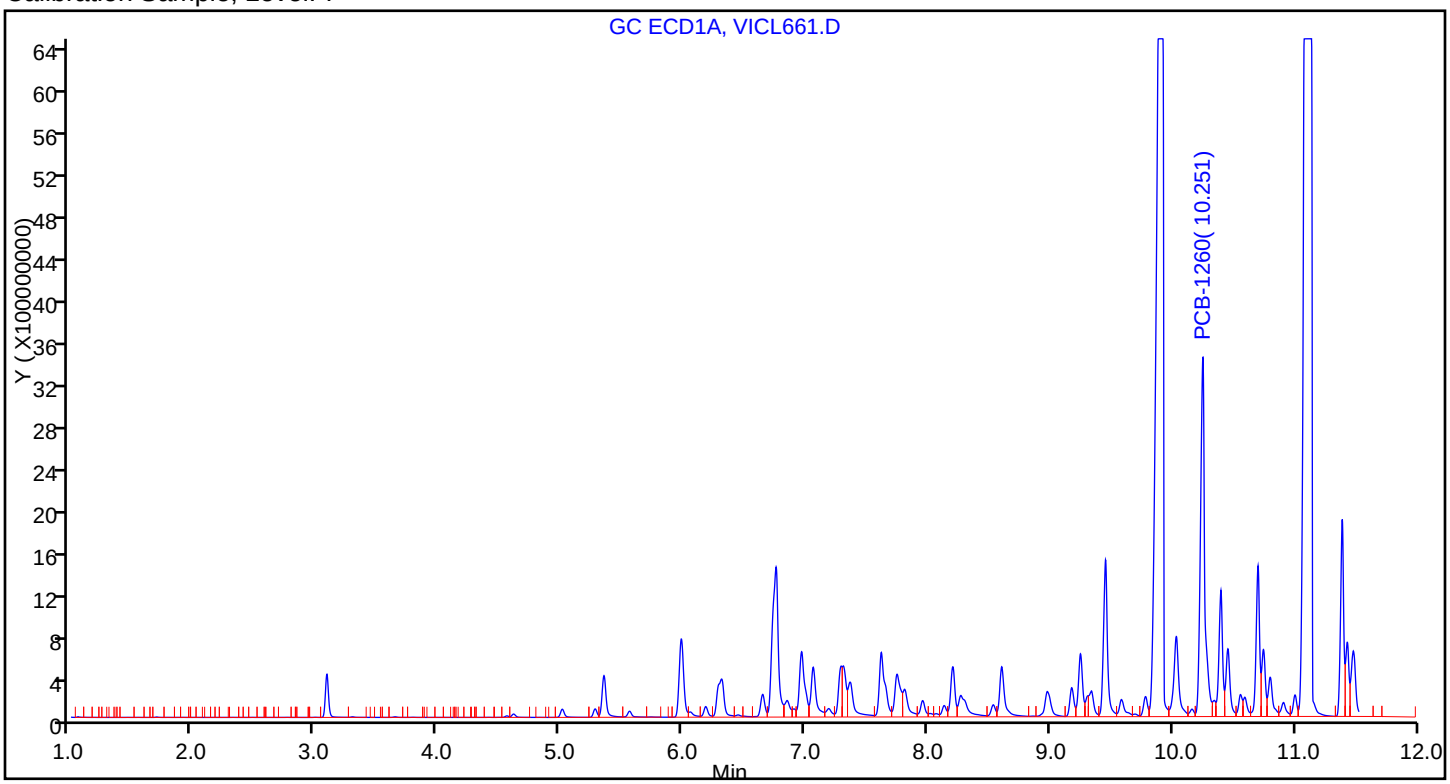
Report Date: 22-Aug-2016 06:48:32 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

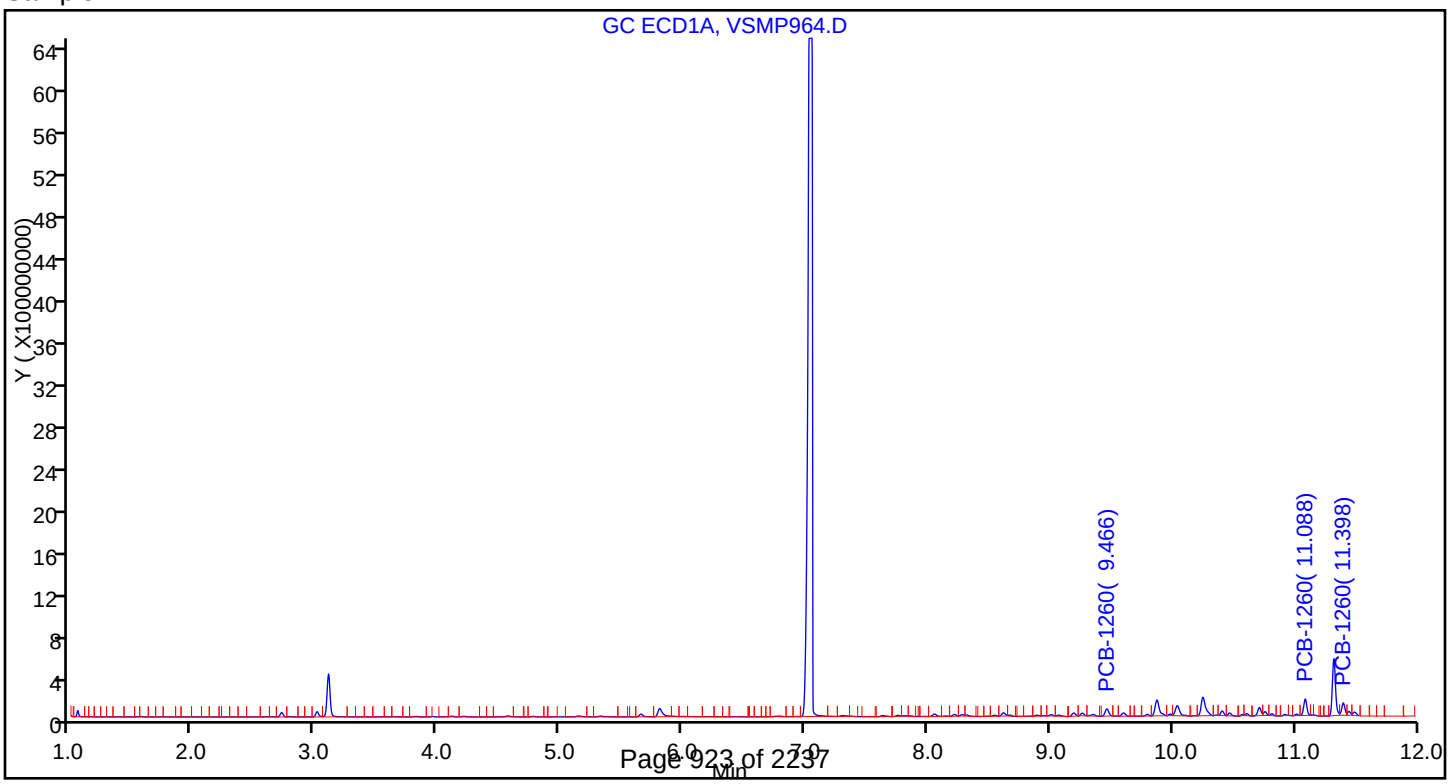
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D				
Injection Date:	19-Aug-2016 17:13:04	Instrument ID:	SGCV		
Lims ID:	160-18521-B-2-C	Lab Sample ID:	160-18521-2		
Client ID:	YMTFA75SE001				
Operator ID:	GLB	ALS Bottle#:	24	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

10 PCB-1260, CAS: 11096-82-5

Calibration Sample, Level: 7



Sample



FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID: YMTFA75SE001
Lab Sample ID: 160-18521-2
Matrix: Solid
Lab File ID: VSMP964.D
Analysis Method: 8082A
Date Collected: 08/05/2016 09:25
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30.05(g)
Date Analyzed: 08/19/2016 17:13
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265549
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
11096-82-5	PCB-1260	0.081		0.033	0.0080

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D
Lims ID: 160-18521-B-2-C
Client ID: YMTFA75SE001
Sample Type: Client
Inject. Date: 19-Aug-2016 17:13:04 ALS Bottle#: 24 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 160-18521-b-2-c
Misc. Info.: 160-0008246-024
Operator ID: GLB Instrument ID: SGCV

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:44:52

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene						
1	3.106	3.105	0.001	732888346	50.4	
2	3.910	3.911	-0.001	411785601	50.4	
8 PCB-1254						
1	8.223	8.228	-0.005	33114300	72.9	
1	8.621	8.628	-0.007	65281086	111.5	
1	9.196	9.201	-0.005	62182848	68.2	
1	0.000	9.879	-9.879	0	0	
1	0.000	10.259	-10.259	0	0	
2	0.000	9.795	-9.795	0	0	
2	10.080	10.085	-0.005	78761141	169.2	
2	10.690	10.695	-0.005	67494616	95.6	
2	11.377	11.383	-0.006	159153719	433.7	
2	0.000	11.597	-11.597	0	0	
					RPD = 93.77	
10 PCB-1260						
1	9.466	9.470	-0.004	143234744	206.3	
1	0.000	9.877	-9.877	0	0	
1	0.000	10.254	-10.254	0	0	
1	11.088	11.090	-0.002	286038710	203.8	
1	11.398	11.402	-0.004	218865869	356.7	
2	10.935	10.934	0.001	103318059	172.2	
2	11.190	11.189	0.001	217100133	281.9	
2	0.000	11.591	-11.591	0	0	
2	12.267	12.266	0.001	265899401	228.2	
2	12.630	12.631	-0.001	193277706	286.5	
					RPD = 5.36	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ng/ml	Flags
$ 4 DCB Decachlorobiphenyl (Surr)						
1	12.534	12.534	0.000	210774666	18.3	
2	13.768	13.769	-0.001	144944588	22.1	
					RPD = 18.77	
S 7 Polychlorinated biphenyls, Total						
1					339.8	
2					475.1	
					RPD = 33.21	

Reagents:

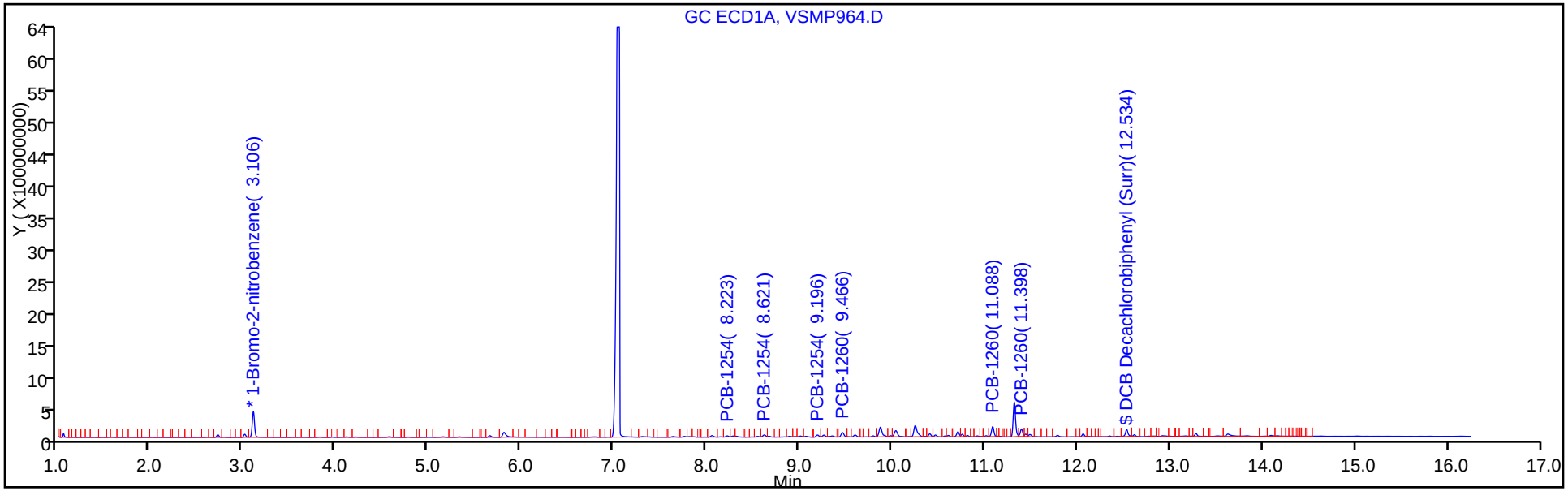
8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 22-Aug-2016 06:48:33 Chrom Revision: 2.2 20-Apr-2016 13:59:46

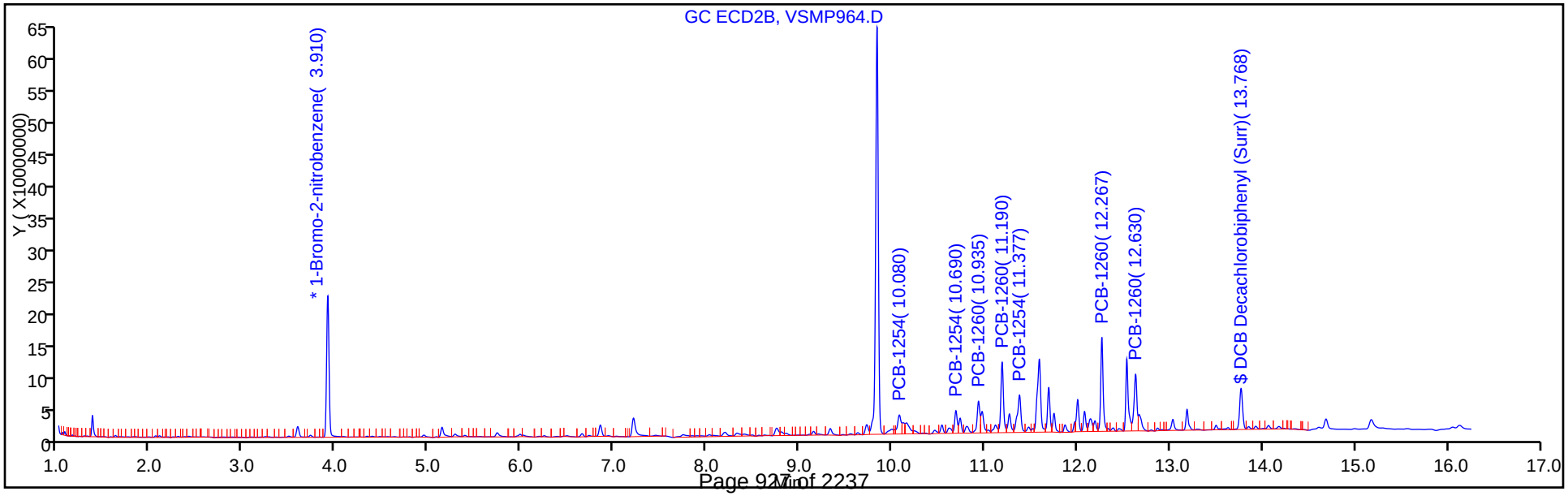
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D				
Injection Date:	19-Aug-2016 17:13:04	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	160-18521-B-2-C	Lab Sample ID:	160-18521-2	Worklist Smp#:	24
Client ID:	YMTFA75SE001				
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	24
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D				
Lims ID:	160-18521-B-2-C				
Client ID:	YMTFA75SE001				
Sample Type:	Client				
Inject. Date:	19-Aug-2016 17:13:04	ALS Bottle#:	24	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18521-b-2-c				
Misc. Info.:	160-0008246-024				
Operator ID:	GLB	Instrument ID:	SGCV		
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	22-Aug-2016 06:46:28	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK001				
First Level Reviewer: bonkoskig		Date:	22-Aug-2016 06:44:52		

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	18.3	91.18

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	22.1	110.07

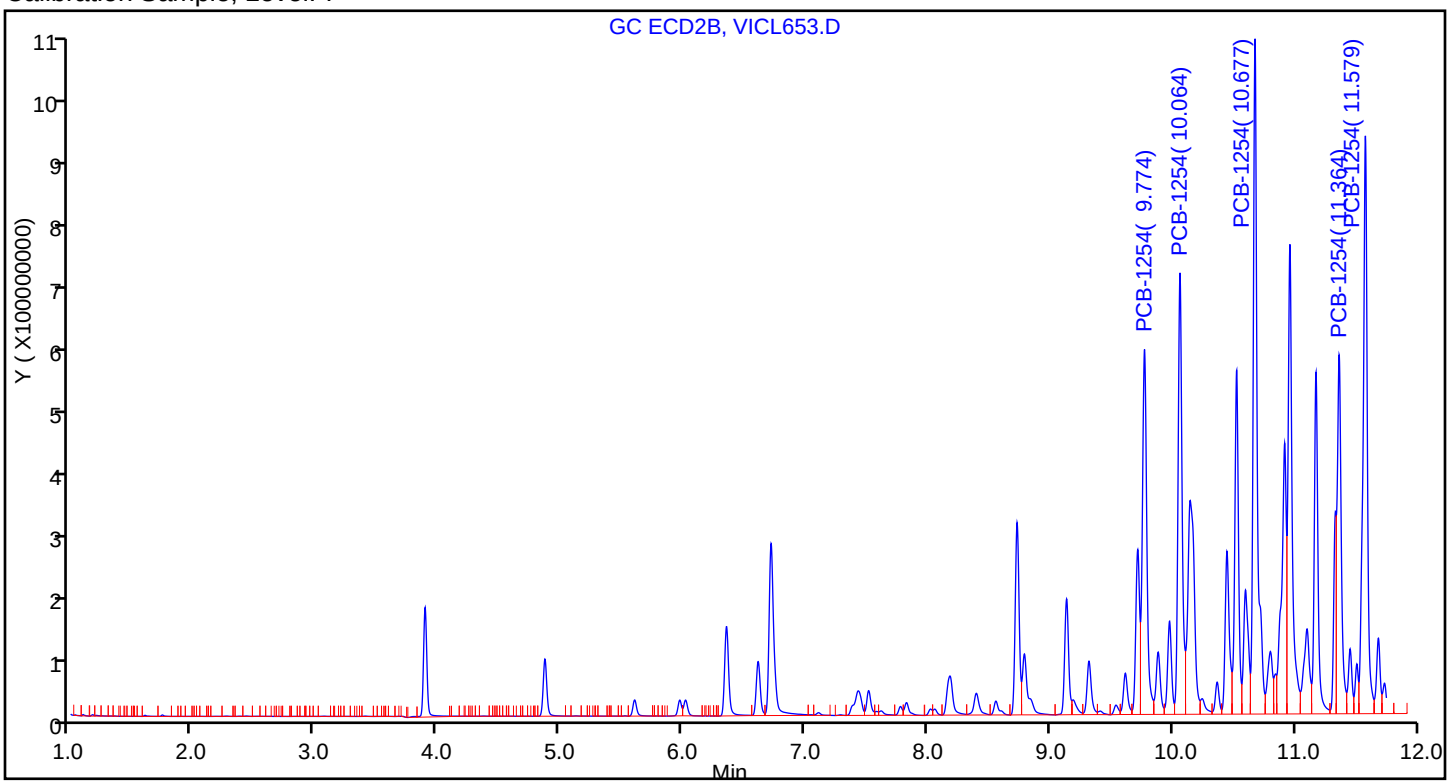
Report Date: 22-Aug-2016 06:48:33 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

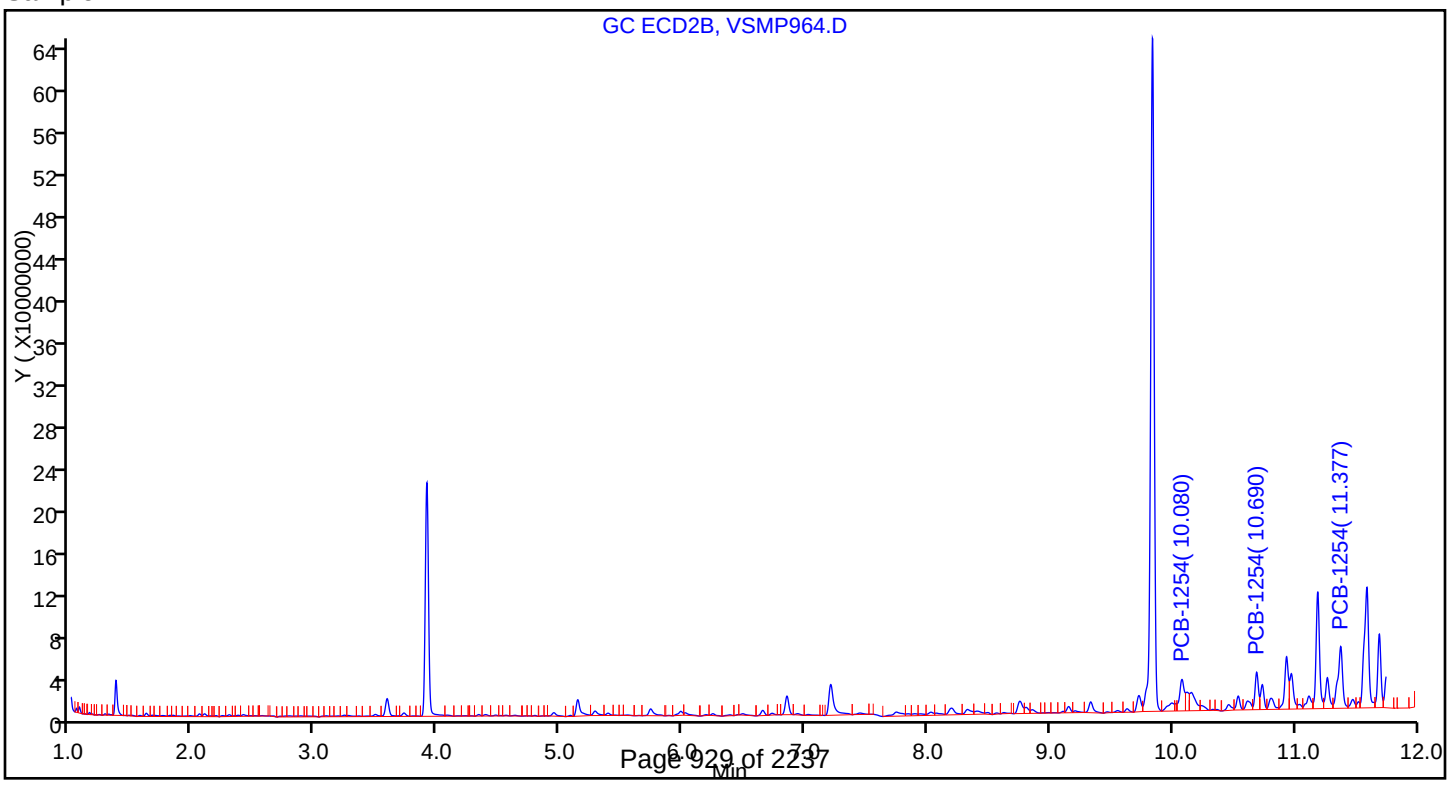
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D				
Injection Date:	19-Aug-2016 17:13:04	Instrument ID:	SGCV		
Lims ID:	160-18521-B-2-C	Lab Sample ID:	160-18521-2		
Client ID:	YMTFA75SE001				
Operator ID:	GLB	ALS Bottle#:	24	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

8 PCB-1254, CAS: 11097-69-1

Calibration Sample, Level: 7



Sample



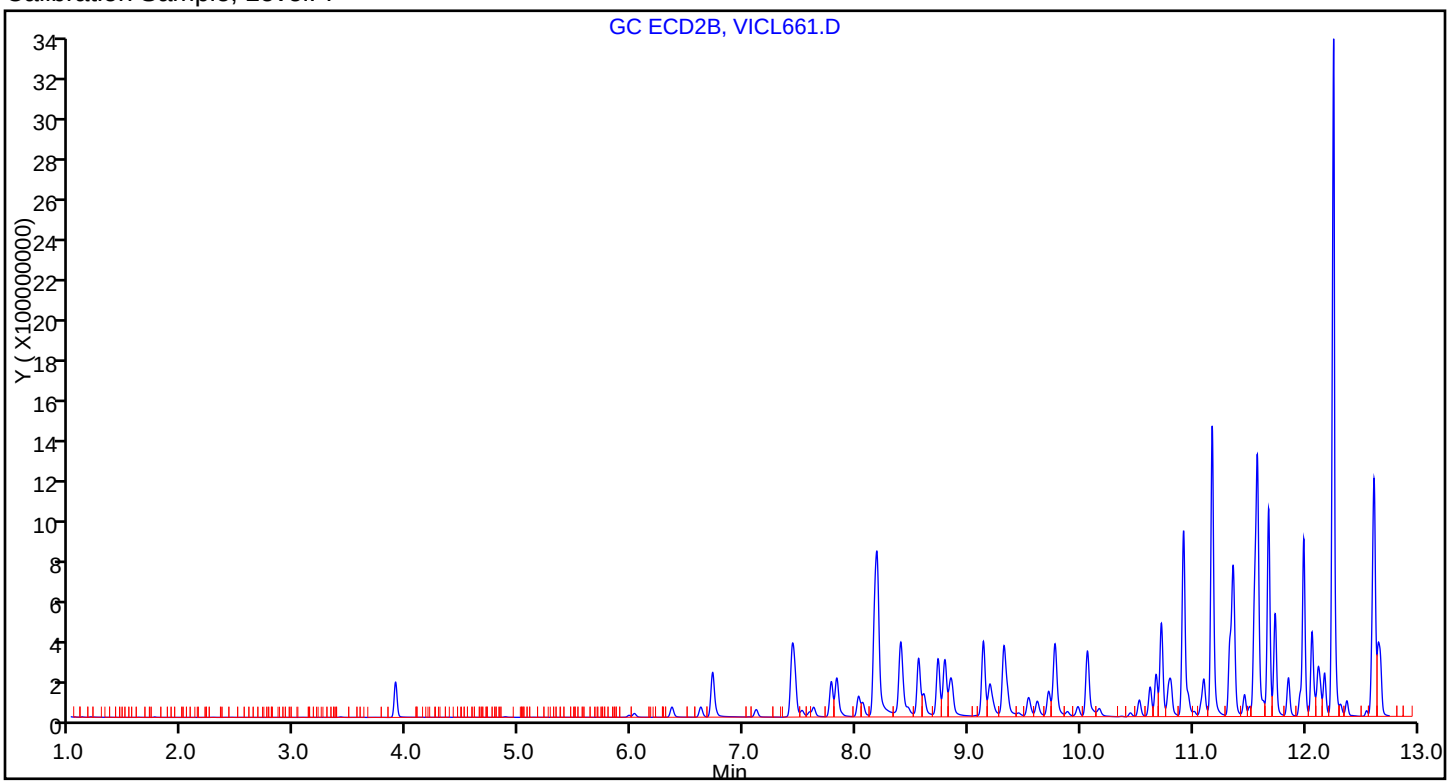
Report Date: 22-Aug-2016 06:48:33 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

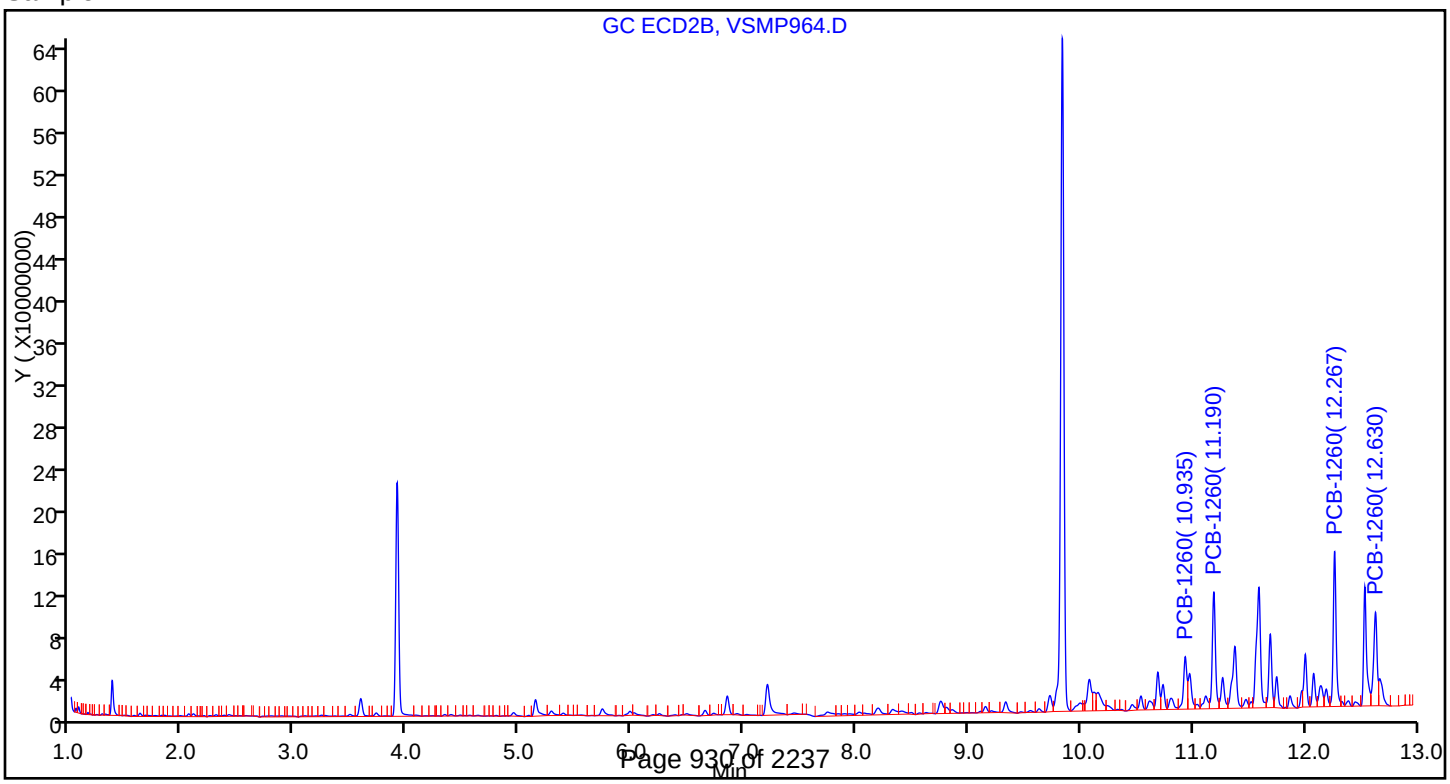
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP964.D				
Injection Date:	19-Aug-2016 17:13:04	Instrument ID:	SGCV		
Lims ID:	160-18521-B-2-C	Lab Sample ID:	160-18521-2		
Client ID:	YMTFA75SE001				
Operator ID:	GLB	ALS Bottle#:	24	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

10 PCB-1260, CAS: 11096-82-5

Calibration Sample, Level: 7



Sample



FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 11:28 Calibration End Date: 08/03/2016 11:28 Calibration ID: 11253

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/4	VICL644.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1						B	M1	M2								
PCB-1232 Peak 1	0.0207					Ave		0.0207						20.0			
PCB-1232 Peak 2	0.0165					Ave		0.0165						20.0			
PCB-1232 Peak 3	0.0312					Ave		0.0312						20.0			
PCB-1232 Peak 4	0.0143					Ave		0.0143						20.0			
PCB-1232 Peak 5	0.0192					Ave		0.0192						20.0			
PCB-1262 Peak 1	0.0383					Ave		0.0383						20.0			
PCB-1262 Peak 2	0.0414					Ave		0.0414						20.0			
PCB-1262 Peak 3	0.0562					Ave		0.0562						20.0			
PCB-1262 Peak 4	0.1288					Ave		0.1288						20.0			
PCB-1262 Peak 5	0.0467					Ave		0.0467						20.0			
DCB Decachlorobiphenyl (Surr)	0.7698					Ave		0.8377				9.4		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 11:28 Calibration End Date: 08/03/2016 11:28 Calibration ID: 11253

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/4	VICL644.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1					LVL 1				
PCB-1232 Peak 1	BNB	Ave	270168110					1000				
PCB-1232 Peak 2	BNB	Ave	214773986					1000				
PCB-1232 Peak 3	BNB	Ave	406977885					1000				
PCB-1232 Peak 4	BNB	Ave	186190154					1000				
PCB-1232 Peak 5	BNB	Ave	250326224					1000				
PCB-1262 Peak 1	BNB	Ave	499969168					1000				
PCB-1262 Peak 2	BNB	Ave	540462915					1000				
PCB-1262 Peak 3	BNB	Ave	733506217					1000				
PCB-1262 Peak 4	BNB	Ave	1681941279					1000				
PCB-1262 Peak 5	BNB	Ave	609595021					1000				
DCB Decachlorobiphenyl (Surr)	BNB	Ave	502424932					50.0				

Curve Type Legend:

Ave = Average ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL644.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Aug-2016 11:28:50 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub15

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:25 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:48:15

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	657904409	50.4	50.4	
2	3.896	3.896	0.000	326911937	50.4	50.4	
6 PCB-1232							
1	5.357	5.357	0.000	270168110	1000.0	1000.0	a
1	5.989	5.989	0.000	214773986	1000.0	1000.0	a
1	6.760	6.760	0.000	406977885	1000.0	1000.0	a
1	7.624	7.624	0.000	186190154	1000.0	1000.0	a
1	8.604	8.604	0.000	250326224	1000.0	1000.0	a
2	6.722	6.722	0.000	175098013	1000.0	1000.0	a
2	7.437	7.437	0.000	150636366	1000.0	1000.0	a
2	8.184	8.184	0.000	309368853	1000.0	1000.0	a
2	9.777	9.777	0.000	155825797	1000.0	1000.0	a
2	10.111	10.111	0.000	112574276	1000.0	1000.0	a
						RPD = 0.00	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
5 PCB-1262							
1	9.452	9.452	0.000	499969168	1000.0	1000.0	a
1	9.862	9.862	0.000	540462915	1000.0	1000.0	a
1	10.397	10.397	0.000	733506217	1000.0	1000.0	a
1	11.077	11.077	0.000	1681941279	1000.0	1000.0	a
1	11.432	11.432	0.000	609595021	1000.0	1000.0	a
2	10.921	10.921	0.000	324736881	1000.0	1000.0	a
2	11.176	11.176	0.000	397306885	1000.0	1000.0	a
2	11.679	11.679	0.000	603834238	1000.0	1000.0	a
2	12.254	12.254	0.000	1002801250	1000.0	1000.0	a
2	12.614	12.614	0.000	623871741	1000.0	1000.0	a
						RPD = 0.00	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	502424932	50.0	45.9	
2	13.754	13.754	0.000	258777096	50.0	46.6	
						RPD = 1.39	
S 7 Polychlorinated biphenyls, Total							
1						2000.0	
2						2000.0	
						RPD = 0.00	

Reagents:

1232/1262Cal5_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:26 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL644.D

Injection Date: 03-Aug-2016 11:28:50 Instrument ID: SGCV Operator ID: GLB

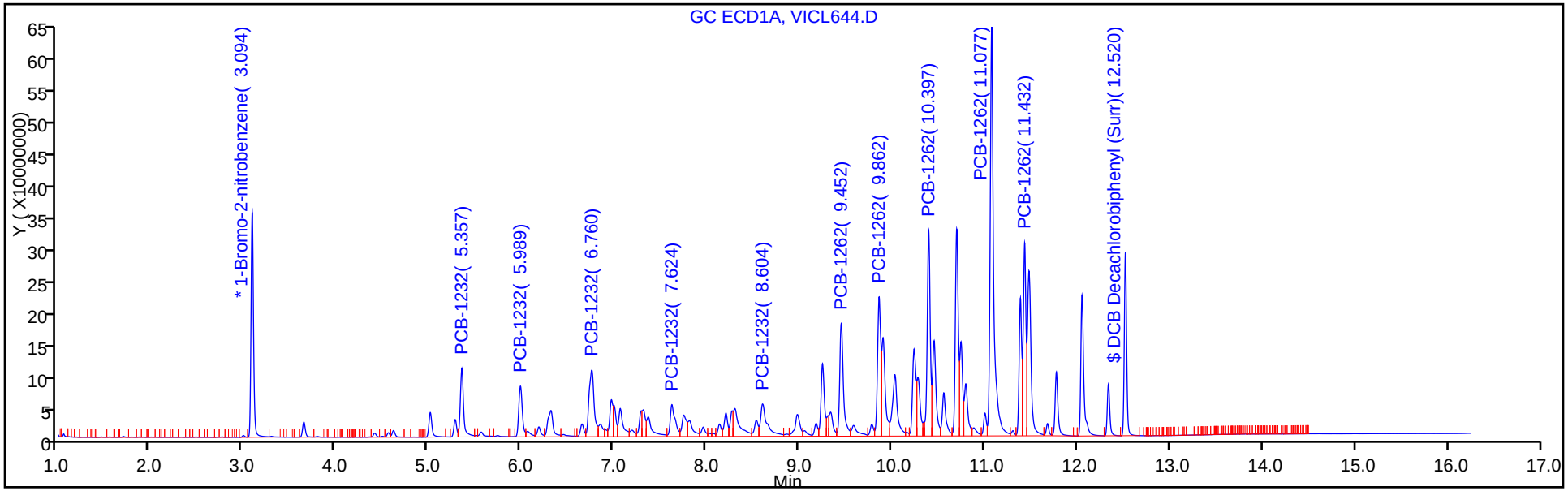
Lims ID: IC Worklist Smp#: 4

Client ID:

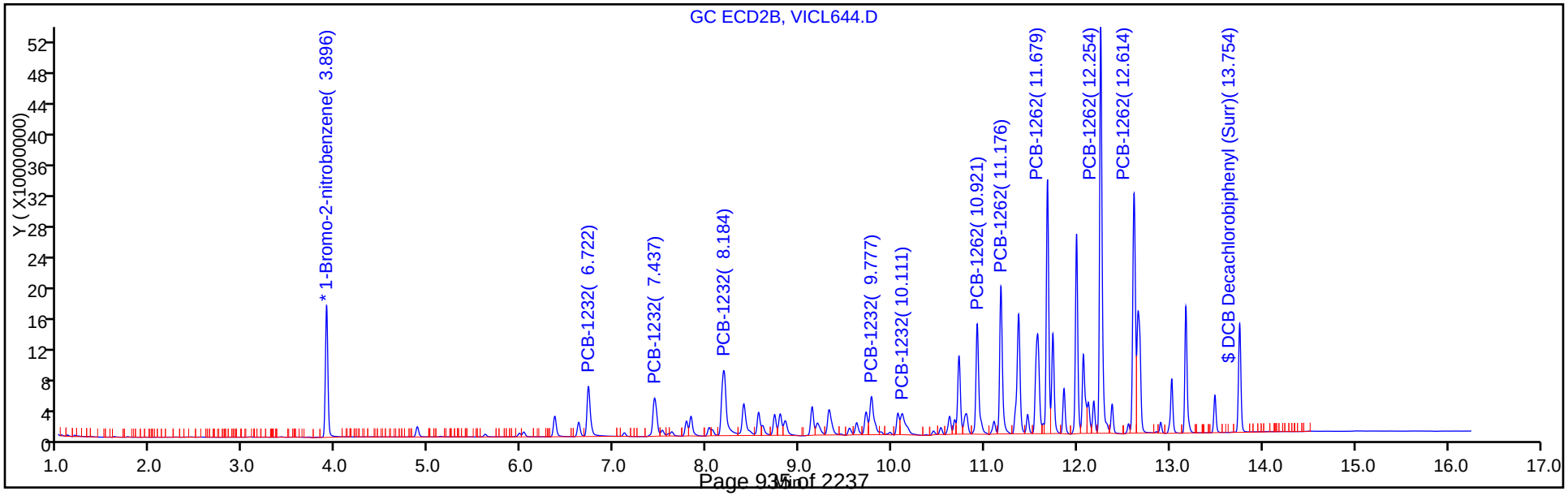
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 4

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 11:28 Calibration End Date: 08/03/2016 11:28 Calibration ID: 11254

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/4	VICL644.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1						B	M1	M2								
PCB-1232 Peak 1	0.0270					Ave		0.0270						20.0			
PCB-1232 Peak 2	0.0232					Ave		0.0232						20.0			
PCB-1232 Peak 3	0.0477					Ave		0.0477						20.0			
PCB-1232 Peak 4	0.0240					Ave		0.0240						20.0			
PCB-1232 Peak 5	0.0174					Ave		0.0174						20.0			
PCB-1262 Peak 1	0.0501					Ave		0.0501						20.0			
PCB-1262 Peak 2	0.0613					Ave		0.0613						20.0			
PCB-1262 Peak 3	0.0931					Ave		0.0931						20.0			
PCB-1262 Peak 4	0.1546					Ave		0.1546						20.0			
PCB-1262 Peak 5	0.0962					Ave		0.0962						20.0			
DCB Decachlorobiphenyl (Surr)	0.7979					Ave		0.8563				7.0		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 11:28 Calibration End Date: 08/03/2016 11:28 Calibration ID: 11254

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/4	VICL644.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1					LVL 1				
PCB-1232 Peak 1	BNB	Ave	175098013					1000				
PCB-1232 Peak 2	BNB	Ave	150636366					1000				
PCB-1232 Peak 3	BNB	Ave	309368853					1000				
PCB-1232 Peak 4	BNB	Ave	155825797					1000				
PCB-1232 Peak 5	BNB	Ave	112574276					1000				
PCB-1262 Peak 1	BNB	Ave	324736881					1000				
PCB-1262 Peak 2	BNB	Ave	397306885					1000				
PCB-1262 Peak 3	BNB	Ave	603834238					1000				
PCB-1262 Peak 4	BNB	Ave	1002801250					1000				
PCB-1262 Peak 5	BNB	Ave	623871741					1000				
DCB Decachlorobiphenyl (Surr)	BNB	Ave	258777096					50.0				

Curve Type Legend:

Ave = Average ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL644.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Aug-2016 11:28:50 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub15

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:25 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:48:15

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	657904409	50.4	50.4	
2	3.896	3.896	0.000	326911937	50.4	50.4	
6 PCB-1232							
1	5.357	5.357	0.000	270168110	1000.0	1000.0	a
1	5.989	5.989	0.000	214773986	1000.0	1000.0	a
1	6.760	6.760	0.000	406977885	1000.0	1000.0	a
1	7.624	7.624	0.000	186190154	1000.0	1000.0	a
1	8.604	8.604	0.000	250326224	1000.0	1000.0	a
2	6.722	6.722	0.000	175098013	1000.0	1000.0	a
2	7.437	7.437	0.000	150636366	1000.0	1000.0	a
2	8.184	8.184	0.000	309368853	1000.0	1000.0	a
2	9.777	9.777	0.000	155825797	1000.0	1000.0	a
2	10.111	10.111	0.000	112574276	1000.0	1000.0	a
						RPD = 0.00	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
5 PCB-1262							
1	9.452	9.452	0.000	499969168	1000.0	1000.0	a
1	9.862	9.862	0.000	540462915	1000.0	1000.0	a
1	10.397	10.397	0.000	733506217	1000.0	1000.0	a
1	11.077	11.077	0.000	1681941279	1000.0	1000.0	a
1	11.432	11.432	0.000	609595021	1000.0	1000.0	a
2	10.921	10.921	0.000	324736881	1000.0	1000.0	a
2	11.176	11.176	0.000	397306885	1000.0	1000.0	a
2	11.679	11.679	0.000	603834238	1000.0	1000.0	a
2	12.254	12.254	0.000	1002801250	1000.0	1000.0	a
2	12.614	12.614	0.000	623871741	1000.0	1000.0	a
						RPD = 0.00	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	502424932	50.0	45.9	
2	13.754	13.754	0.000	258777096	50.0	46.6	
						RPD = 1.39	
S 7 Polychlorinated biphenyls, Total							
1						2000.0	
2						2000.0	
						RPD = 0.00	

Reagents:

1232/1262Cal5_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:26 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL644.D

Injection Date: 03-Aug-2016 11:28:50 Instrument ID: SGCV Operator ID: GLB

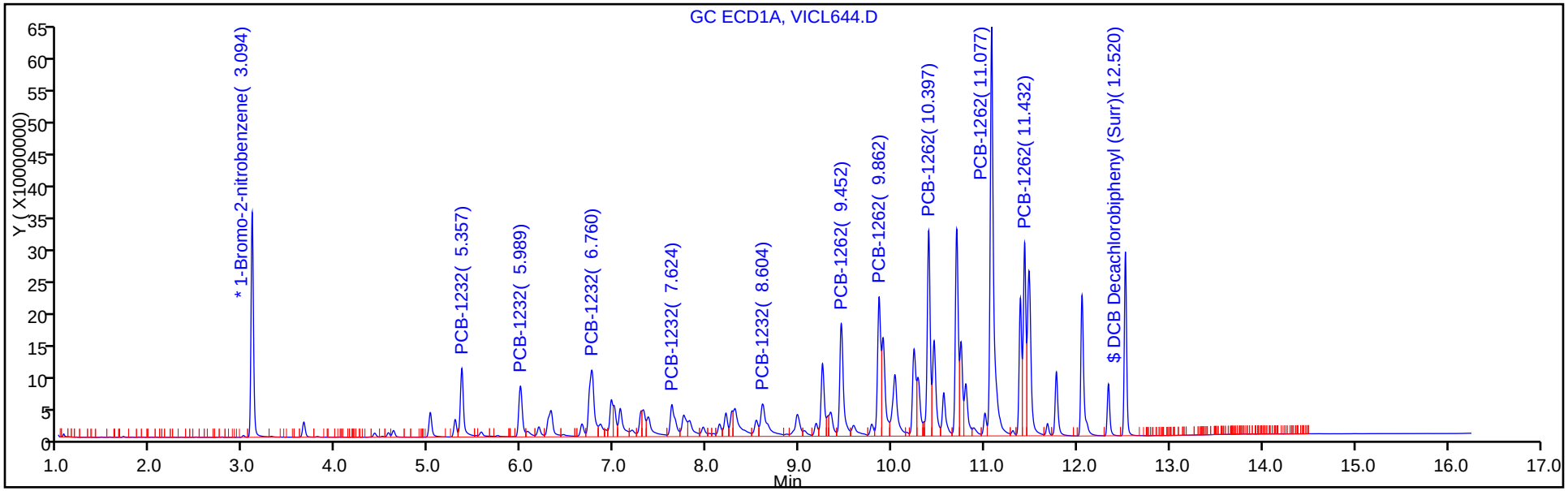
Lims ID: IC Worklist Smp#: 4

Client ID:

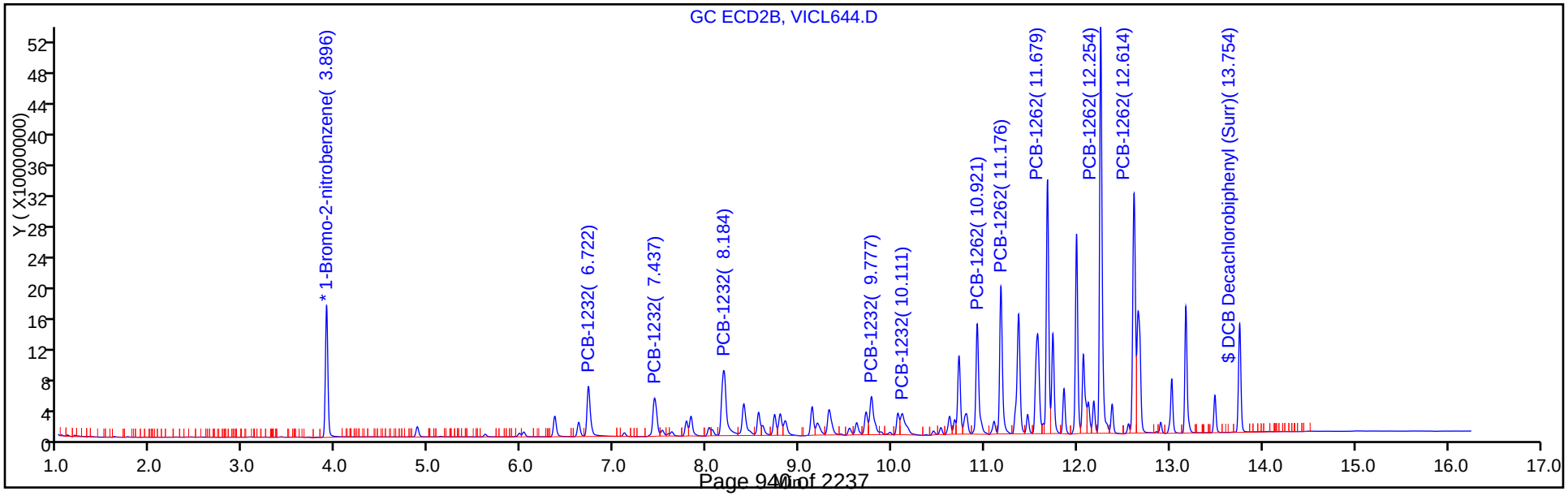
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 4

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 11:51 Calibration End Date: 08/03/2016 11:51 Calibration ID: 11257

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/5	VICL645.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1						B	M1	M2								
PCB-1242 Peak 1	0.0260					Ave		0.0260						20.0			
PCB-1242 Peak 2	0.0187					Ave		0.0187						20.0			
PCB-1242 Peak 3	0.0488					Ave		0.0488						20.0			
PCB-1242 Peak 4	0.0247					Ave		0.0247						20.0			
PCB-1242 Peak 5	0.0147					Ave		0.0147						20.0			
PCB-1268 Peak 1	0.1268					Ave		0.1268						20.0			
PCB-1268 Peak 2	0.1349					Ave		0.1349						20.0			
PCB-1268 Peak 3	0.1122					Ave		0.1122						20.0			
PCB-1268 Peak 4	0.0298					Ave		0.0298						20.0			
PCB-1268 Peak 5	0.3624					Ave		0.3624						20.0			
DCB Decachlorobiphenyl (Surr)	1.9235					Lin1	-0.113	1.0370							0.8710		0.0990

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 11:51 Calibration End Date: 08/03/2016 11:51 Calibration ID: 11257

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/5	VICL645.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1					LVL 1				
PCB-1242 Peak 1	BNB	Ave	334947684					1004				
PCB-1242 Peak 2	BNB	Ave	241128051					1004				
PCB-1242 Peak 3	BNB	Ave	629016297					1004				
PCB-1242 Peak 4	BNB	Ave	318563238					1004				
PCB-1242 Peak 5	BNB	Ave	189509129					1004				
PCB-1268 Peak 1	BNB	Ave	1626173322					1000				
PCB-1268 Peak 2	BNB	Ave	1731053810					1000				
PCB-1268 Peak 3	BNB	Ave	1438957068					1000				
PCB-1268 Peak 4	BNB	Ave	382775321					1000				
PCB-1268 Peak 5	BNB	Ave	4649053988					1000				
DCB Decachlorobiphenyl (Surr)	BNB	Lin1	1233847223					50.0				

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL645.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	5		
Inject. Date:	03-Aug-2016 11:51:24	ALS Bottle#:	5	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-005				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub16				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:44:28	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:52:13

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	646595537	50.4	50.4	
2	3.896	3.896	0.000	318279743	50.4	50.4	
9 PCB-1242							
1	5.989	5.989	0.000	334947684	1004.0	1004.0	a
1	6.320	6.320	0.000	241128051	1004.0	1004.0	a
1	6.759	6.759	0.000	629016297	1004.0	1004.0	a
1	7.624	7.624	0.000	318563238	1004.0	1004.0	a
1	8.599	8.599	0.000	189509129	1004.0	1004.0	a
2	7.438	7.438	0.000	225195704	1004.0	1004.0	a
2	7.829	7.829	0.000	99913047	1004.0	1004.0	a
2	8.186	8.186	0.000	486962975	1004.0	1004.0	a
2	9.781	9.781	0.000	206848065	1004.0	1004.0	a
2	10.113	10.113	0.000	216234004	1004.0	1004.0	a
						RPD = 0.00	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
11 PCB-1268							
1	11.434	11.434	0.000	1626173322	1000.0	1000.0	a
1	11.474	11.474	0.000	1731053810	1000.0	1000.0	a
1	11.680	11.680	0.000	1438957068	1000.0	1000.0	a
1	12.050	12.050	0.000	382775321	1000.0	1000.0	a
1	12.344	12.344	0.000	4649053988	1000.0	1000.0	a
2	12.611	12.611	0.000	1109528832	1000.0	1000.0	a
2	12.656	12.656	0.000	976909420	1000.0	1000.0	a
2	12.901	12.901	0.000	902253985	1000.0	1000.0	a
2	13.173	13.173	0.000	216943061	1000.0	1000.0	a
2	13.486	13.486	0.000	1807654197	1000.0	1000.0	a
						RPD = 0.00	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	1233847223	50.0	92.9	
2	13.753	13.753	0.000	608476126	50.0	96.1	
						RPD = 3.42	
S 7 Polychlorinated biphenyls, Total							
1						2004.0	
2						2004.0	
						RPD = 0.00	

Reagents:

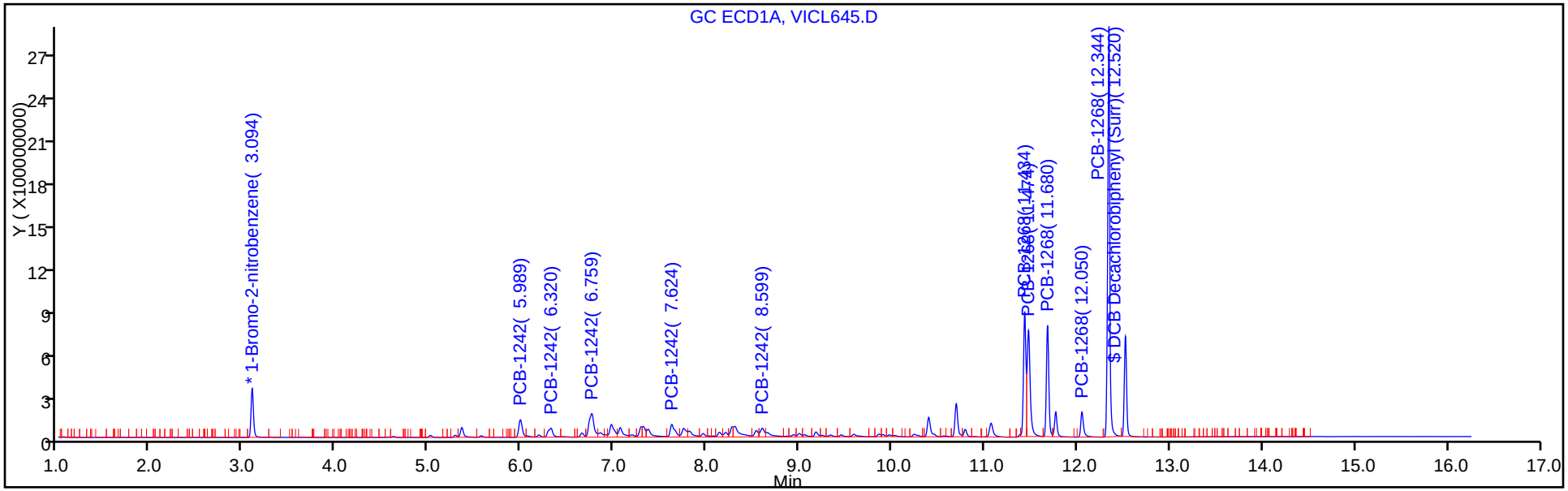
1242/1268Cal5_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:28 Chrom Revision: 2.2 20-Apr-2016 13:59:46

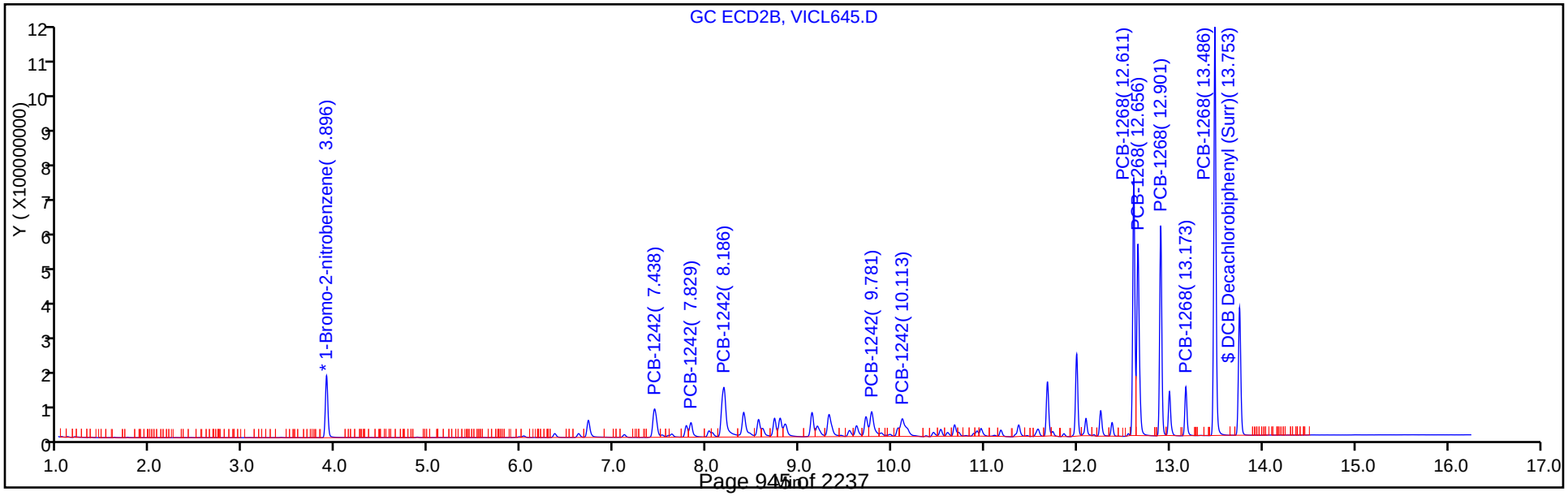
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL645.D				
Injection Date:	03-Aug-2016 11:51:24	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	5
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 11:51 Calibration End Date: 08/03/2016 11:51 Calibration ID: 11258

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/5	VICL645.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1						B	M1	M2								
PCB-1242 Peak 1	0.0355					Ave		0.0355						20.0			
PCB-1242 Peak 2	0.0158					Ave		0.0158						20.0			
PCB-1242 Peak 3	0.0768					Ave		0.0768						20.0			
PCB-1242 Peak 4	0.0326					Ave		0.0326						20.0			
PCB-1242 Peak 5	0.0341					Ave		0.0341						20.0			
PCB-1268 Peak 1	0.1757					Ave		0.1757						20.0			
PCB-1268 Peak 2	0.1547					Ave		0.1547						20.0			
PCB-1268 Peak 3	0.1429					Ave		0.1429						20.0			
PCB-1268 Peak 4	0.0344					Ave		0.0344						20.0			
PCB-1268 Peak 5	0.2862					Ave		0.2862						20.0			
DCB Decachlorobiphenyl (Surr)	1.9271					Lin1	0.7987	0.9945							0.8570		0.0990

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 11:51 Calibration End Date: 08/03/2016 11:51 Calibration ID: 11258

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/5	VICL645.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1					LVL 1				
PCB-1242 Peak 1	BNB	Ave	225195704					1004				
PCB-1242 Peak 2	BNB	Ave	99913047					1004				
PCB-1242 Peak 3	BNB	Ave	486962975					1004				
PCB-1242 Peak 4	BNB	Ave	206848065					1004				
PCB-1242 Peak 5	BNB	Ave	216234004					1004				
PCB-1268 Peak 1	BNB	Ave	1109528832					1000				
PCB-1268 Peak 2	BNB	Ave	976909420					1000				
PCB-1268 Peak 3	BNB	Ave	902253985					1000				
PCB-1268 Peak 4	BNB	Ave	216943061					1000				
PCB-1268 Peak 5	BNB	Ave	1807654197					1000				
DCB Decachlorobiphenyl (Surr)	BNB	Lin1	608476126					50.0				

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL645.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Aug-2016 11:51:24 ALS Bottle#: 5 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-005
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub16

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:52:13

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	646595537	50.4	50.4	
2	3.896	3.896	0.000	318279743	50.4	50.4	
9 PCB-1242							
1	5.989	5.989	0.000	334947684	1004.0	1004.0	a
1	6.320	6.320	0.000	241128051	1004.0	1004.0	a
1	6.759	6.759	0.000	629016297	1004.0	1004.0	a
1	7.624	7.624	0.000	318563238	1004.0	1004.0	a
1	8.599	8.599	0.000	189509129	1004.0	1004.0	a
2	7.438	7.438	0.000	225195704	1004.0	1004.0	a
2	7.829	7.829	0.000	99913047	1004.0	1004.0	a
2	8.186	8.186	0.000	486962975	1004.0	1004.0	a
2	9.781	9.781	0.000	206848065	1004.0	1004.0	a
2	10.113	10.113	0.000	216234004	1004.0	1004.0	a
						RPD = 0.00	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
11 PCB-1268							
1	11.434	11.434	0.000	1626173322	1000.0	1000.0	a
1	11.474	11.474	0.000	1731053810	1000.0	1000.0	a
1	11.680	11.680	0.000	1438957068	1000.0	1000.0	a
1	12.050	12.050	0.000	382775321	1000.0	1000.0	a
1	12.344	12.344	0.000	4649053988	1000.0	1000.0	a
2	12.611	12.611	0.000	1109528832	1000.0	1000.0	a
2	12.656	12.656	0.000	976909420	1000.0	1000.0	a
2	12.901	12.901	0.000	902253985	1000.0	1000.0	a
2	13.173	13.173	0.000	216943061	1000.0	1000.0	a
2	13.486	13.486	0.000	1807654197	1000.0	1000.0	a
						RPD = 0.00	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	1233847223	50.0	92.9	
2	13.753	13.753	0.000	608476126	50.0	96.1	
						RPD = 3.42	
S 7 Polychlorinated biphenyls, Total							
1						2004.0	
2						2004.0	
						RPD = 0.00	

Reagents:

1242/1268Cal5_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:29 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL645.D

Injection Date: 03-Aug-2016 11:51:24 Instrument ID: SGCV Operator ID: GLB

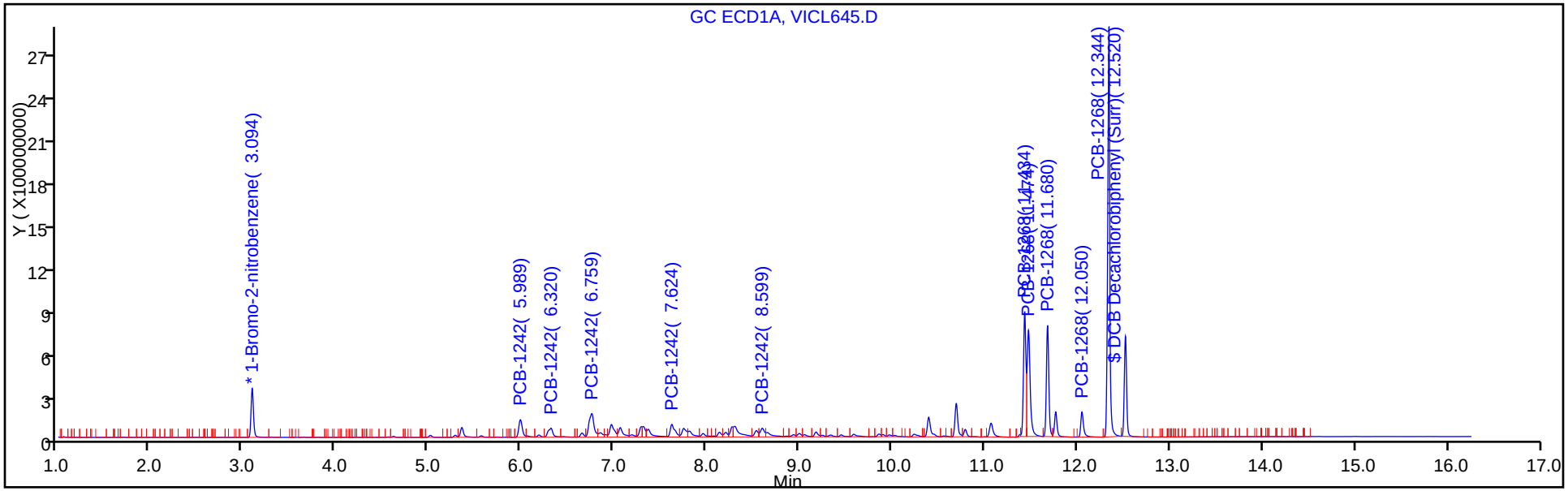
Lims ID: IC Worklist Smp#: 5

Client ID:

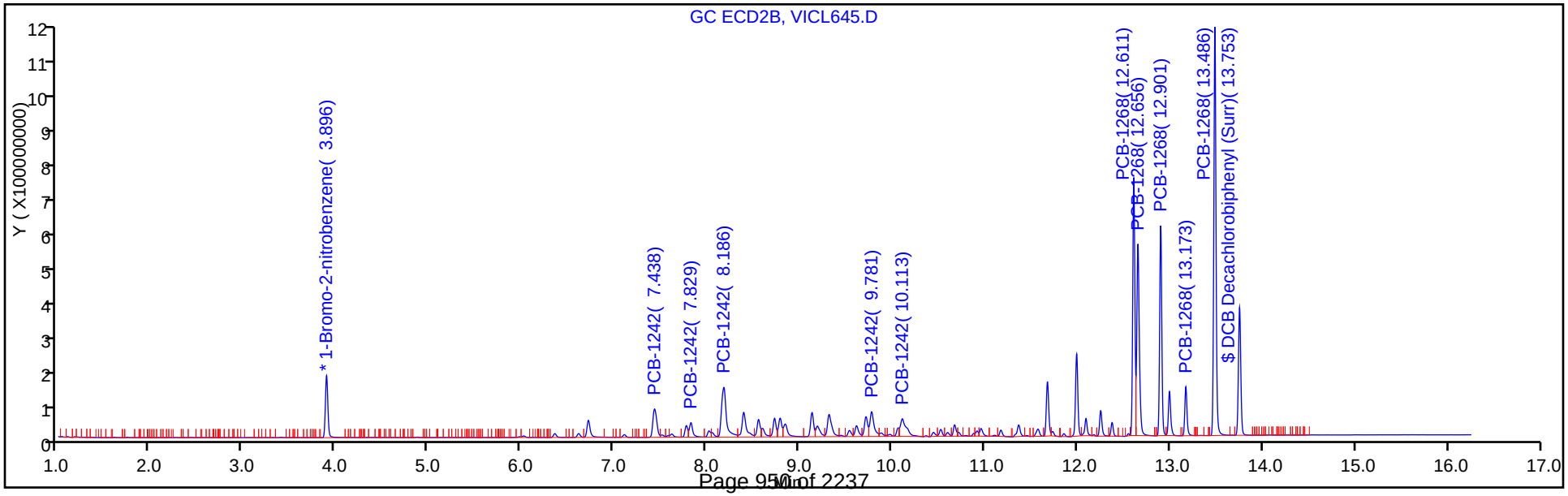
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 5

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 12:13 Calibration End Date: 08/03/2016 12:13 Calibration ID: 11273

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/6	VICL646.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1						B	M1	M2								
PCB-1248 Peak 1	0.0335					Ave		0.0335						20.0			
PCB-1248 Peak 2	0.0380					Ave		0.0380						20.0			
PCB-1248 Peak 3	0.0397					Ave		0.0397						20.0			
PCB-1248 Peak 4	0.0261					Ave		0.0261						20.0			
PCB-1248 Peak 5	0.0273					Ave		0.0273						20.0			
DCB Decachlorobiphenyl (Surr)	0.4308					Lin1	-1.331	0.8644							0.9530		0.0990

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 12:13 Calibration End Date: 08/03/2016 12:13 Calibration ID: 11273

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/6	VICL646.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1					LVL 1				
PCB-1248 Peak 1	BNB	Ave	473340443					1003				
PCB-1248 Peak 2	BNB	Ave	536778740					1003				
PCB-1248 Peak 3	BNB	Ave	560855344					1003				
PCB-1248 Peak 4	BNB	Ave	368670370					1003				
PCB-1248 Peak 5	BNB	Ave	385429763					1003				
DCB Decachlorobiphenyl (Surr)	BNB	Lin1	303051320					50.0				

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL646.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Aug-2016 12:13:56 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-006
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub17

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:57:52 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 08:57:37

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.093	0.000	709040352	50.4	50.4	
2	3.895	3.895	0.000	345111382	50.4	50.4	
3 PCB-1248							M
1	6.755	6.755	0.000	473340443	1003.2	1003.2	M
1	7.292	7.292	0.000	536778740	1003.2	1003.2	M
1	7.623	7.623	0.000	560855344	1003.2	1003.2	M
1	8.277	8.277	0.000	368670370	1003.2	1003.2	M
1	8.600	8.600	0.000	385429763	1003.2	1003.2	M
2	8.734	8.734	0.000	205668891	1003.2	1003.2	a
2	9.137	9.137	0.000	259822849	1003.2	1003.2	a
2	9.320	9.320	0.000	324164969	1003.2	1003.2	a
2	9.780	9.780	0.000	380420632	1003.2	1003.2	a
2	10.110	10.110	0.000	416643547	1003.2	1003.2	a
						RPD = 0.00	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	303051320	50.0	26.5	
2	13.752	13.752	0.000	148100977	50.0	26.8	
						RPD = 1.40	
S 7 Polychlorinated biphenyls, Total							
1						1003.2	
2						1003.2	
						RPD = 0.00	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

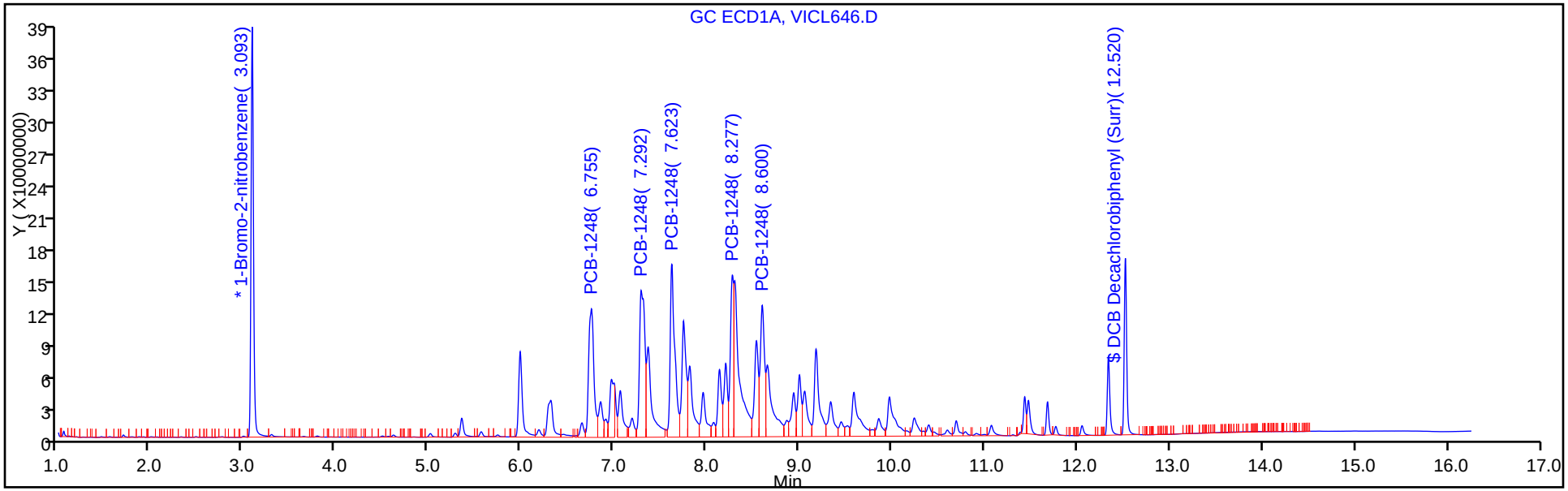
1248Cal5_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:57:53 Chrom Revision: 2.2 20-Apr-2016 13:59:46

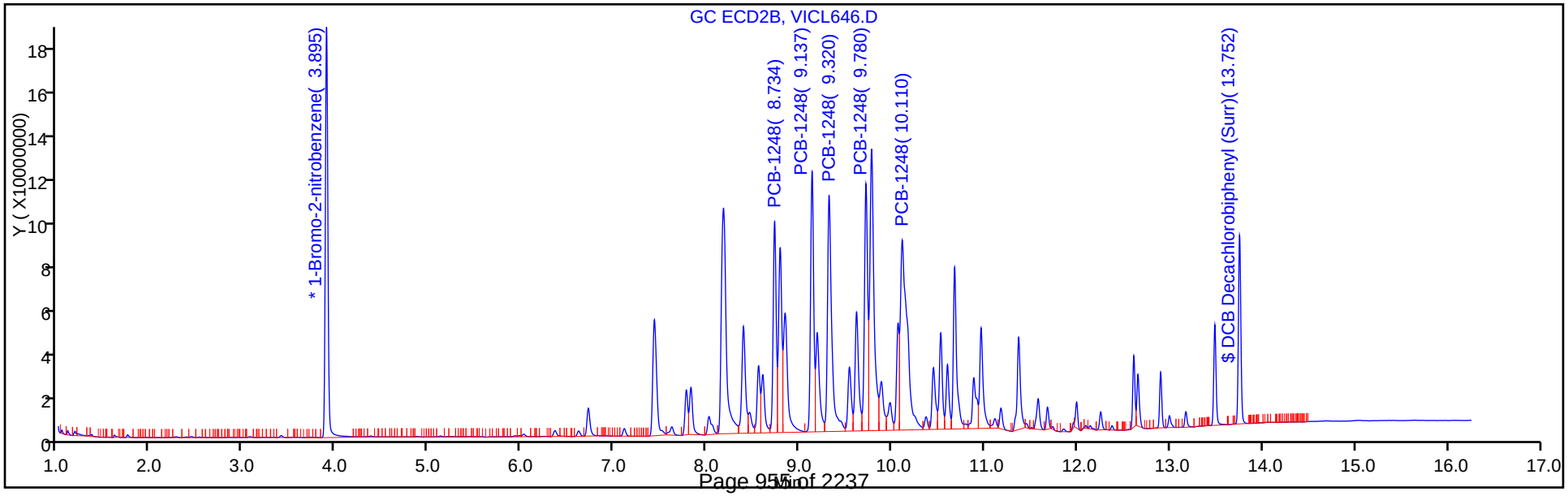
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL646.D				
Injection Date:	03-Aug-2016 12:13:56	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	6
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1

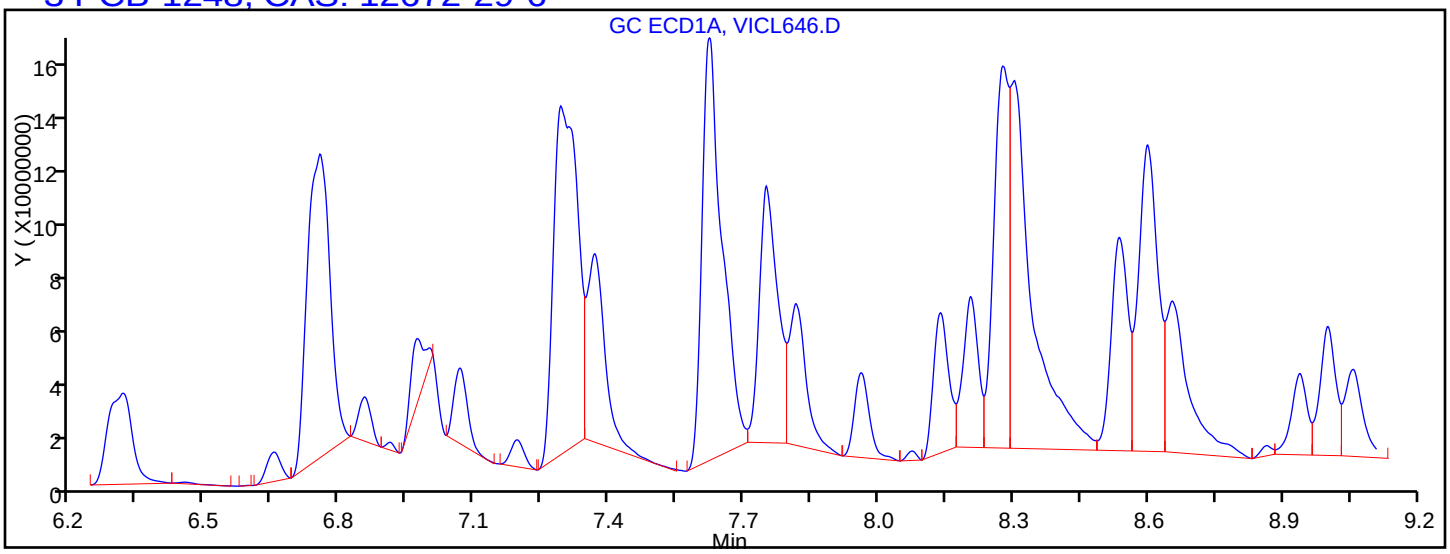


Report Date: 04-Aug-2016 08:57:53 Chrom Revision: 2.2 20-Apr-2016 13:59:46

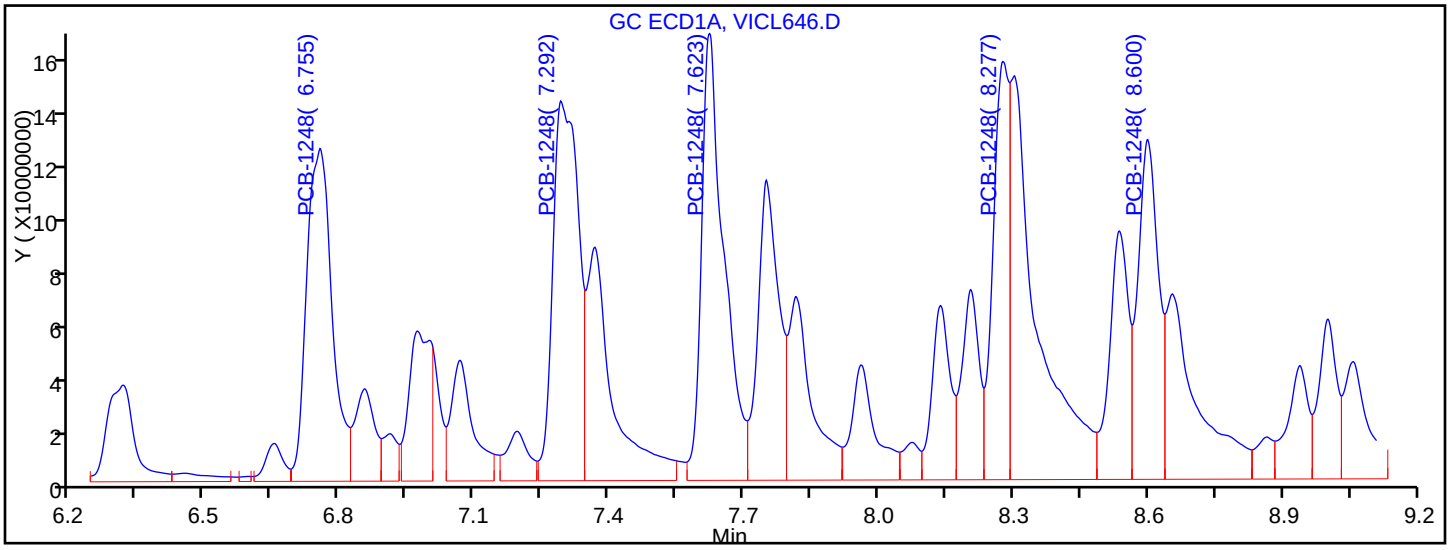
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL646.D				
Injection Date:	03-Aug-2016 12:13:56	Instrument ID:	SGCV		
Lims ID:	IC				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

3 PCB-1248, CAS: 12672-29-6



Processing Integration Results



Manual Integration Results

RT = 6.755	Response = 473340443	M
RT = 7.292	Response = 536778740	M
RT = 7.623	Response = 560855344	M
RT = 8.277	Response = 368670370	M
RT = 8.600	Response = 385429763	M

Reviewer: bonkoskig, 04-Aug-2016 08:57:37

Audit Action: Assigned New Baseline Audit Reason: Baseline Smoothing

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 12:13 Calibration End Date: 08/03/2016 12:13 Calibration ID: 11274

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/6	VICL646.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1						B	M1	M2								
PCB-1248 Peak 1	0.0299					Ave		0.0299						20.0			
PCB-1248 Peak 2	0.0378					Ave		0.0378						20.0			
PCB-1248 Peak 3	0.0472					Ave		0.0472						20.0			
PCB-1248 Peak 4	0.0554					Ave		0.0554						20.0			
PCB-1248 Peak 5	0.0607					Ave		0.0607						20.0			
DCB Decachlorobiphenyl (Surr)	0.4326					Lin1	-0.421	0.8217							0.9580		0.0990

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 12:13 Calibration End Date: 08/03/2016 12:13 Calibration ID: 11274

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/6	VICL646.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1					LVL 1				
PCB-1248 Peak 1	BNB	Ave	205668891					1003				
PCB-1248 Peak 2	BNB	Ave	259822849					1003				
PCB-1248 Peak 3	BNB	Ave	324164969					1003				
PCB-1248 Peak 4	BNB	Ave	380420632					1003				
PCB-1248 Peak 5	BNB	Ave	416643547					1003				
DCB Decachlorobiphenyl (Surr)	BNB	Lin1	148100977					50.0				

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL646.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Aug-2016 12:13:56 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-006
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub17

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:57:52 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 08:57:37

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.093	0.000	709040352	50.4	50.4	
2	3.895	3.895	0.000	345111382	50.4	50.4	
3 PCB-1248							M
1	6.755	6.755	0.000	473340443	1003.2	1003.2	M
1	7.292	7.292	0.000	536778740	1003.2	1003.2	M
1	7.623	7.623	0.000	560855344	1003.2	1003.2	M
1	8.277	8.277	0.000	368670370	1003.2	1003.2	M
1	8.600	8.600	0.000	385429763	1003.2	1003.2	M
2	8.734	8.734	0.000	205668891	1003.2	1003.2	a
2	9.137	9.137	0.000	259822849	1003.2	1003.2	a
2	9.320	9.320	0.000	324164969	1003.2	1003.2	a
2	9.780	9.780	0.000	380420632	1003.2	1003.2	a
2	10.110	10.110	0.000	416643547	1003.2	1003.2	a
						RPD = 0.00	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	303051320	50.0	26.5	
2	13.752	13.752	0.000	148100977	50.0	26.8	
						RPD = 1.40	
S 7 Polychlorinated biphenyls, Total							
1						1003.2	
2						1003.2	
						RPD = 0.00	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

1248Cal5_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:57:53 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL646.D

Injection Date: 03-Aug-2016 12:13:56 Instrument ID: SGCV Operator ID: GLB

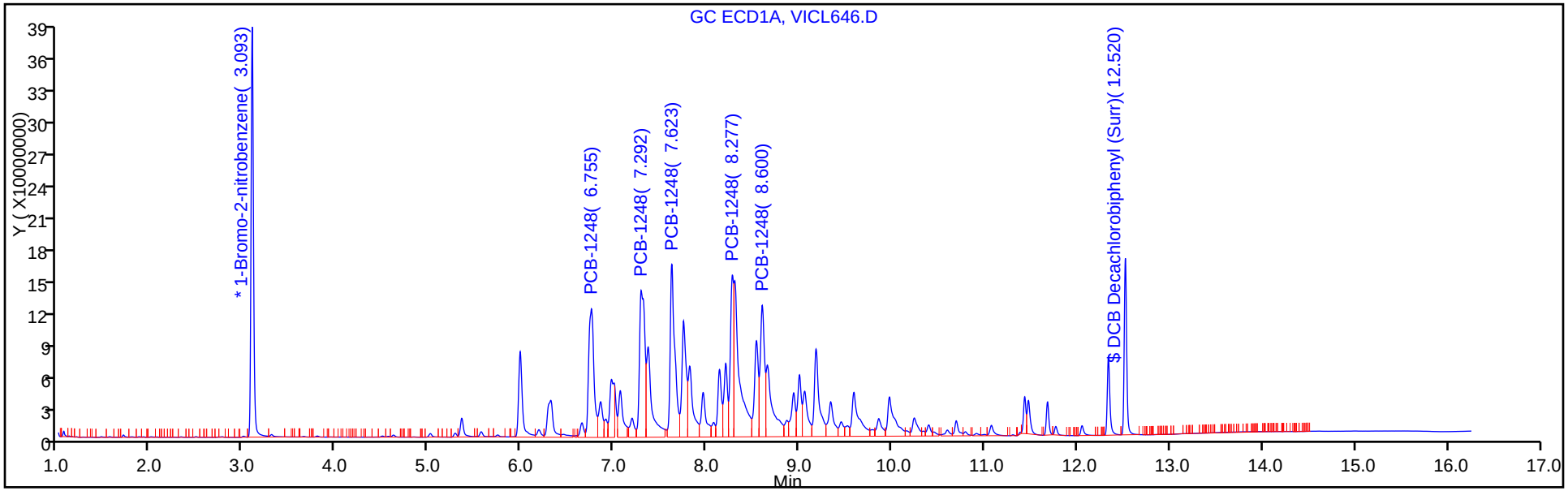
Lims ID: IC Worklist Smp#: 6

Client ID:

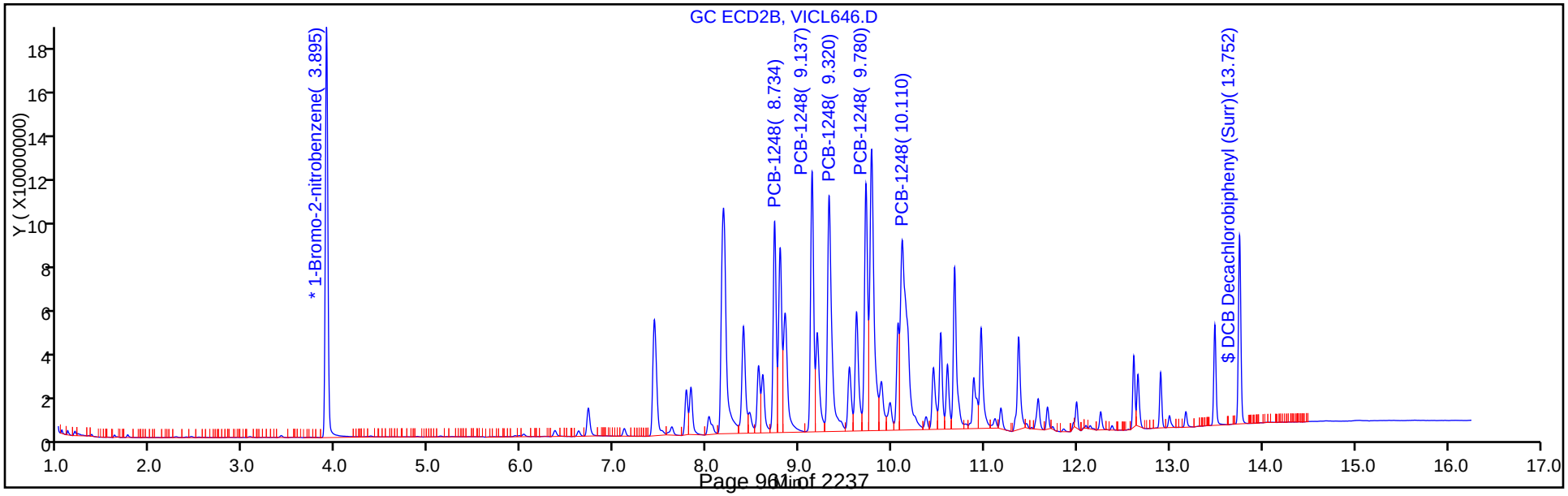
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 6

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 12:58 Calibration End Date: 08/03/2016 14:51 Calibration ID: 11265

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/8	VICL648.D
Level 2	IC 160-263102/9	VICL649.D
Level 3	IC 160-263102/10	VICL650.D
Level 4	IC 160-263102/11	VICL651.D
Level 5	IC 160-263102/12	VICL652.D
Level 6	IC 160-263102/13	VICL653.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
PCB-1221 Peak 1	0.0092 0.0093	0.0104	0.0095	0.0099	0.0097	Ave		0.0097				4.6		20.0			
PCB-1221 Peak 2	0.0057 0.0053	0.0062	0.0054	0.0056	0.0052	Ave		0.0056				6.2		20.0			
PCB-1221 Peak 3	0.0226 0.0225	0.0256	0.0231	0.0240	0.0227	Ave		0.0234				5.2		20.0			
PCB-1254 Peak 1	0.0278 0.0341	0.0313	0.0297	0.0320	0.0326	Ave		0.0313				7.1		20.0			
PCB-1254 Peak 2	0.0344 0.0471	0.0388	0.0375	0.0416	0.0424	Ave		0.0403				11.0		20.0			
PCB-1254 Peak 3	0.0624 0.0738	0.0622	0.0544	0.0614	0.0617	Ave		0.0627				10.0		20.0			
PCB-1254 Peak 4	0.0405 0.0480	0.0448	0.0426	0.0456	0.0451	Ave		0.0444				5.9		20.0			
PCB-1254 Peak 5	0.0538 0.0726	0.0609	0.0597	0.0657	0.0647	Ave		0.0629				10.1		20.0			
DCB Decachlorobiphenyl (Surr)	0.7312 0.9102	0.7404	0.7652	0.8541	0.8210	Ave		0.8037				8.8		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 12:58 Calibration End Date: 08/03/2016 14:51 Calibration ID: 11265

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/8	VICL648.D
Level 2	IC 160-263102/9	VICL649.D
Level 3	IC 160-263102/10	VICL650.D
Level 4	IC 160-263102/11	VICL651.D
Level 5	IC 160-263102/12	VICL652.D
Level 6	IC 160-263102/13	VICL653.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
PCB-1221 Peak 1	BNB	Ave	12488781 511974804	28981526	63532727	143271138	269739988	101 4032	202	504	1008	2016
PCB-1221 Peak 2	BNB	Ave	7720453 290095045	17145330	36250965	81045158	145935624	101 4032	202	504	1008	2016
PCB-1221 Peak 3	BNB	Ave	30648652 1232142619	71150956	154662472	348677611	634880378	101 4032	202	504	1008	2016
PCB-1254 Peak 1	BNB	Ave	37699574 1867288765	86992397	199228938	465670449	911318319	101 4032	202	504	1008	2016
PCB-1254 Peak 2	BNB	Ave	46663404 2582113802	107741935	250881510	603909501	1184573672	101 4032	202	504	1008	2016
PCB-1254 Peak 3	BNB	Ave	84773845 4045694882	172918332	364691960	891778310	1723355890	101 4032	202	504	1008	2016
PCB-1254 Peak 4	BNB	Ave	55039130 2633714475	124399195	285148603	662719112	1261439103	101 4032	202	504	1008	2016
PCB-1254 Peak 5	BNB	Ave	73046254 3978274436	169141015	400048309	954220192	1807434773	101 4032	202	504	1008	2016
DCB Decachlorobiphenyl (Surr)	BNB	Ave	49266370 2474657673	102038913	254226091	615692451	1137802259	5.00 200	10.0	25.0	50.0	100

Curve Type Legend:
Ave = Average ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL648.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 03-Aug-2016 12:58:59 ALS Bottle#: 8 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-008
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:38 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.093	0.000	679208283	50.4	50.4	
2	3.895	3.895	0.000	322520591	50.4	50.4	
2 PCB-1221							
1	5.015	5.014	0.001	12488781	100.8	95.9	
1	5.285	5.284	0.001	7720453	100.8	103.0	
1	5.355	5.355	0.000	30648652	100.8	97.1	
2	6.359	6.358	0.001	9802800	100.8	109.0	
2	6.617	6.616	0.001	5105225	100.8	99.4	
2	6.722	6.721	0.001	19266645	100.8	97.9	
						RPD = 3.42	
8 PCB-1254							
1	8.207	8.207	0.000	37699574	100.8	89.5	
1	8.607	8.607	0.000	46663404	100.8	86.0	
1	9.182	9.179	0.003	84773845	100.8	100.4	
1	9.858	9.855	0.003	55039130	100.8	91.9	
1	10.242	10.237	0.005	73046254	100.8	86.2	
2	9.774	9.771	0.003	41740324	100.8	111.9	
2	10.064	10.063	0.001	34539499	100.8	94.7	
2	10.677	10.676	0.001	50641924	100.8	91.6	
2	11.365	11.364	0.001	26243791	100.8	91.3	
2	11.579	11.578	0.001	43625767	100.8	89.5	
						RPD = 5.39	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	49266370	5.00	6.35	
2	13.752	13.752	0.000	24229455	5.00	5.79	
						RPD = 9.17	
S 7 Polychlorinated biphenyls, Total							
1						189.5	
2						198.0	
						RPD = 4.37	

Reagents:

1221/1254Cal2_00002 Amount Added: 20.00 Units: uL

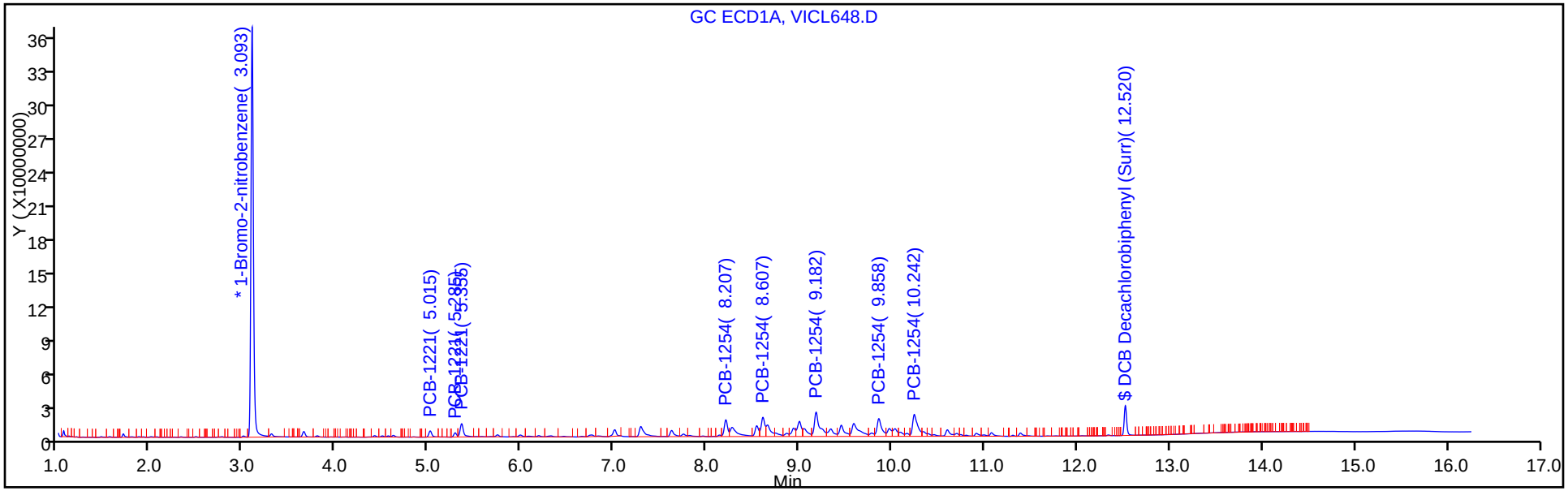
Report Date: 04-Aug-2016 08:44:38 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

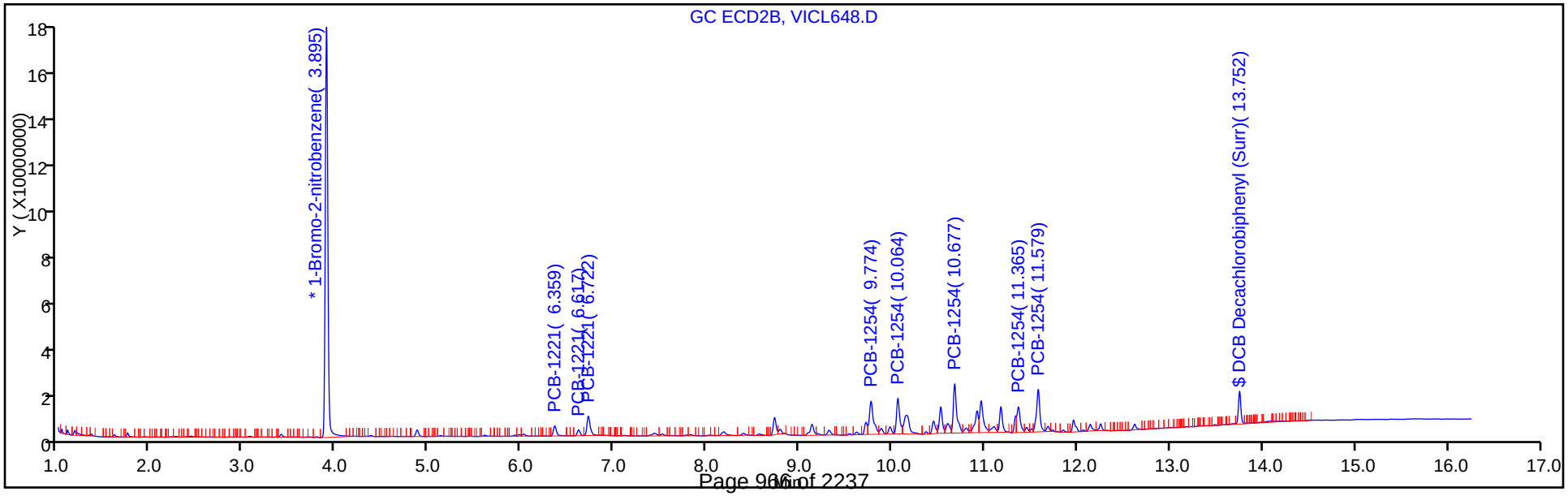
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL648.D

Injection Date:	03-Aug-2016 12:58:59	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	8
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	8
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL649.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 03-Aug-2016 13:21:30 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-009
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:41 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:44:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.092	3.093	-0.001	694552001	50.4	50.4	
2	3.896	3.895	0.000	329047922	50.4	50.4	
2 PCB-1221							
1	5.015	5.014	0.001	28981526	201.6	217.7	
1	5.284	5.284	0.000	17145330	201.6	223.8	
1	5.354	5.355	-0.001	71150956	201.6	220.6	
2	6.359	6.358	0.001	21199766	201.6	231.1	
2	6.616	6.616	0.000	12292060	201.6	234.7	
2	6.721	6.721	0.000	47083436	201.6	234.6	
						RPD = 5.63	
8 PCB-1254							M
1	8.207	8.207	0.000	86992397	201.6	202.0	M
1	8.607	8.607	0.000	107741935	201.6	194.1	M
1	9.180	9.179	0.001	172918332	201.6	200.3	M
1	9.859	9.855	0.004	124399195	201.6	203.1	M
1	10.240	10.237	0.003	169141015	201.6	195.2	M
2	9.772	9.771	0.001	86168906	201.6	226.5	
2	10.062	10.063	-0.001	79171630	201.6	212.8	
2	10.676	10.676	0.000	115883901	201.6	205.5	
2	11.364	11.364	0.000	56232133	201.6	191.8	
2	11.579	11.578	0.001	96784735	201.6	194.7	
						RPD = 3.61	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	102038913	10.0	10.9	
2	13.751	13.752	-0.001	51961669	10.0	11.1	
						RPD = 2.11	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags

S 7 Polychlorinated biphenyls, Total

1	419.6
2	439.7
	RPD = 4.68

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

1221/1254Cal3_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:41 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL649.D

Injection Date: 03-Aug-2016 13:21:30 Instrument ID: SGCV Operator ID: GLB

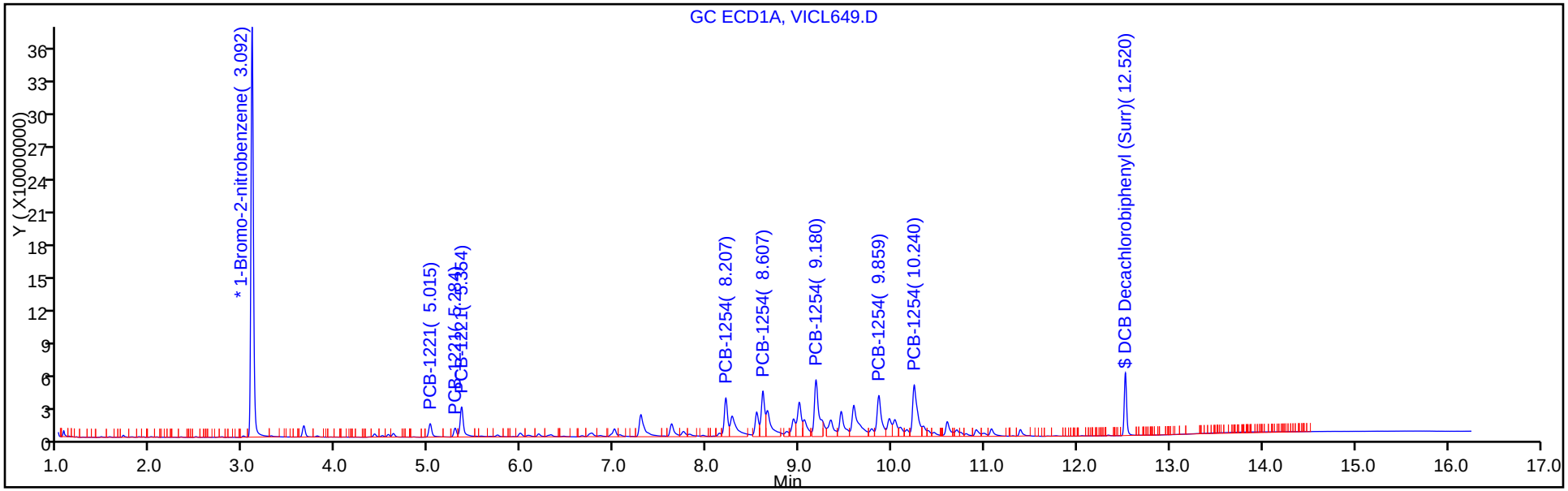
Lims ID: IC Worklist Smp#: 9

Client ID:

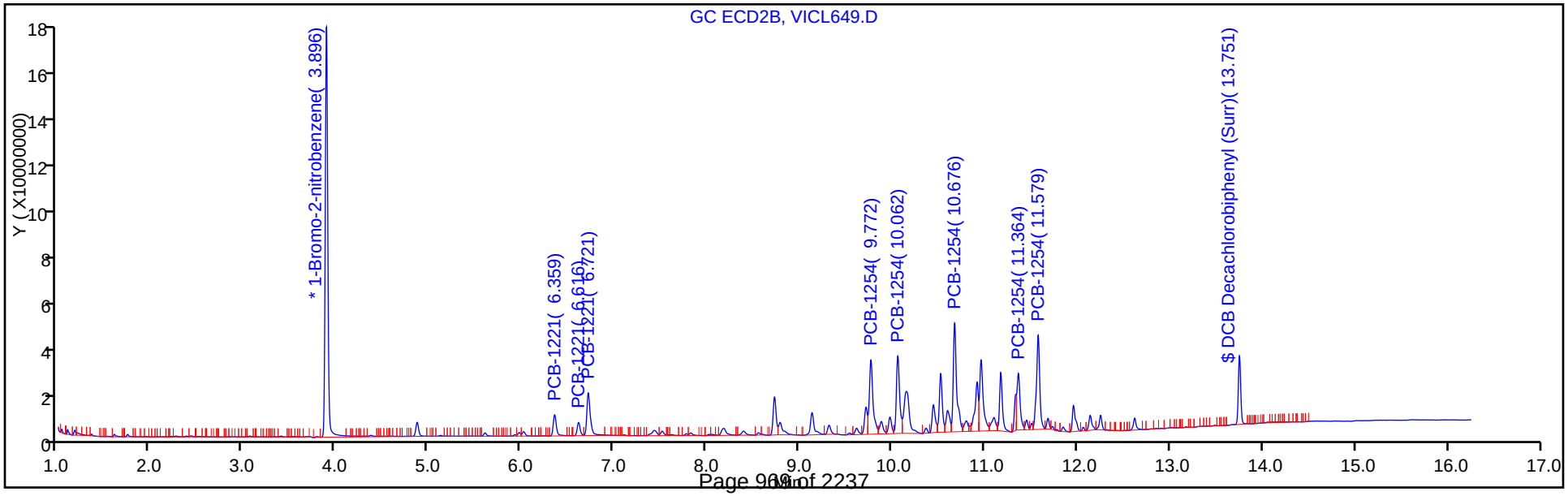
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 9

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1

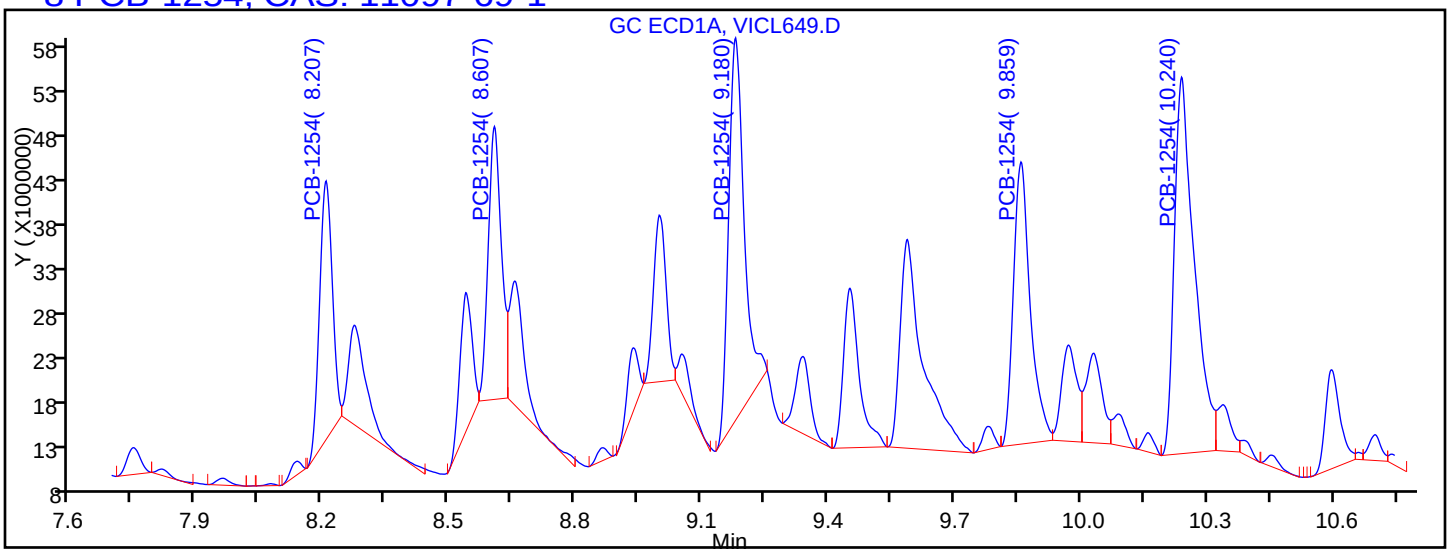


Report Date: 04-Aug-2016 08:44:41 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

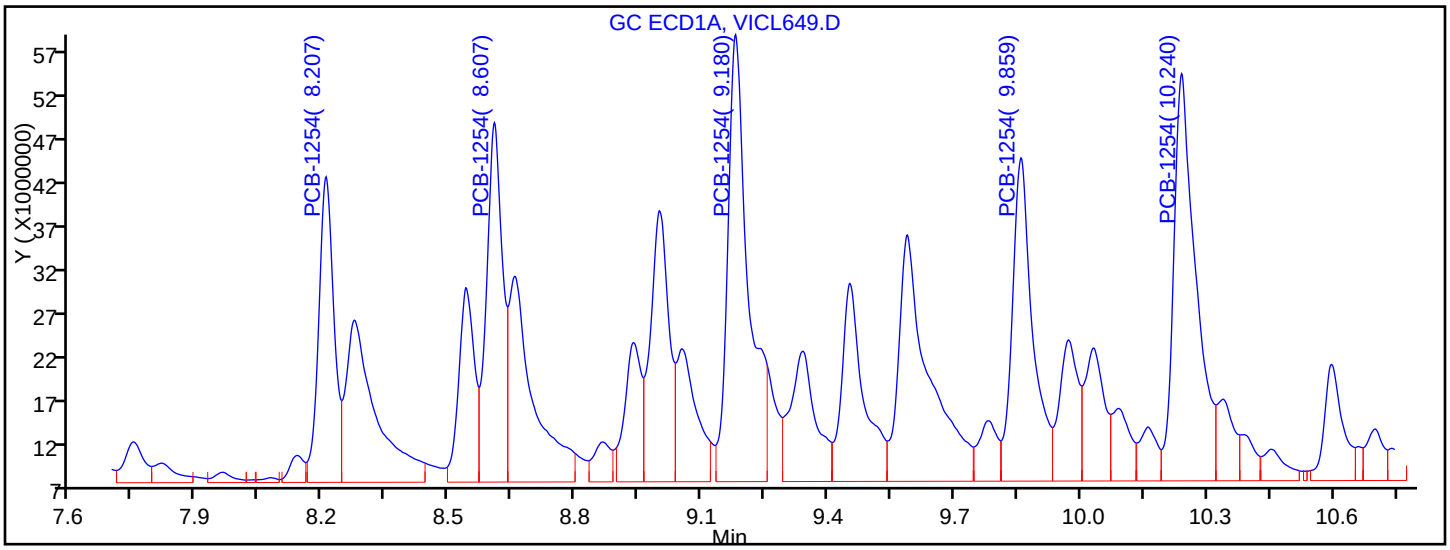
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL649.D
Injection Date: 03-Aug-2016 13:21:30 Instrument ID: SGCV
Lims ID: IC
Client ID:
Operator ID: GLB ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS
Column: RTX-CLP Pesticides (0.53 mm) Detector GC ECD1A

8 PCB-1254, CAS: 11097-69-1



Processing Integration Results

RT = 8.207	Response = 61507507	M
RT = 8.607	Response = 66921950	M
RT = 9.180	Response = 109818778	M
RT = 9.859	Response = 88498474	M
RT = 10.240	Response = 139487294	M



Manual Integration Results

RT = 8.207	Response = 86992397	M
RT = 8.607	Response = 107741935	M
RT = 9.180	Response = 172918332	M
RT = 9.859	Response = 124399195	M
RT = 10.240	Response = 169141015	M

Reviewer: bonkoskig, 04-Aug-2016 07:44:20
Audit Action: Assigned New Baseline Audit Reason: Baseline Smoothing

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL650.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 03-Aug-2016 13:44:02 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-1010
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:43 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:43:00

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.093	-0.001	669782499	50.4	50.4	
2	3.895	3.895	-0.001	315091195	50.4	50.4	
2 PCB-1221							
1	5.014	5.014	0.000	63532727	504.0	494.9	
1	5.283	5.284	-0.001	36250965	504.0	490.6	
1	5.354	5.355	-0.001	154662472	504.0	497.1	
2	6.357	6.358	-0.001	45107629	504.0	513.5	
2	6.615	6.616	-0.001	26902697	504.0	536.3	
2	6.720	6.721	-0.001	105567244	504.0	549.3	
						RPD = 7.56	
8 PCB-1254							
1	8.206	8.207	-0.001	199228938	504.0	479.6	
1	8.606	8.607	-0.001	250881510	504.0	468.7	
1	9.179	9.179	0.000	364691960	504.0	438.0	
1	9.858	9.855	0.003	285148603	504.0	482.8	
1	10.239	10.237	0.002	400048309	504.0	478.7	
2	9.773	9.771	0.002	169202604	504.0	464.4	
2	10.063	10.063	0.000	167083542	504.0	469.0	
2	10.677	10.676	0.001	270116450	504.0	500.2	
2	11.363	11.364	-0.001	139230809	504.0	495.8	
2	11.578	11.578	0.000	237332410	504.0	498.6	
						RPD = 3.36	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.519	12.520	-0.001	254226091	25.0	24.3	
2	13.752	13.752	0.000	125596513	25.0	25.6	
						RPD = 5.38	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags

S 7 Polychlorinated biphenyls, Total

1		963.8
2		1018.7
		RPD = 5.54

Reagents:

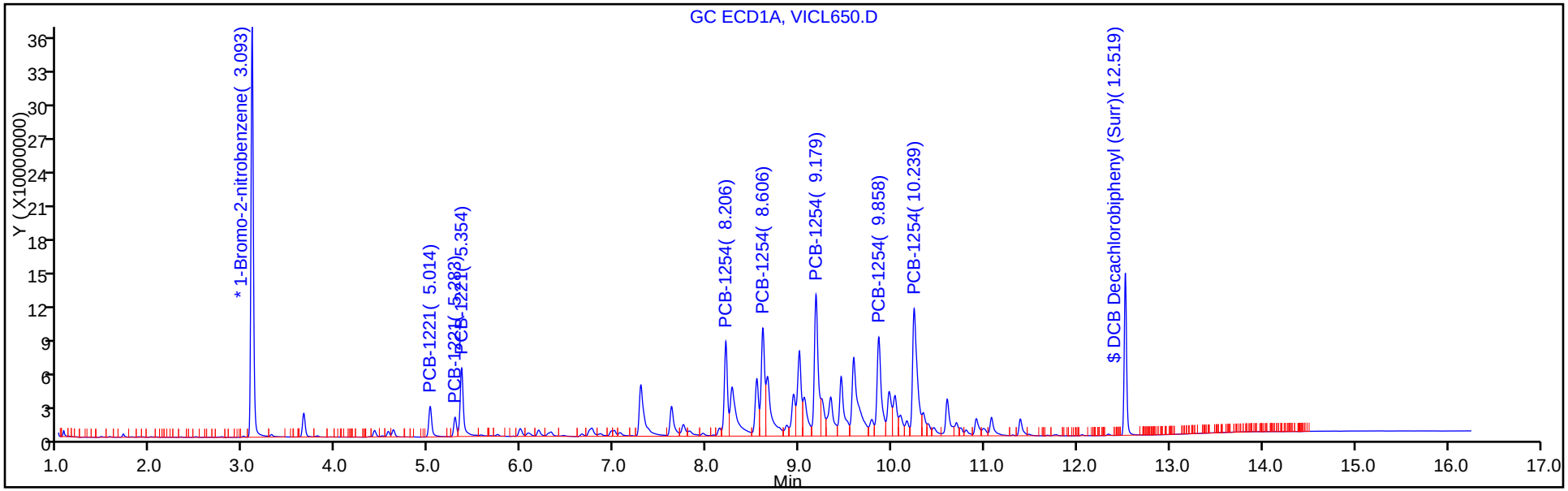
1221/1254Cal4_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

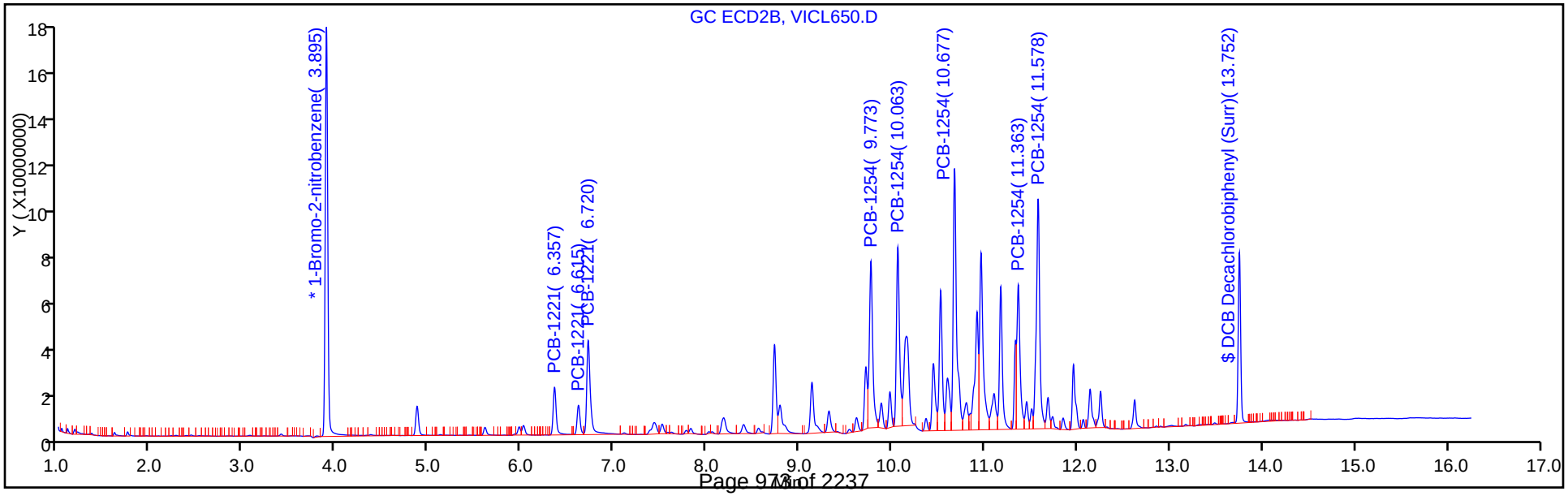
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL650.D				
Injection Date:	03-Aug-2016 13:44:02	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	10
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	10
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL651.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Aug-2016 14:06:33 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-011
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:46 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:32:47

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	726618601	50.4	50.4	
2	3.896	3.896	0.000	347420117	50.4	50.4	
2 PCB-1221							
1	5.014	5.014	0.000	143271138	1008.0	1028.7	
1	5.284	5.284	0.000	81045158	1008.0	1011.1	
1	5.355	5.355	0.000	348677611	1008.0	1033.1	
2	6.358	6.358	0.000	93947447	1008.0	970.0	
2	6.616	6.616	0.000	53613679	1008.0	969.4	
2	6.721	6.721	0.000	204234160	1008.0	963.8	
						RPD = 5.68	
8 PCB-1254							
1	8.207	8.207	0.000	465670449	1008.0	1033.4	
1	8.607	8.607	0.000	603909501	1008.0	1040.1	
1	9.179	9.179	0.000	891778310	1008.0	987.2	
1	9.855	9.855	0.000	662719112	1008.0	1034.3	
1	10.237	10.237	0.000	954220192	1008.0	1052.5	
2	9.771	9.771	0.000	396703858	1008.0	987.5	
2	10.063	10.063	0.000	410580752	1008.0	1045.3	
2	10.676	10.676	0.000	619985412	1008.0	1041.1	
2	11.364	11.364	0.000	335255350	1008.0	1082.8	
2	11.578	11.578	0.000	564647905	1008.0	1075.8	
						RPD = 1.64	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	615692451	50.0	52.3	
2	13.751	13.751	0.000	296937250	50.0	52.0	
						RPD = 0.67	

Report Date: 04-Aug-2016 08:44:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL651.D

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags

S 7 Polychlorinated biphenyls, Total

1	2053.8
2	2014.3
	RPD = 1.94

Reagents:

1221/1254Cal5_00002 Amount Added: 20.00 Units: uL

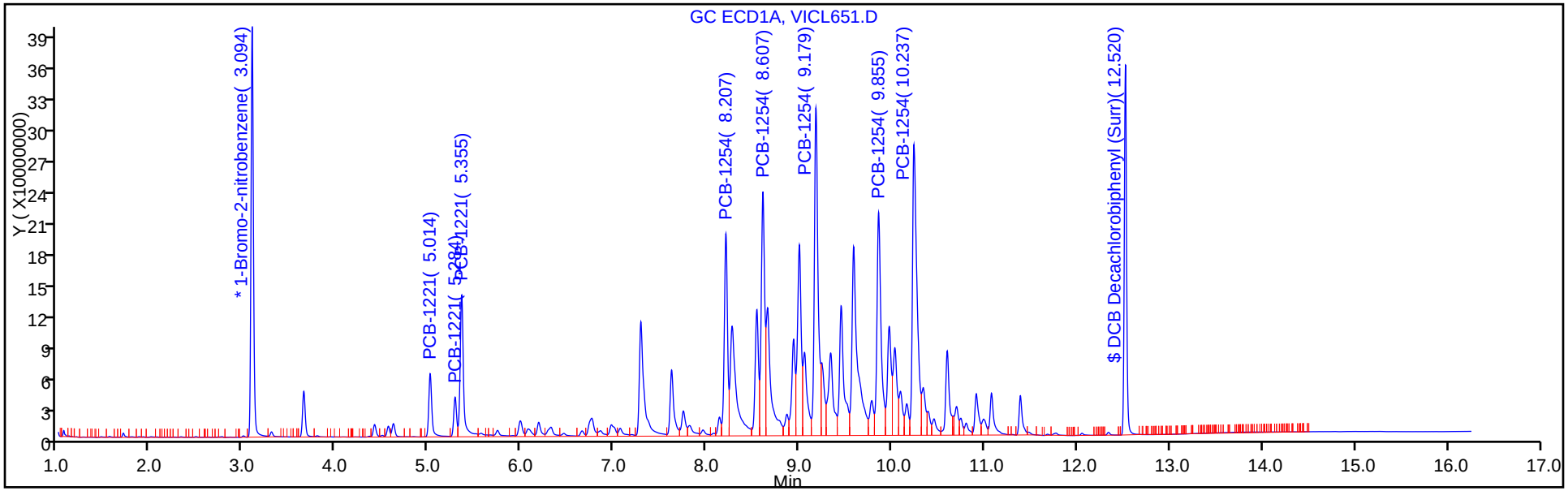
Report Date: 04-Aug-2016 08:44:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

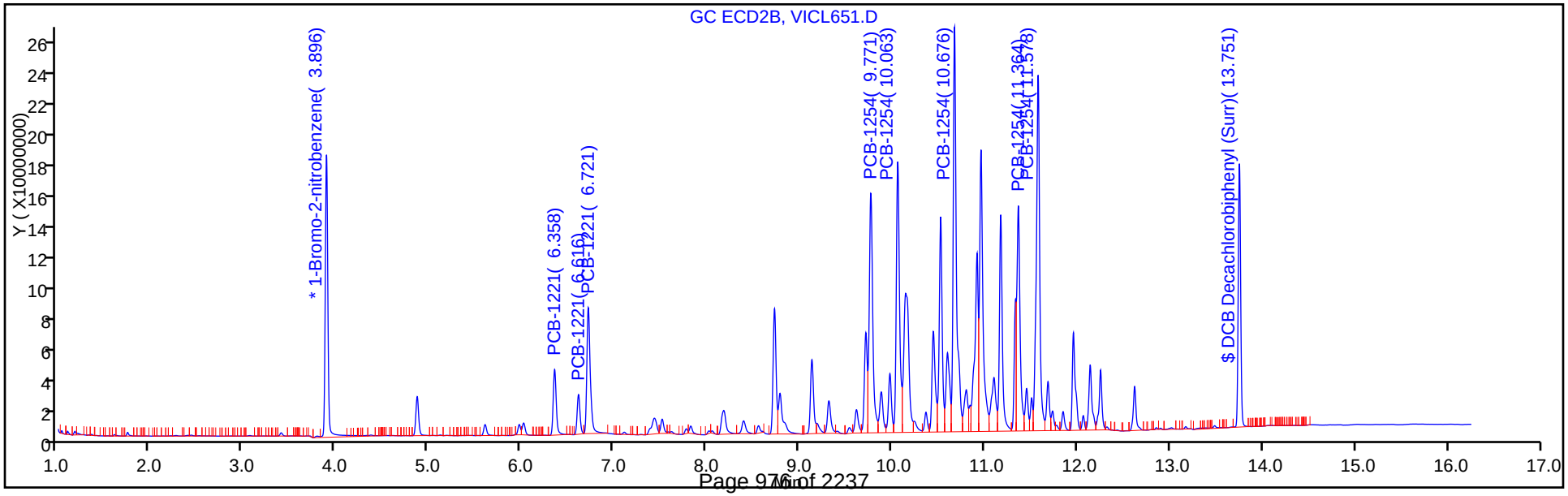
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL651.D

Injection Date:	03-Aug-2016 14:06:33	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	11
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL652.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 03-Aug-2016 14:29:05 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-012
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:48 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	698500595	50.4	50.4	
2	3.895	3.896	-0.001	334004353	50.4	50.4	
2 PCB-1221							
1	5.015	5.014	0.001	269739988	2016.0	2014.7	
1	5.283	5.284	-0.001	145935624	2016.0	1893.9	
1	5.355	5.355	0.000	634880378	2016.0	1956.9	
2	6.359	6.358	0.001	171856633	2016.0	1845.7	
2	6.615	6.616	-0.001	99061147	2016.0	1863.0	
2	6.722	6.721	0.001	375165796	2016.0	1841.6	
						RPD = 5.52	
8 PCB-1254							
1	8.206	8.207	-0.001	911318319	2016.0	2103.8	
1	8.608	8.607	0.001	1184573672	2016.0	2122.2	
1	9.180	9.179	0.001	1723355890	2016.0	1984.5	
1	9.858	9.855	0.003	1261439103	2016.0	2047.9	
1	10.240	10.237	0.003	1807434773	2016.0	2073.8	
2	9.774	9.771	0.003	730594353	2016.0	1891.7	
2	10.064	10.063	0.001	762817637	2016.0	2020.1	
2	10.675	10.676	-0.001	1152963345	2016.0	2014.0	
2	11.364	11.364	0.000	603993213	2016.0	2029.2	
2	11.579	11.578	0.001	1035826689	2016.0	2052.8	
						RPD = 3.19	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.520	0.001	1137802259	100.0	101.1	
2	13.752	13.751	0.001	528691381	100.0	97.7	
						RPD = 3.44	
S 7 Polychlorinated biphenyls, Total							
1						4021.6	
2						3851.7	
						RPD = 4.32	

Reagents:

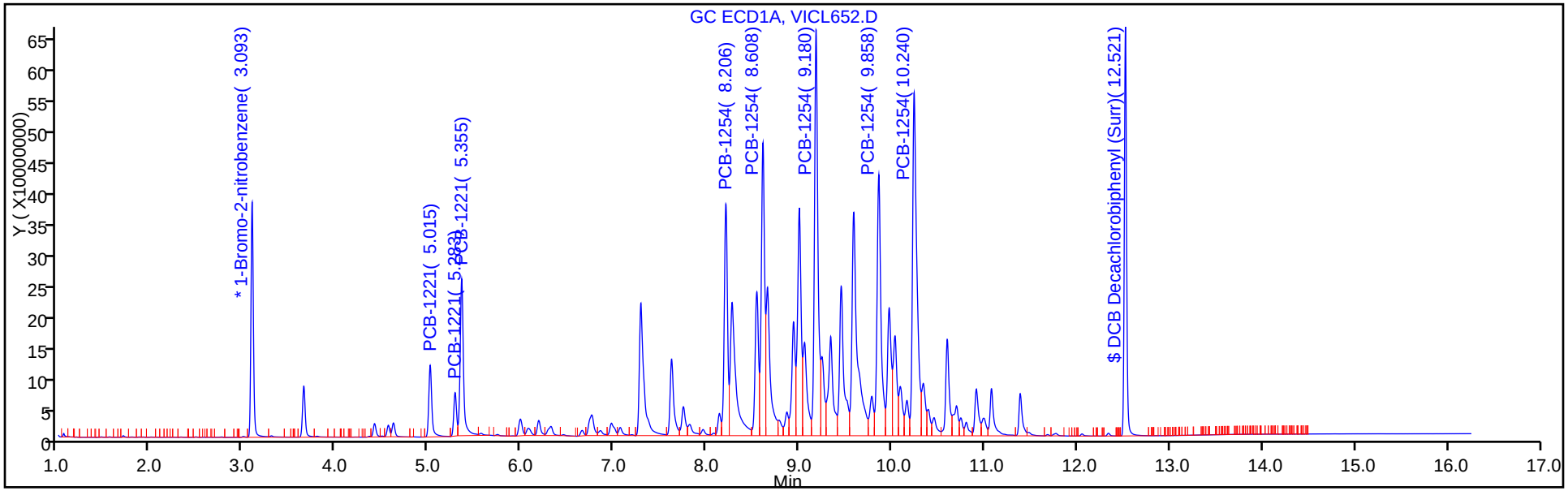
1221/1254Cal6_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:49 Chrom Revision: 2.2 20-Apr-2016 13:59:46

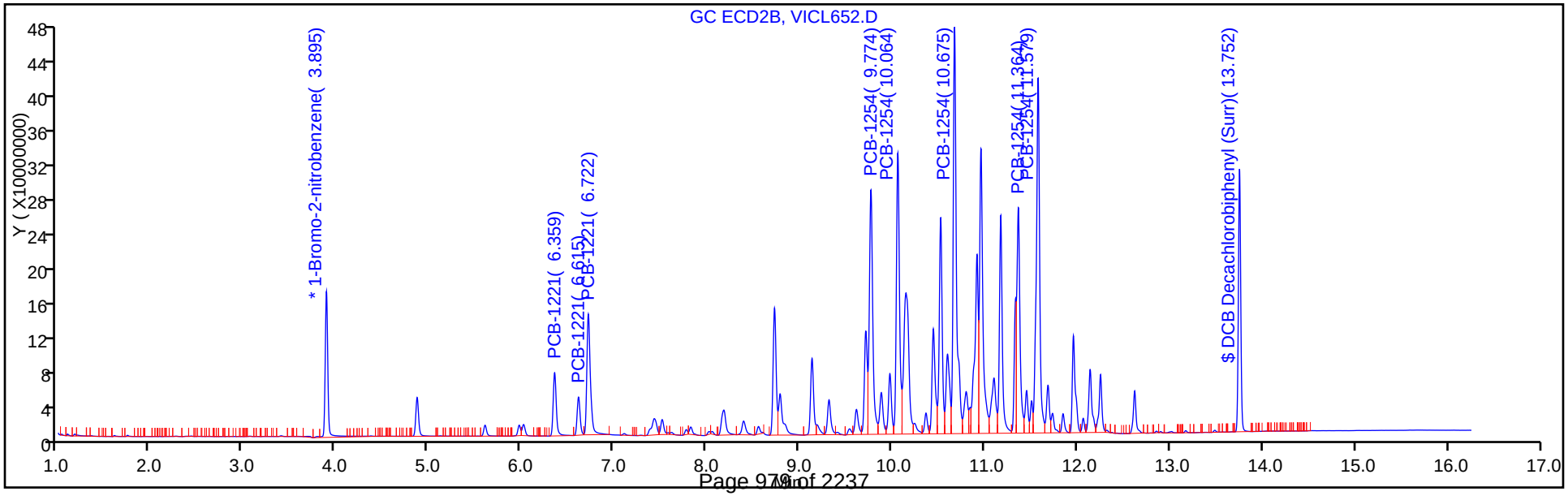
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL652.D				
Injection Date:	03-Aug-2016 14:29:05	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	12
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	12
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL653.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 03-Aug-2016 14:51:37 ALS Bottle#: 13 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-013
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:51 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	685167803	50.4	50.4	
2	3.895	3.896	-0.001	322855547	50.4	50.4	
2 PCB-1221							
1	5.016	5.014	0.002	511974804	4032.0	3898.3	
1	5.285	5.284	0.001	290095045	4032.0	3838.0	
1	5.355	5.355	0.000	1232142619	4032.0	3871.7	
2	6.359	6.358	0.001	317584071	4032.0	3528.6	
2	6.617	6.616	0.001	186428113	4032.0	3627.2	
2	6.722	6.721	0.001	718729772	4032.0	3649.8	
						RPD = 7.16	
8 PCB-1254							
1	8.208	8.207	0.001	1867288765	4032.0	4394.5	
1	8.608	8.607	0.001	2582113802	4032.0	4716.0	
1	9.183	9.179	0.004	4045694882	4032.0	4749.5	
1	9.860	9.855	0.005	2633714475	4032.0	4359.0	
1	10.241	10.237	0.004	3978274436	4032.0	4653.5	
2	9.774	9.771	0.003	1394968747	4032.0	3736.7	
2	10.064	10.063	0.001	1523207284	4032.0	4173.0	
2	10.677	10.676	0.001	2337748070	4032.0	4224.5	
2	11.364	11.364	0.000	1250930087	4032.0	4347.8	
2	11.579	11.578	0.001	2106861595	4032.0	4319.5	
						RPD = 9.48	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.520	0.001	2474657673	200.0	226.5	
2	13.752	13.751	0.001	1055552607	200.0	204.3	
						RPD = 10.32	
S 7 Polychlorinated biphenyls, Total							
1						8443.8	
2						7762.2	
						RPD = 8.41	

Reagents:

1221/1254Cal7_00002 Amount Added: 20.00 Units: uL

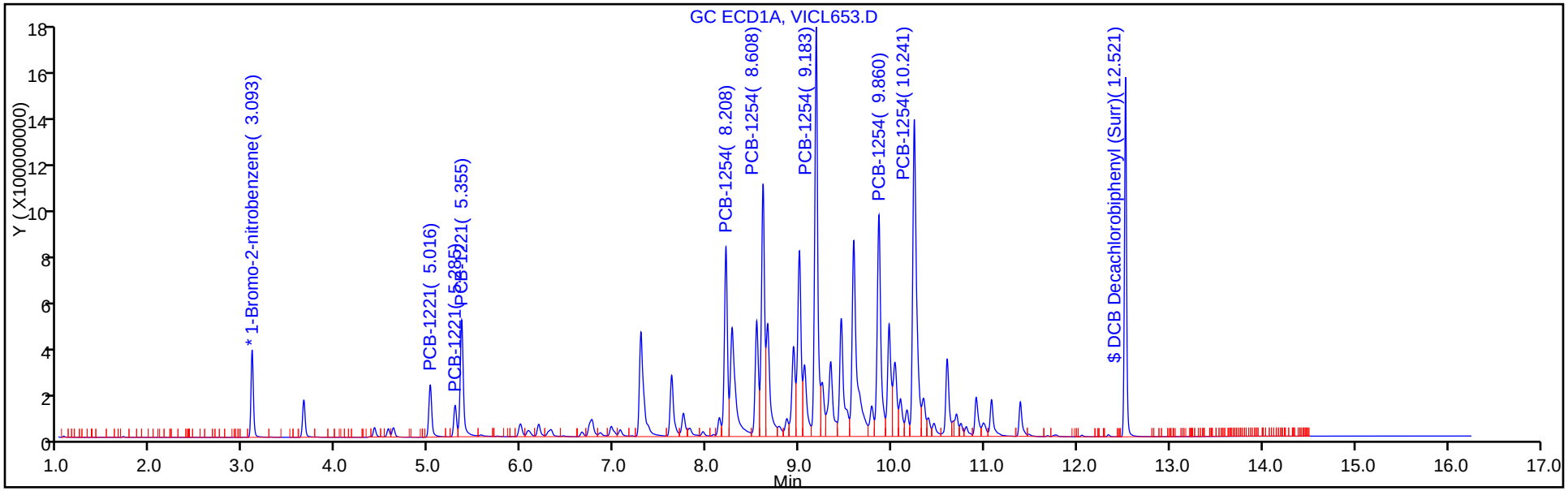
Report Date: 04-Aug-2016 08:44:51 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

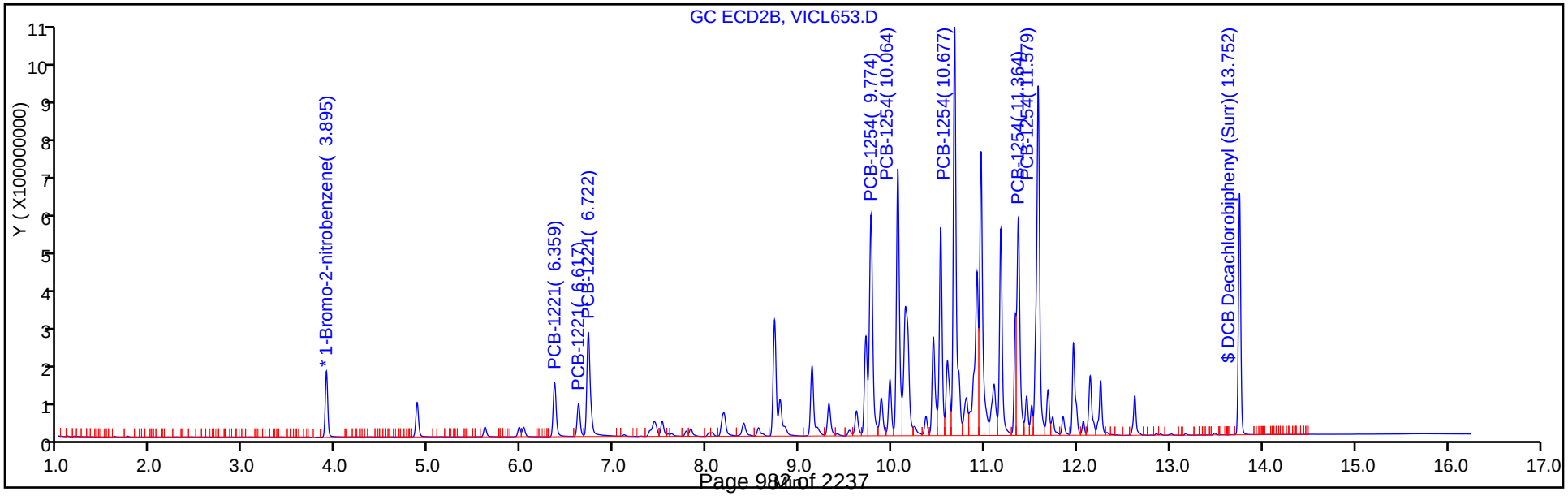
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL653.D

Injection Date:	03-Aug-2016 14:51:37	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	13
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	13
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 12:58 Calibration End Date: 08/03/2016 14:51 Calibration ID: 11266

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/8	VICL648.D
Level 2	IC 160-263102/9	VICL649.D
Level 3	IC 160-263102/10	VICL650.D
Level 4	IC 160-263102/11	VICL651.D
Level 5	IC 160-263102/12	VICL652.D
Level 6	IC 160-263102/13	VICL653.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
PCB-1221 Peak 1	0.0152 0.0123	0.0161	0.0143	0.0135	0.0129	Ave		0.0140				10.3		20.0			
PCB-1221 Peak 2	0.0079 0.0072	0.0093	0.0085	0.0077	0.0074	Ave		0.0080				9.8		20.0			
PCB-1221 Peak 3	0.0299 0.0278	0.0358	0.0335	0.0294	0.0281	Ave		0.0307				10.4		20.0			
PCB-1254 Peak 1	0.0647 0.0540	0.0655	0.0537	0.0571	0.0547	Ave		0.0583				9.3		20.0			
PCB-1254 Peak 2	0.0535 0.0590	0.0602	0.0530	0.0591	0.0571	Ave		0.0570				5.3		20.0			
PCB-1254 Peak 3	0.0785 0.0905	0.0880	0.0857	0.0892	0.0863	Ave		0.0864				4.9		20.0			
PCB-1254 Peak 4	0.0407 0.0484	0.0427	0.0442	0.0482	0.0452	Ave		0.0449				6.8		20.0			
PCB-1254 Peak 5	0.0676 0.0816	0.0735	0.0753	0.0813	0.0775	Ave		0.0761				6.9		20.0			
DCB Decachlorobiphenyl (Surr)	0.7573 0.8239	0.7959	0.8036	0.8615	0.7978	Ave		0.8067				4.3		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 12:58 Calibration End Date: 08/03/2016 14:51 Calibration ID: 11266

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/8	VICL648.D
Level 2	IC 160-263102/9	VICL649.D
Level 3	IC 160-263102/10	VICL650.D
Level 4	IC 160-263102/11	VICL651.D
Level 5	IC 160-263102/12	VICL652.D
Level 6	IC 160-263102/13	VICL653.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
PCB-1221 Peak 1	BNB	Ave	9802800 317584071	21199766	45107629	93947447	171856633	101 4032	202	504	1008	2016
PCB-1221 Peak 2	BNB	Ave	5105225 186428113	12292060	26902697	53613679	99061147	101 4032	202	504	1008	2016
PCB-1221 Peak 3	BNB	Ave	19266645 718729772	47083436	105567244	204234160	375165796	101 4032	202	504	1008	2016
PCB-1254 Peak 1	BNB	Ave	41740324 1394968747	86168906	169202604	396703858	730594353	101 4032	202	504	1008	2016
PCB-1254 Peak 2	BNB	Ave	34539499 1523207284	79171630	167083542	410580752	762817637	101 4032	202	504	1008	2016
PCB-1254 Peak 3	BNB	Ave	50641924 2337748070	115883901	270116450	619985412	1152963345	101 4032	202	504	1008	2016
PCB-1254 Peak 4	BNB	Ave	26243791 1250930087	56232133	139230809	335255350	603993213	101 4032	202	504	1008	2016
PCB-1254 Peak 5	BNB	Ave	43625767 2106861595	96784735	237332410	564647905	1035826689	101 4032	202	504	1008	2016
DCB Decachlorobiphenyl (Surr)	BNB	Ave	24229455 1055552607	51961669	125596513	296937250	528691381	5.00 200	10.0	25.0	50.0	100

Curve Type Legend:
Ave = Average ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL648.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 03-Aug-2016 12:58:59 ALS Bottle#: 8 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-008
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:38 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.093	0.000	679208283	50.4	50.4	
2	3.895	3.895	0.000	322520591	50.4	50.4	
2 PCB-1221							
1	5.015	5.014	0.001	12488781	100.8	95.9	
1	5.285	5.284	0.001	7720453	100.8	103.0	
1	5.355	5.355	0.000	30648652	100.8	97.1	
2	6.359	6.358	0.001	9802800	100.8	109.0	
2	6.617	6.616	0.001	5105225	100.8	99.4	
2	6.722	6.721	0.001	19266645	100.8	97.9	
						RPD = 3.42	
8 PCB-1254							
1	8.207	8.207	0.000	37699574	100.8	89.5	
1	8.607	8.607	0.000	46663404	100.8	86.0	
1	9.182	9.179	0.003	84773845	100.8	100.4	
1	9.858	9.855	0.003	55039130	100.8	91.9	
1	10.242	10.237	0.005	73046254	100.8	86.2	
2	9.774	9.771	0.003	41740324	100.8	111.9	
2	10.064	10.063	0.001	34539499	100.8	94.7	
2	10.677	10.676	0.001	50641924	100.8	91.6	
2	11.365	11.364	0.001	26243791	100.8	91.3	
2	11.579	11.578	0.001	43625767	100.8	89.5	
						RPD = 5.39	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	49266370	5.00	6.35	
2	13.752	13.752	0.000	24229455	5.00	5.79	
						RPD = 9.17	
S 7 Polychlorinated biphenyls, Total							
1						189.5	
2						198.0	
						RPD = 4.37	

Reagents:

1221/1254Cal2_00002 Amount Added: 20.00 Units: uL

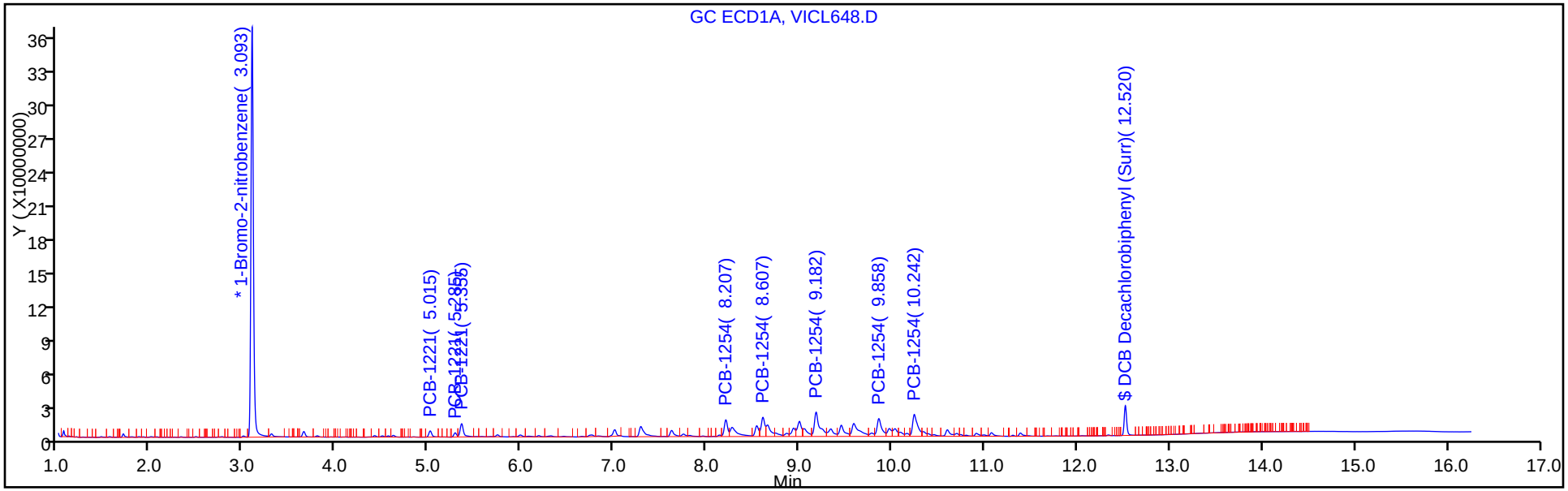
Report Date: 04-Aug-2016 08:44:39 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

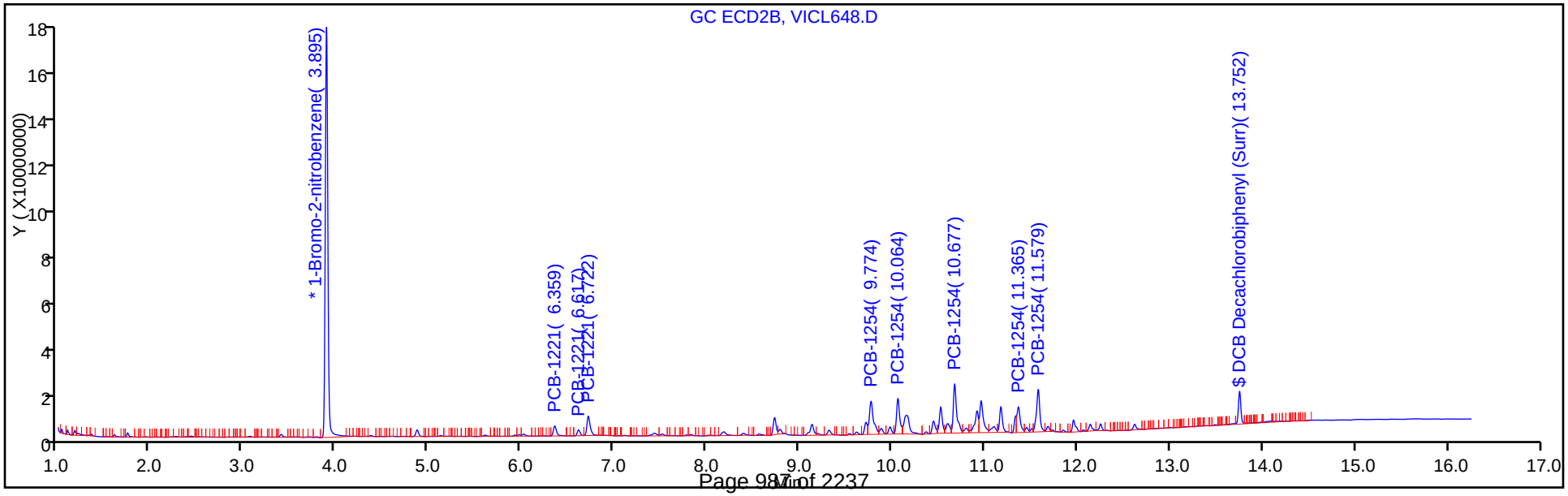
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL648.D

Injection Date:	03-Aug-2016 12:58:59	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	8
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	8
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL649.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 03-Aug-2016 13:21:30 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-009
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:41 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:44:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.092	3.093	-0.001	694552001	50.4	50.4	
2	3.896	3.895	0.000	329047922	50.4	50.4	
2 PCB-1221							
1	5.015	5.014	0.001	28981526	201.6	217.7	
1	5.284	5.284	0.000	17145330	201.6	223.8	
1	5.354	5.355	-0.001	71150956	201.6	220.6	
2	6.359	6.358	0.001	21199766	201.6	231.1	
2	6.616	6.616	0.000	12292060	201.6	234.7	
2	6.721	6.721	0.000	47083436	201.6	234.6	
						RPD = 5.63	
8 PCB-1254							M
1	8.207	8.207	0.000	86992397	201.6	202.0	M
1	8.607	8.607	0.000	107741935	201.6	194.1	M
1	9.180	9.179	0.001	172918332	201.6	200.3	M
1	9.859	9.855	0.004	124399195	201.6	203.1	M
1	10.240	10.237	0.003	169141015	201.6	195.2	M
2	9.772	9.771	0.001	86168906	201.6	226.5	
2	10.062	10.063	-0.001	79171630	201.6	212.8	
2	10.676	10.676	0.000	115883901	201.6	205.5	
2	11.364	11.364	0.000	56232133	201.6	191.8	
2	11.579	11.578	0.001	96784735	201.6	194.7	
						RPD = 3.61	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	102038913	10.0	10.9	
2	13.751	13.752	-0.001	51961669	10.0	11.1	
						RPD = 2.11	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
S 7 Polychlorinated biphenyls, Total							
1						419.6	
2						439.7	
						RPD = 4.68	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

1221/1254Cal3_00002 Amount Added: 20.00 Units: uL

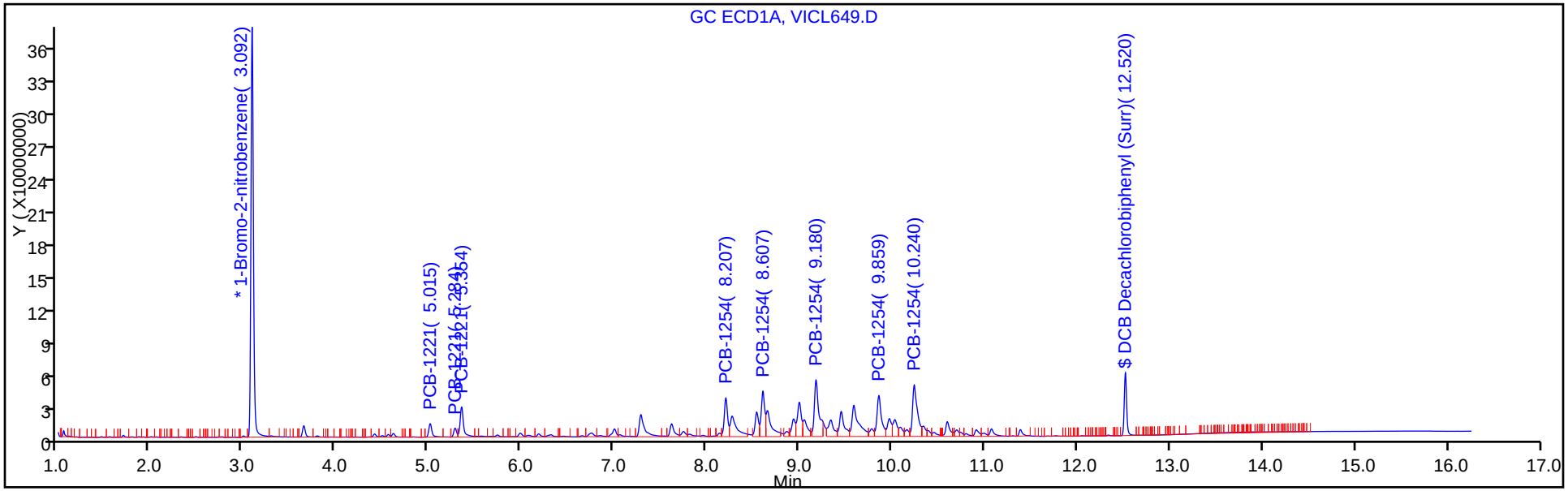
Report Date: 04-Aug-2016 08:44:41 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

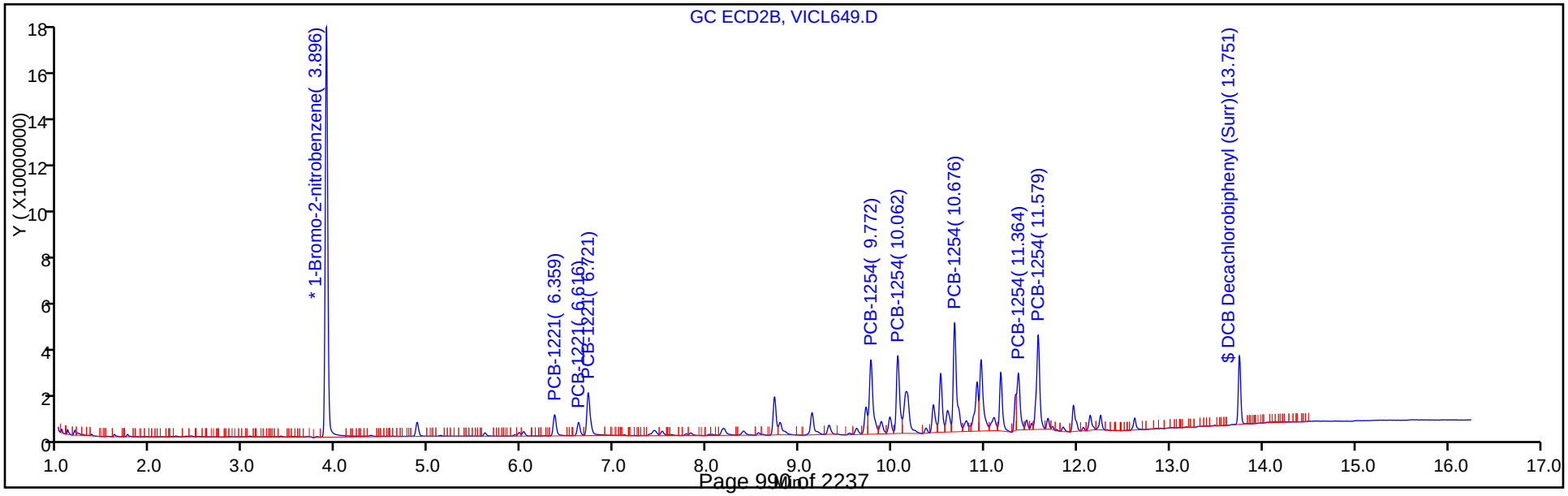
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL649.D

Injection Date:	03-Aug-2016 13:21:30	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	9
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	9
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL650.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 03-Aug-2016 13:44:02 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-1010
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:43 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:43:00

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.093	-0.001	669782499	50.4	50.4	
2	3.895	3.895	-0.001	315091195	50.4	50.4	
2 PCB-1221							
1	5.014	5.014	0.000	63532727	504.0	494.9	
1	5.283	5.284	-0.001	36250965	504.0	490.6	
1	5.354	5.355	-0.001	154662472	504.0	497.1	
2	6.357	6.358	-0.001	45107629	504.0	513.5	
2	6.615	6.616	-0.001	26902697	504.0	536.3	
2	6.720	6.721	-0.001	105567244	504.0	549.3	
						RPD = 7.56	
8 PCB-1254							
1	8.206	8.207	-0.001	199228938	504.0	479.6	
1	8.606	8.607	-0.001	250881510	504.0	468.7	
1	9.179	9.179	0.000	364691960	504.0	438.0	
1	9.858	9.855	0.003	285148603	504.0	482.8	
1	10.239	10.237	0.002	400048309	504.0	478.7	
2	9.773	9.771	0.002	169202604	504.0	464.4	
2	10.063	10.063	0.000	167083542	504.0	469.0	
2	10.677	10.676	0.001	270116450	504.0	500.2	
2	11.363	11.364	-0.001	139230809	504.0	495.8	
2	11.578	11.578	0.000	237332410	504.0	498.6	
						RPD = 3.36	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.519	12.520	-0.001	254226091	25.0	24.3	
2	13.752	13.752	0.000	125596513	25.0	25.6	
						RPD = 5.38	

Report Date: 04-Aug-2016 08:44:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL650.D

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags

S 7 Polychlorinated biphenyls, Total

1						963.8	
2						1018.7	
						RPD = 5.54	

Reagents:

1221/1254Cal4_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL650.D

Injection Date: 03-Aug-2016 13:44:02 Instrument ID: SGCV Operator ID: GLB

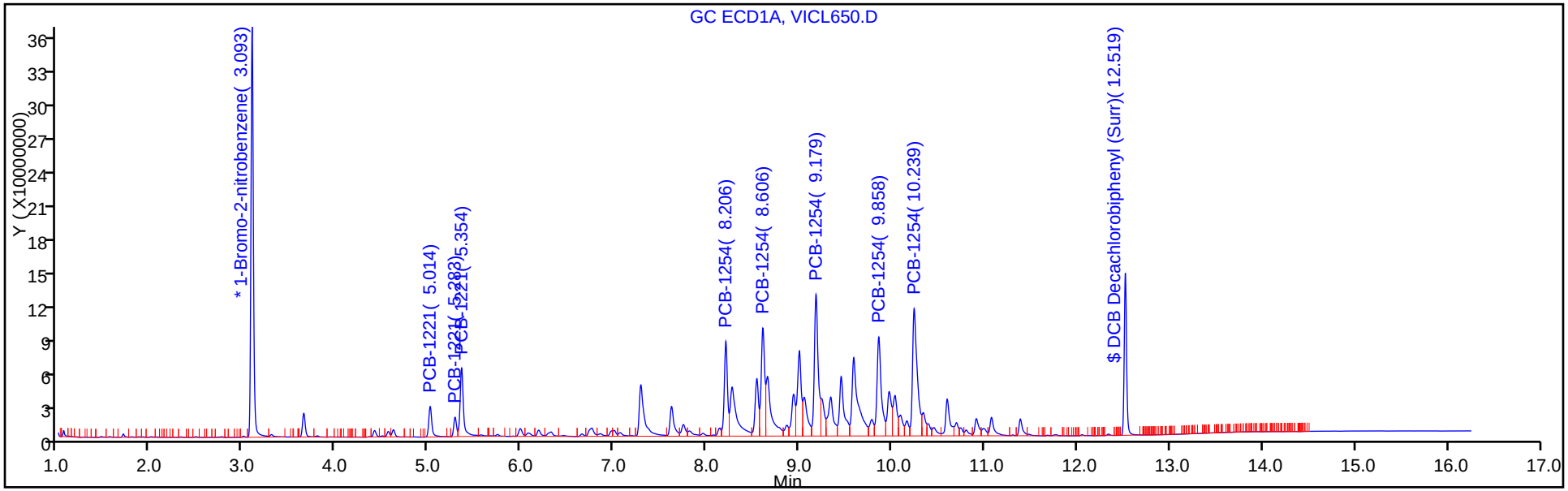
Lims ID: IC Worklist Smp#: 10

Client ID:

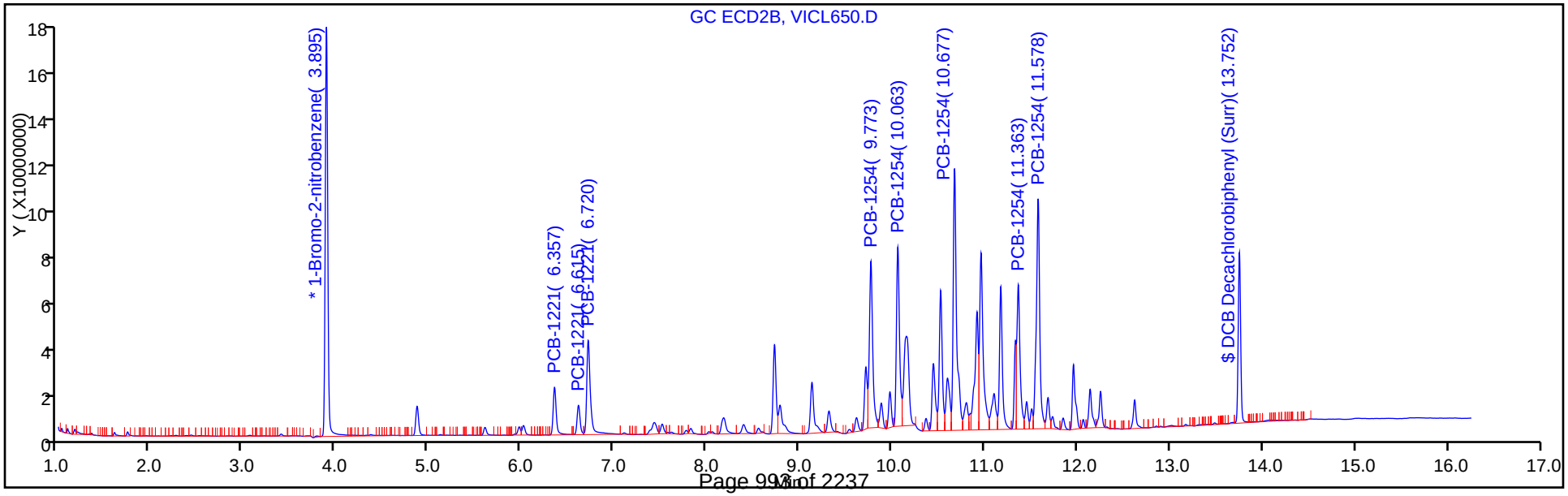
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 10

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL651.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Aug-2016 14:06:33 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-011
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:46 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:32:47

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	726618601	50.4	50.4	
2	3.896	3.896	0.000	347420117	50.4	50.4	
2 PCB-1221							
1	5.014	5.014	0.000	143271138	1008.0	1028.7	
1	5.284	5.284	0.000	81045158	1008.0	1011.1	
1	5.355	5.355	0.000	348677611	1008.0	1033.1	
2	6.358	6.358	0.000	93947447	1008.0	970.0	
2	6.616	6.616	0.000	53613679	1008.0	969.4	
2	6.721	6.721	0.000	204234160	1008.0	963.8	
						RPD = 5.68	
8 PCB-1254							
1	8.207	8.207	0.000	465670449	1008.0	1033.4	
1	8.607	8.607	0.000	603909501	1008.0	1040.1	
1	9.179	9.179	0.000	891778310	1008.0	987.2	
1	9.855	9.855	0.000	662719112	1008.0	1034.3	
1	10.237	10.237	0.000	954220192	1008.0	1052.5	
2	9.771	9.771	0.000	396703858	1008.0	987.5	
2	10.063	10.063	0.000	410580752	1008.0	1045.3	
2	10.676	10.676	0.000	619985412	1008.0	1041.1	
2	11.364	11.364	0.000	335255350	1008.0	1082.8	
2	11.578	11.578	0.000	564647905	1008.0	1075.8	
						RPD = 1.64	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	615692451	50.0	52.3	
2	13.751	13.751	0.000	296937250	50.0	52.0	
						RPD = 0.67	

Report Date: 04-Aug-2016 08:44:47 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL651.D

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags

S 7 Polychlorinated biphenyls, Total

1						2053.8	
2						2014.3	
						RPD = 1.94	

Reagents:

1221/1254Cal5_00002 Amount Added: 20.00 Units: uL

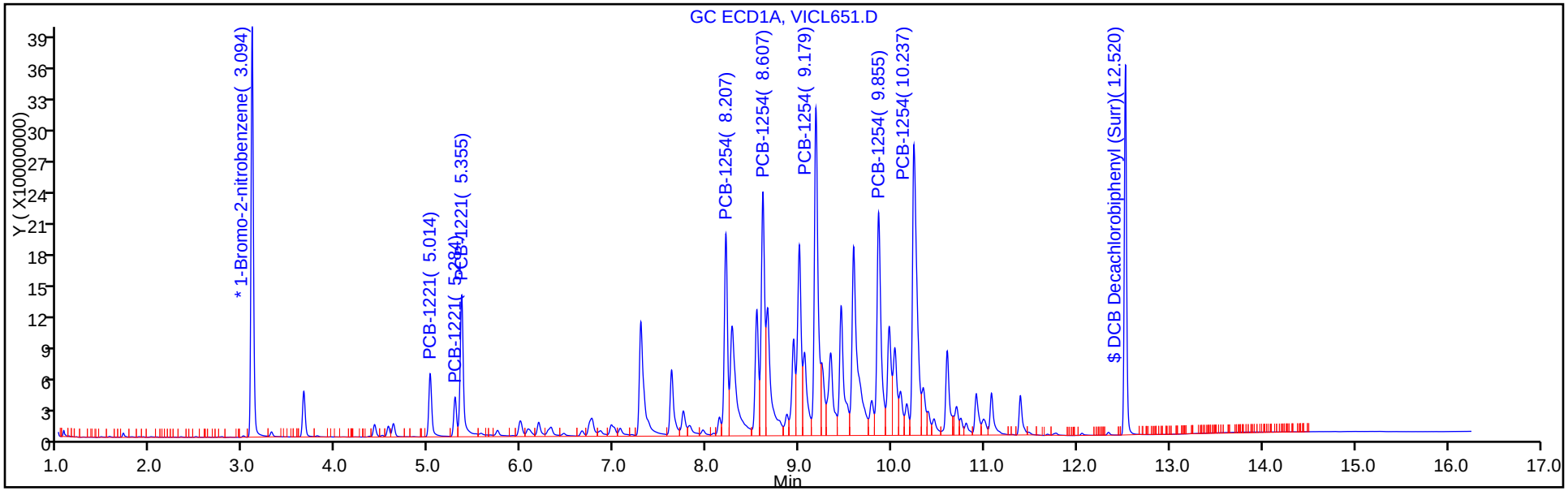
Report Date: 04-Aug-2016 08:44:47 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

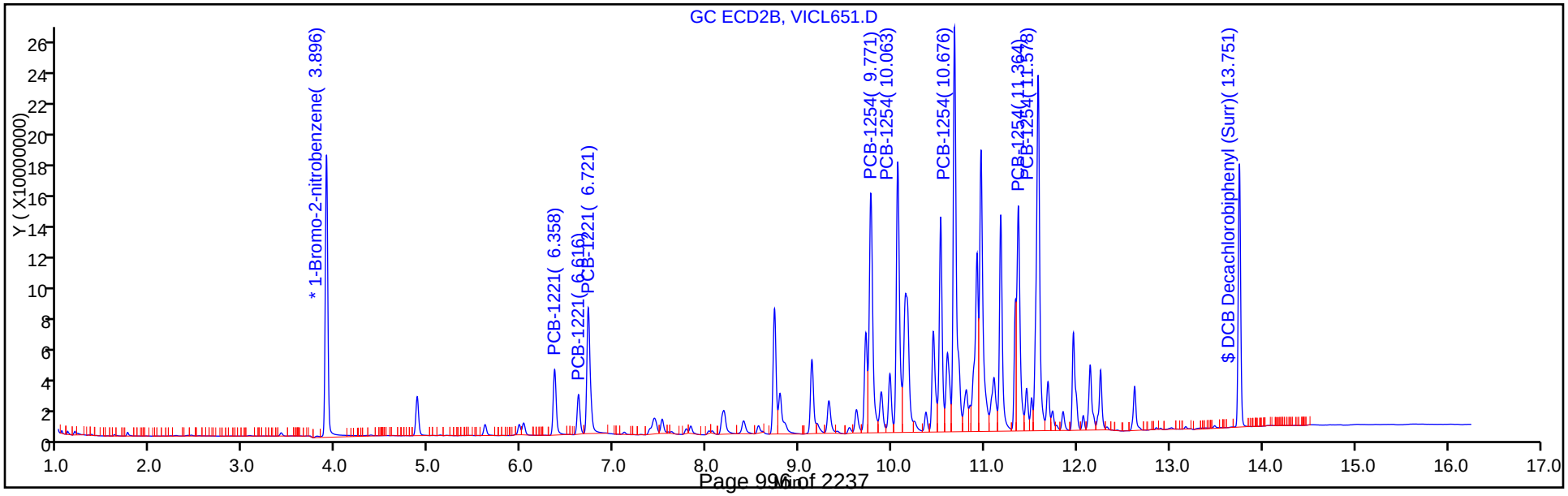
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL651.D

Injection Date:	03-Aug-2016 14:06:33	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	11
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL652.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 03-Aug-2016 14:29:05 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-012
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:48 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	698500595	50.4	50.4	
2	3.895	3.896	-0.001	334004353	50.4	50.4	
2 PCB-1221							
1	5.015	5.014	0.001	269739988	2016.0	2014.7	
1	5.283	5.284	-0.001	145935624	2016.0	1893.9	
1	5.355	5.355	0.000	634880378	2016.0	1956.9	
2	6.359	6.358	0.001	171856633	2016.0	1845.7	
2	6.615	6.616	-0.001	99061147	2016.0	1863.0	
2	6.722	6.721	0.001	375165796	2016.0	1841.6	
						RPD = 5.52	
8 PCB-1254							
1	8.206	8.207	-0.001	911318319	2016.0	2103.8	
1	8.608	8.607	0.001	1184573672	2016.0	2122.2	
1	9.180	9.179	0.001	1723355890	2016.0	1984.5	
1	9.858	9.855	0.003	1261439103	2016.0	2047.9	
1	10.240	10.237	0.003	1807434773	2016.0	2073.8	
2	9.774	9.771	0.003	730594353	2016.0	1891.7	
2	10.064	10.063	0.001	762817637	2016.0	2020.1	
2	10.675	10.676	-0.001	1152963345	2016.0	2014.0	
2	11.364	11.364	0.000	603993213	2016.0	2029.2	
2	11.579	11.578	0.001	1035826689	2016.0	2052.8	
						RPD = 3.19	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.520	0.001	1137802259	100.0	101.1	
2	13.752	13.751	0.001	528691381	100.0	97.7	
						RPD = 3.44	
S 7 Polychlorinated biphenyls, Total							
1						4021.6	
2						3851.7	
						RPD = 4.32	

Reagents:

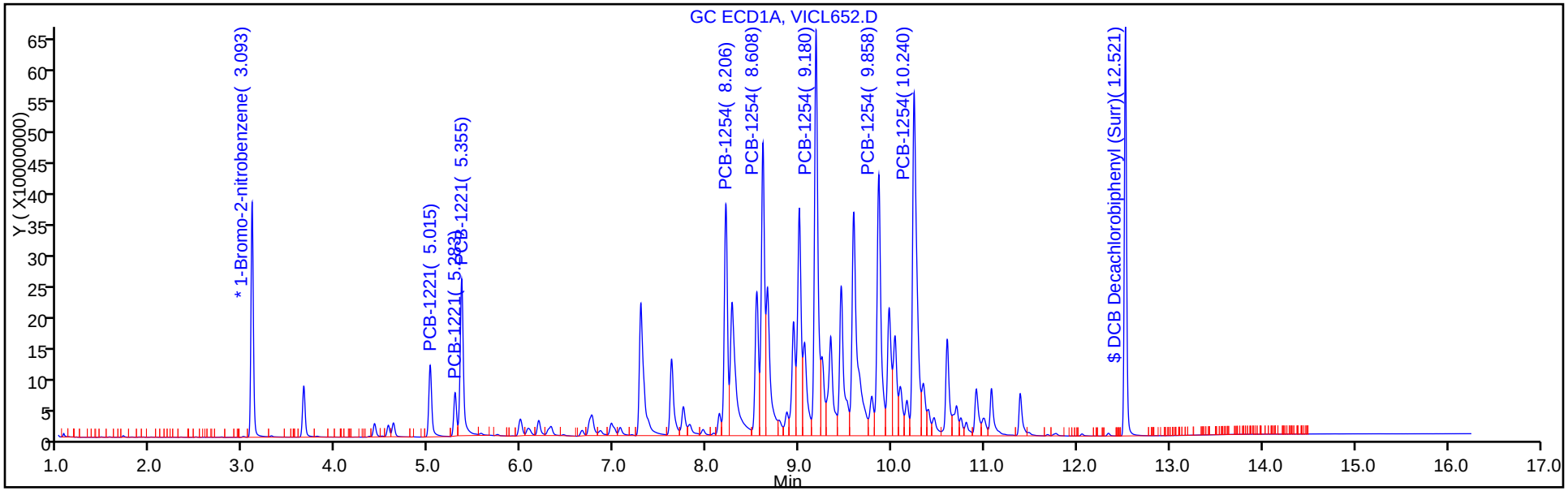
1221/1254Cal6_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:49 Chrom Revision: 2.2 20-Apr-2016 13:59:46

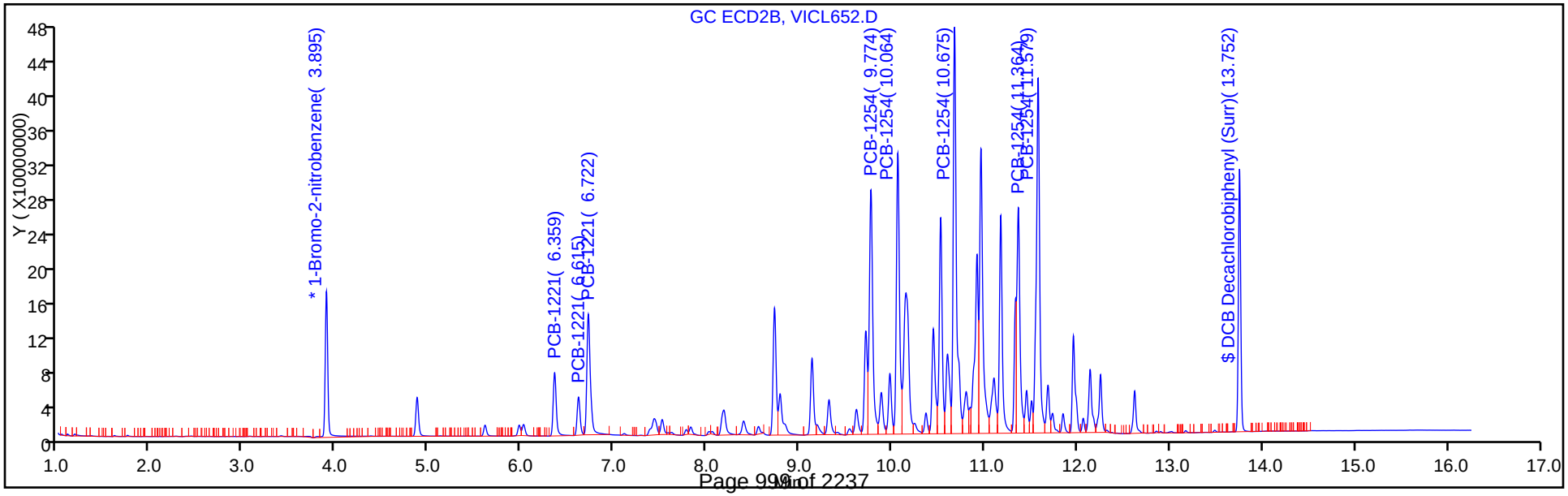
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL652.D				
Injection Date:	03-Aug-2016 14:29:05	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	12
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	12
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL653.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 03-Aug-2016 14:51:37 ALS Bottle#: 13 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008076-013
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:51 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	685167803	50.4	50.4	
2	3.895	3.896	-0.001	322855547	50.4	50.4	
2 PCB-1221							
1	5.016	5.014	0.002	511974804	4032.0	3898.3	
1	5.285	5.284	0.001	290095045	4032.0	3838.0	
1	5.355	5.355	0.000	1232142619	4032.0	3871.7	
2	6.359	6.358	0.001	317584071	4032.0	3528.6	
2	6.617	6.616	0.001	186428113	4032.0	3627.2	
2	6.722	6.721	0.001	718729772	4032.0	3649.8	
						RPD = 7.16	
8 PCB-1254							
1	8.208	8.207	0.001	1867288765	4032.0	4394.5	
1	8.608	8.607	0.001	2582113802	4032.0	4716.0	
1	9.183	9.179	0.004	4045694882	4032.0	4749.5	
1	9.860	9.855	0.005	2633714475	4032.0	4359.0	
1	10.241	10.237	0.004	3978274436	4032.0	4653.5	
2	9.774	9.771	0.003	1394968747	4032.0	3736.7	
2	10.064	10.063	0.001	1523207284	4032.0	4173.0	
2	10.677	10.676	0.001	2337748070	4032.0	4224.5	
2	11.364	11.364	0.000	1250930087	4032.0	4347.8	
2	11.579	11.578	0.001	2106861595	4032.0	4319.5	
						RPD = 9.48	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.520	0.001	2474657673	200.0	226.5	
2	13.752	13.751	0.001	1055552607	200.0	204.3	
						RPD = 10.32	
S 7 Polychlorinated biphenyls, Total							
1						8443.8	
2						7762.2	
						RPD = 8.41	

Reagents:

1221/1254Cal7_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:51 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL653.D

Injection Date: 03-Aug-2016 14:51:37 Instrument ID: SGCV Operator ID: GLB

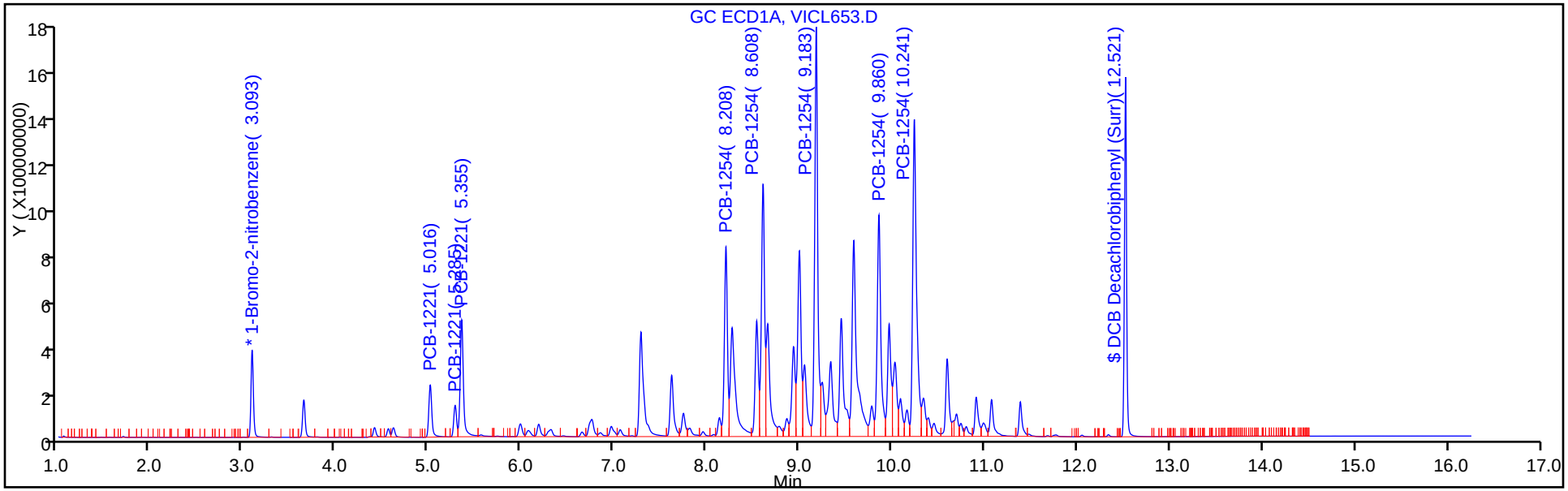
Lims ID: IC Worklist Smp#: 13

Client ID:

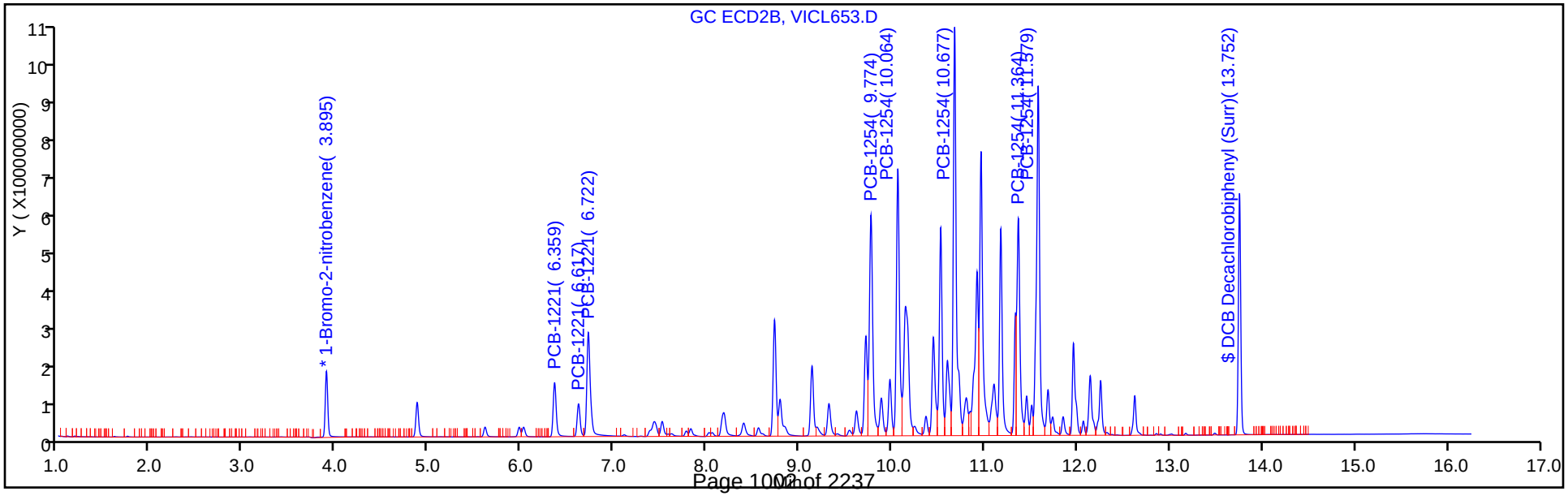
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 13

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 15:59 Calibration End Date: 08/03/2016 17:51 Calibration ID: 11269

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/16	VICL656.D
Level 2	IC 160-263102/17	VICL657.D
Level 3	IC 160-263102/18	VICL658.D
Level 4	ICIS 160-263102/19	VICL659.D
Level 5	IC 160-263102/20	VICL660.D
Level 6	IC 160-263102/21	VICL661.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
PCB-1016 Peak 1	0.0416 0.0324	0.0335	0.0321	0.0339	0.0323	Lin1	0.6767	0.0322							0.9990		0.0990
PCB-1016 Peak 2	0.0602 0.0814	0.0588	0.0592	0.0692	0.0707	Lin1	-3.485	0.0775							0.9930		0.0990
PCB-1016 Peak 3	0.0190 0.0322	0.0181	0.0290	0.0332	0.0323	Lin1	-1.831	0.0330							0.9980		0.0990
PCB-1016 Peak 4	0.0310 0.0336	0.0299	0.0284	0.0335	0.0329	Lin1	-0.590	0.0334							0.9990		0.0990
PCB-1016 Peak 5	0.0185 0.0196	0.0173	0.0162	0.0194	0.0192	Lin1	-0.343	0.0194							0.9980		0.0990
PCB-1260 Peak 1	0.0473 +++++	0.0460	0.0467	0.0519	0.0512	Lin1	-0.746	0.0514							0.9990		0.0990
PCB-1260 Peak 2	0.0858 +++++	0.0857	0.0852	0.0940	0.0948	Lin1	-1.477	0.0946							0.9990		0.0990
PCB-1260 Peak 3	0.0856 +++++	0.0833	0.0848	0.0943	0.0914	Lin1	-1.187	0.0923							0.9990		0.0990
PCB-1260 Peak 4	0.0931 +++++	0.0930	0.0952	0.1061	0.1157	Lin1	-3.385	0.1131							0.9960		0.0990
PCB-1260 Peak 5	0.0392 +++++	0.0386	0.0391	0.0440	0.0455	Lin1	-1.038	0.0451							0.9980		0.0990
DCB Decachlorobiphenyl (Surr)	0.8970 0.9585	0.8025	0.7528	0.7981	0.8455	Ave		0.8424				8.9		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 15:59 Calibration End Date: 08/03/2016 17:51 Calibration ID: 11269

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/16	VICL656.D
Level 2	IC 160-263102/17	VICL657.D
Level 3	IC 160-263102/18	VICL658.D
Level 4	ICIS 160-263102/19	VICL659.D
Level 5	IC 160-263102/20	VICL660.D
Level 6	IC 160-263102/21	VICL661.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
PCB-1016 Peak 1	BNB	Lin1	59896184 1944619770	104089352	260197038	543592981	1008091551	100 4000	200	500	1000	2000
PCB-1016 Peak 2	BNB	Lin1	86673963 4877232662	182947212	479722197	1110122499	2206780571	100 4000	200	500	1000	2000
PCB-1016 Peak 3	BNB	Lin1	27349811 1928695593	56221296	234734069	532135711	1007530037	100 4000	200	500	1000	2000
PCB-1016 Peak 4	BNB	Lin1	44640491 2013928854	93089720	230019102	537553442	1028259826	100 4000	200	500	1000	2000
PCB-1016 Peak 5	BNB	Lin1	26622109 1175129464	53785812	131632163	311219058	597996792	100 4000	200	500	1000	2000
PCB-1260 Peak 1	BNB	Lin1	68079892 +++++	143222426	378660744	832512026	1598563037	100 +++++	200	500	1001	2001
PCB-1260 Peak 2	BNB	Lin1	123522893 +++++	266525137	690930395	1508038401	2962716140	100 +++++	200	500	1001	2001
PCB-1260 Peak 3	BNB	Lin1	123261033 +++++	259210625	687391253	1513777940	2855321508	100 +++++	200	500	1001	2001
PCB-1260 Peak 4	BNB	Lin1	134016053 +++++	289228488	772174115	1703621536	3614124005	100 +++++	200	500	1001	2001
PCB-1260 Peak 5	BNB	Lin1	56368535 +++++	120009621	316706473	706645033	1422006469	100 +++++	200	500	1001	2001
DCB Decachlorobiphenyl (Surr)	BNB	Ave	64539525 2872586838	124739077	305007915	640227228	1320000433	5.00 200	10.0	25.0	50.0	100

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL656.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	2		
Inject. Date:	03-Aug-2016 15:59:11	ALS Bottle#:	16	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-016				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:00	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:26:21

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	725270968	50.4	50.4	
2	3.895	3.896	-0.001	325189695	50.4	50.4	
1 PCB-1016							
1	5.986	5.987	-0.001	59896184	100.0	108.3	
1	6.760	6.762	-0.002	86673963	100.0	122.7	
1	6.975	6.972	0.003	27349811	100.0	113.1	
1	7.623	7.622	0.001	44640491	100.0	110.5	
1	8.206	8.207	-0.001	26622109	100.0	112.8	
2	6.720	6.721	-0.001	18334338	100.0	116.9	
2	7.435	7.436	-0.001	37088067	100.0	116.1	
2	8.184	8.184	0.000	73239971	100.0	106.0	
2	8.399	8.399	0.000	32128988	100.0	106.4	
2	9.135	9.136	-0.001	23525897	100.0	109.3	
						RPD = 2.28	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.451	9.452	-0.001	68079892	100.1	106.6	
1	9.860	9.861	-0.001	123522893	100.1	106.4	
1	10.240	10.241	-0.001	123261033	100.1	105.7	
1	11.075	11.076	-0.001	134016053	100.1	112.2	
1	11.386	11.387	-0.001	56368535	100.1	109.9	
2	10.920	10.919	0.001	53325564	100.1	112.6	
2	11.175	11.176	-0.001	62489991	100.1	102.8	
2	11.577	11.576	0.001	79754502	100.1	103.3	
2	12.252	12.253	-0.001	88915189	100.1	96.6	
2	12.617	12.618	-0.001	56634276	100.1	106.3	
						RPD = 3.61	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	64539525	5.00	5.39	
2	13.750	13.751	-0.001	30281207	5.00	5.61	
						RPD = 3.87	
S 7 Polychlorinated biphenyls, Total							
1						221.6	
2						215.2	
						RPD = 2.93	

Reagents:

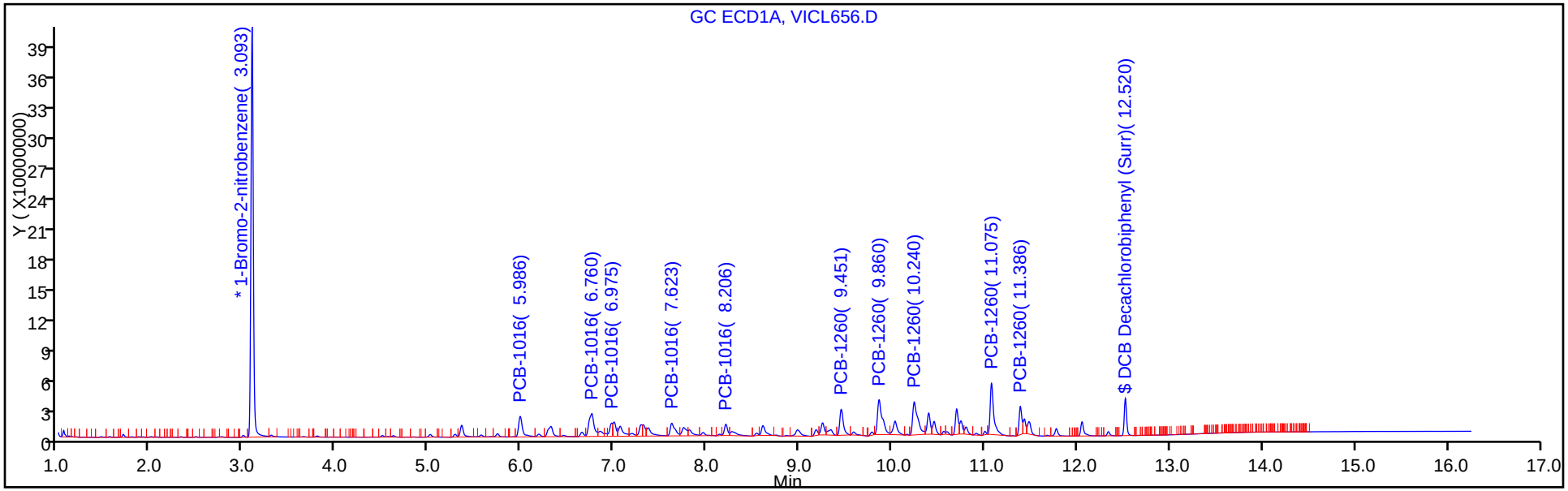
1016/1260Cal2_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:00 Chrom Revision: 2.2 20-Apr-2016 13:59:46

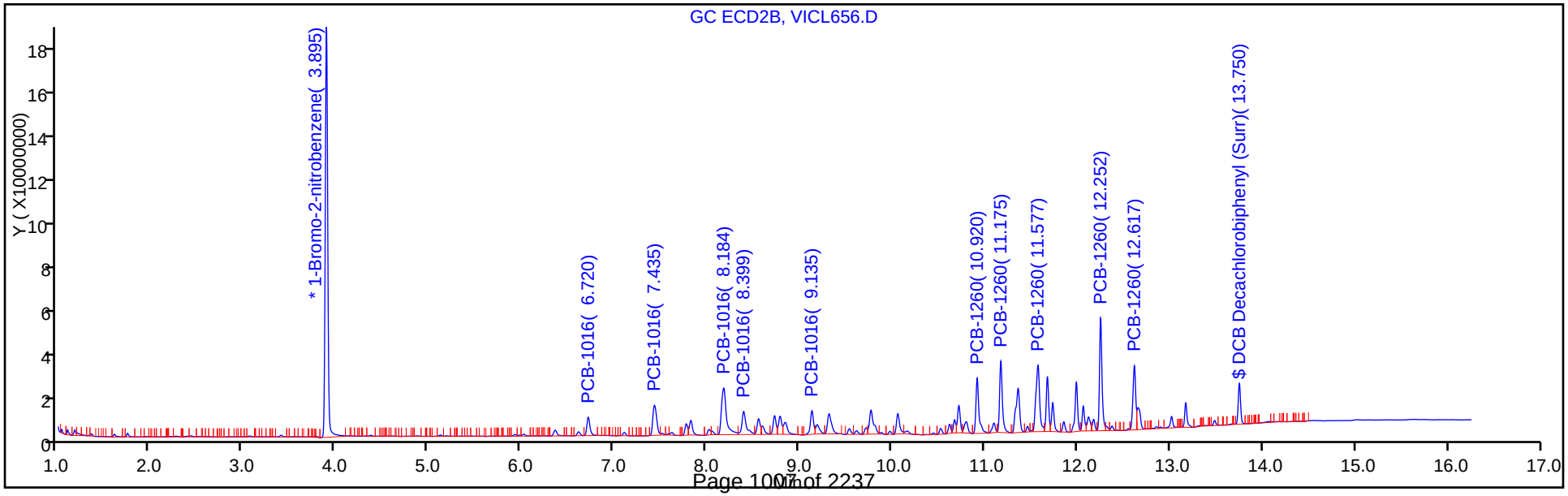
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL656.D				
Injection Date:	03-Aug-2016 15:59:11	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	16
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	16
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL657.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	3		
Inject. Date:	03-Aug-2016 16:21:43	ALS Bottle#:	17	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-017				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:04	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:25:37

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.092	3.094	-0.001	783397946	50.4	50.4	
2	3.895	3.896	-0.001	348435954	50.4	50.4	
1 PCB-1016							
1	5.986	5.987	-0.001	104089352	200.0	187.0	
1	6.759	6.762	-0.003	182947212	200.0	196.9	
1	6.974	6.972	0.002	56221296	200.0	165.1	
1	7.623	7.622	0.001	93089720	200.0	196.9	
1	8.208	8.207	0.001	53785812	200.0	195.6	
2	6.721	6.721	0.000	35098846	200.0	208.8	
2	7.436	7.436	0.000	75915806	200.0	221.7	
2	8.186	8.184	0.002	150566365	200.0	203.4	
2	8.400	8.399	0.001	65482022	200.0	202.4	
2	9.136	9.136	0.000	46582378	200.0	201.9	
						RPD = 9.76	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.453	9.452	0.001	143222426	200.1	193.9	
1	9.861	9.861	0.000	266525137	200.1	197.0	
1	10.239	10.241	-0.002	259210625	200.1	193.6	
1	11.076	11.076	0.000	289228488	200.1	194.4	
1	11.388	11.387	0.001	120009621	200.1	194.2	
2	10.920	10.919	0.001	98599947	200.1	194.2	
2	11.176	11.176	0.000	129514393	200.1	198.8	
2	11.576	11.576	0.000	164767391	200.1	199.2	
2	12.253	12.253	0.000	189779868	200.1	192.5	
2	12.618	12.618	0.000	115078239	200.1	201.6	
						RPD = 1.36	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.520	0.001	124739077	10.0	9.53	
2	13.753	13.751	0.002	60311994	10.0	10.3	
						RPD = 7.40	
S 7 Polychlorinated biphenyls, Total							
1						382.9	
2						404.9	
						RPD = 5.58	

Reagents:

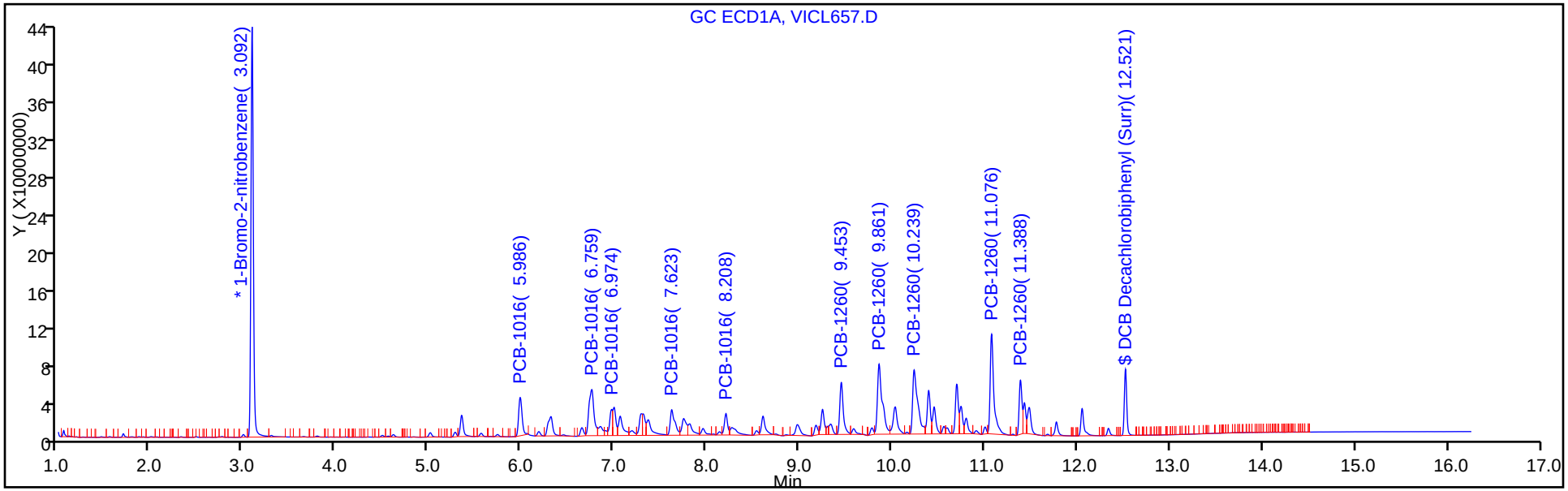
1016/1260Cal3_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:05 Chrom Revision: 2.2 20-Apr-2016 13:59:46

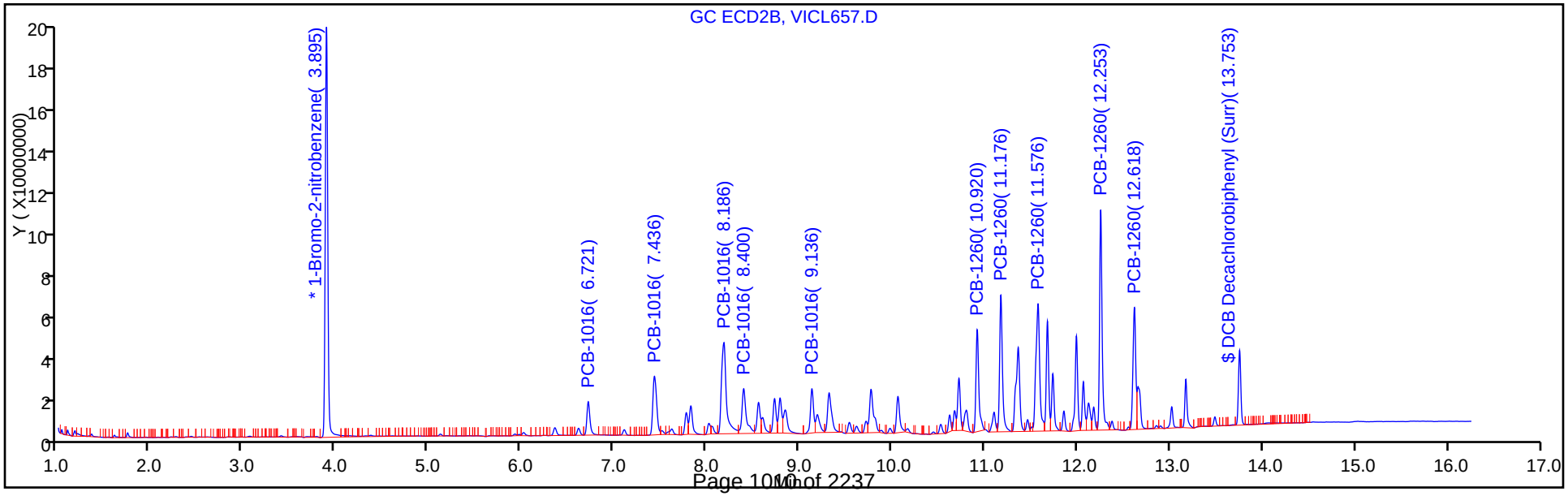
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL657.D				
Injection Date:	03-Aug-2016 16:21:43	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	17
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	17
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL658.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	4		
Inject. Date:	03-Aug-2016 16:44:15	ALS Bottle#:	18	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-018				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:10	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:24:39

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	816855242	50.4	50.4	
2	3.895	3.896	-0.001	361216953	50.4	50.4	
1 PCB-1016							
1	5.986	5.987	-0.001	260197038	500.0	477.7	
1	6.760	6.762	-0.002	479722197	500.0	427.0	
1	6.971	6.972	-0.001	234734069	500.0	494.4	
1	7.623	7.622	0.001	230019102	500.0	442.5	
1	8.206	8.207	-0.001	131632163	500.0	435.5	
2	6.722	6.721	0.001	87838882	500.0	504.0	
2	7.437	7.436	0.001	177321866	500.0	499.6	
2	8.184	8.184	0.000	374438657	500.0	488.0	
2	8.399	8.399	0.000	169910956	500.0	506.5	
2	9.135	9.136	-0.001	116893414	500.0	488.7	
						RPD = 8.81	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.453	9.452	0.001	378660744	500.3	469.3	
1	9.860	9.861	-0.001	690930395	500.3	466.4	
1	10.238	10.241	-0.003	687391253	500.3	472.5	
1	11.075	11.076	-0.001	772174115	500.3	451.0	
1	11.386	11.387	-0.001	316706473	500.3	456.2	
2	10.920	10.919	0.001	247734856	500.3	470.7	
2	11.175	11.176	-0.001	314504846	500.3	465.6	
2	11.577	11.576	0.001	388823789	500.3	453.5	
2	12.252	12.253	-0.001	433727145	500.3	424.4	
2	12.617	12.618	-0.001	262241080	500.3	443.2	
						RPD = 2.54	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.520	0.001	305007915	25.0	22.4	
2	13.752	13.751	0.001	139093822	25.0	23.0	
						RPD = 2.43	
S 7 Polychlorinated biphenyls, Total							
1						918.5	
2						948.8	
						RPD = 3.25	

Reagents:

1016/1260Cal4_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL658.D

Injection Date: 03-Aug-2016 16:44:15 Instrument ID: SGCV Operator ID: GLB

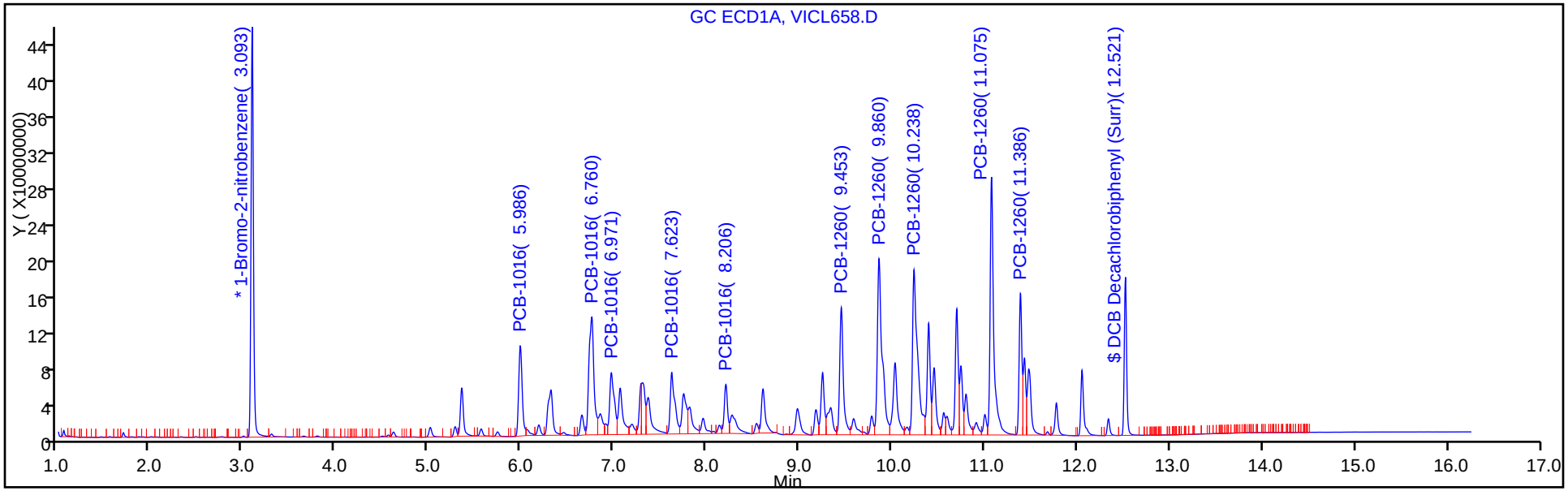
Lims ID: IC Worklist Smp#: 18

Client ID:

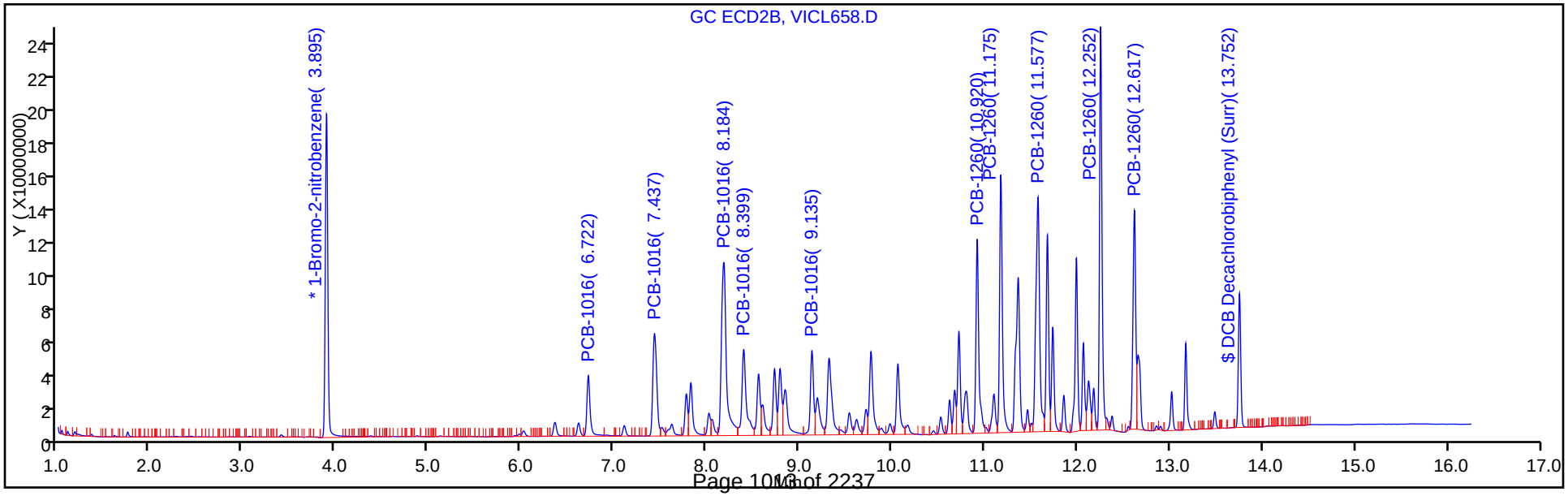
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 18

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL659.D				
Lims ID:	ICIS				
Client ID:					
Sample Type:	ICIS	Calib Level:	5		
Inject. Date:	03-Aug-2016 17:06:47	ALS Bottle#:	19	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	ICIS				
Misc. Info.:	160-0008076-019				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:18	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:13:08

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	808574174	50.4	50.4	
2	3.896	3.896	0.000	355323807	50.4	50.4	
1 PCB-1016							
1	5.987	5.987	0.000	543592981	1000.0	1031.6	
1	6.762	6.762	0.000	1110122499	1000.0	938.1	
1	6.972	6.972	0.000	532135711	1000.0	1060.6	
1	7.622	7.622	0.000	537553442	1000.0	1020.6	
1	8.207	8.207	0.000	311219058	1000.0	1015.7	
2	6.721	6.721	0.000	173007745	1000.0	1009.1	
2	7.436	7.436	0.000	344901974	1000.0	987.9	
2	8.184	8.184	0.000	756360920	1000.0	1002.1	
2	8.399	8.399	0.000	330260486	1000.0	1000.8	
2	9.136	9.136	0.000	231110824	1000.0	982.2	
						RPD = 1.68	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.452	9.452	0.000	832512026	1000.5	1024.6	
1	9.861	9.861	0.000	1508038401	1000.5	1009.7	
1	10.241	10.241	0.000	1513777940	1000.5	1035.4	
1	11.076	11.076	0.000	1703621536	1000.5	968.5	
1	11.387	11.387	0.000	706645033	1000.5	999.5	
2	10.919	10.919	0.000	505382388	1000.5	976.2	
2	11.176	11.176	0.000	649291757	1000.5	977.2	
2	11.576	11.576	0.000	833319339	1000.5	987.9	
2	12.253	12.253	0.000	926061150	1000.5	921.1	
2	12.618	12.618	0.000	561946644	1000.5	965.5	
						RPD = 4.25	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.519	12.519	0.000	640227228	50.0	48.1	
2	13.753	13.753	0.000	285436153	50.0	48.4	
						RPD = 0.70	

Reagents:

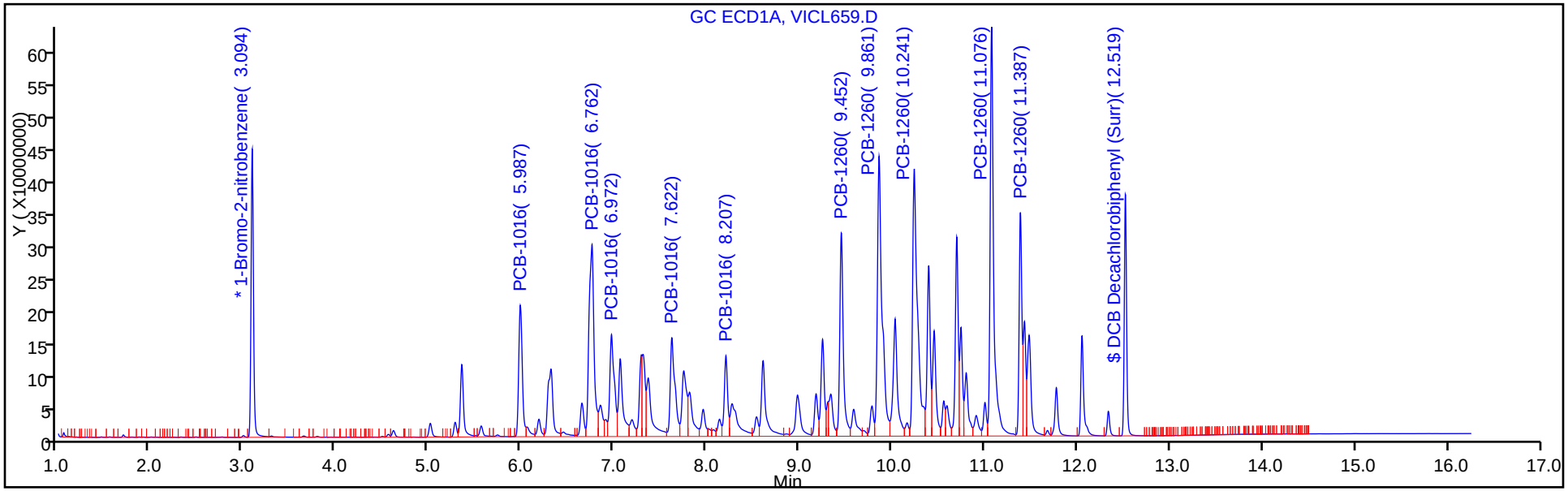
1016/1260Cal5_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:19 Chrom Revision: 2.2 20-Apr-2016 13:59:46

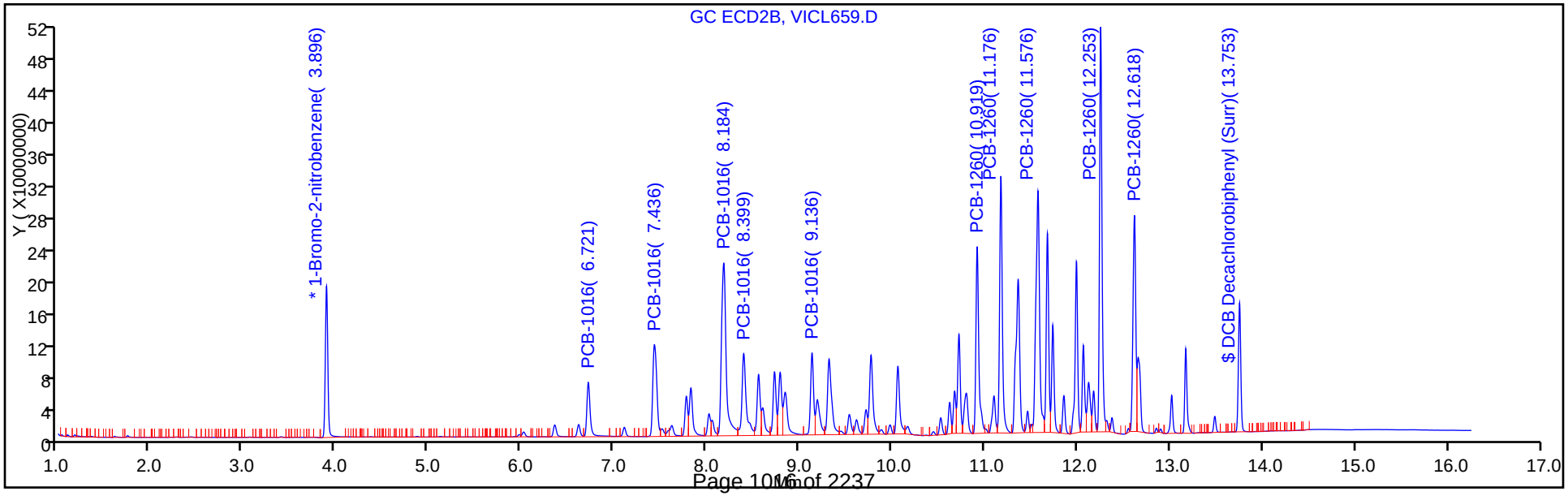
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL659.D				
Injection Date:	03-Aug-2016 17:06:47	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ICIS			Worklist Smp#:	19
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	19
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL660.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	6		
Inject. Date:	03-Aug-2016 17:29:18	ALS Bottle#:	20	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-020				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:23	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:27:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	786881894	50.4	50.4	
2	3.896	3.896	0.000	347008035	50.4	50.4	
1 PCB-1016							
1	5.989	5.987	0.002	1008091551	2000.0	1984.9	
1	6.762	6.762	0.000	2206780571	2000.0	1869.3	
1	6.972	6.972	0.000	1007530037	2000.0	2011.0	
1	7.624	7.622	0.002	1028259826	2000.0	1989.0	
1	8.207	8.207	0.000	597996792	2000.0	1988.2	
2	6.723	6.721	0.002	303597498	2000.0	1813.3	
2	7.438	7.436	0.002	612672112	2000.0	1796.8	
2	8.184	8.184	0.000	1429032653	2000.0	1938.7	
2	8.399	8.399	0.000	624561189	2000.0	1938.0	
2	9.136	9.136	0.000	450140007	2000.0	1959.0	
						RPD = 4.11	

Report Date: 04-Aug-2016 08:45:24 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL660.D

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.454	9.452	0.002	1598563037	2001.0	2007.5	
1	9.860	9.861	-0.001	2962716140	2001.0	2022.4	
1	10.239	10.241	-0.002	2855321508	2001.0	1994.8	
1	11.079	11.076	0.003	3614124005	2001.0	2075.8	
1	11.387	11.387	0.000	1422006469	2001.0	2042.2	
2	10.921	10.919	0.002	990761013	2001.0	1959.7	
2	11.176	11.176	0.000	1294793480	2001.0	1995.3	
2	11.576	11.576	0.000	1654795112	2001.0	2008.9	
2	12.253	12.253	0.000	1911400334	2001.0	1946.8	
2	12.618	12.618	0.000	1133176533	2001.0	1993.6	
						RPD = 2.38	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.519	0.001	1320000433	100.0	101.3	
2	13.753	13.753	0.000	598869799	100.0	102.5	
						RPD = 1.16	
S 7 Polychlorinated biphenyls, Total							
1						3997.0	
2						3870.0	
						RPD = 3.23	

Reagents:

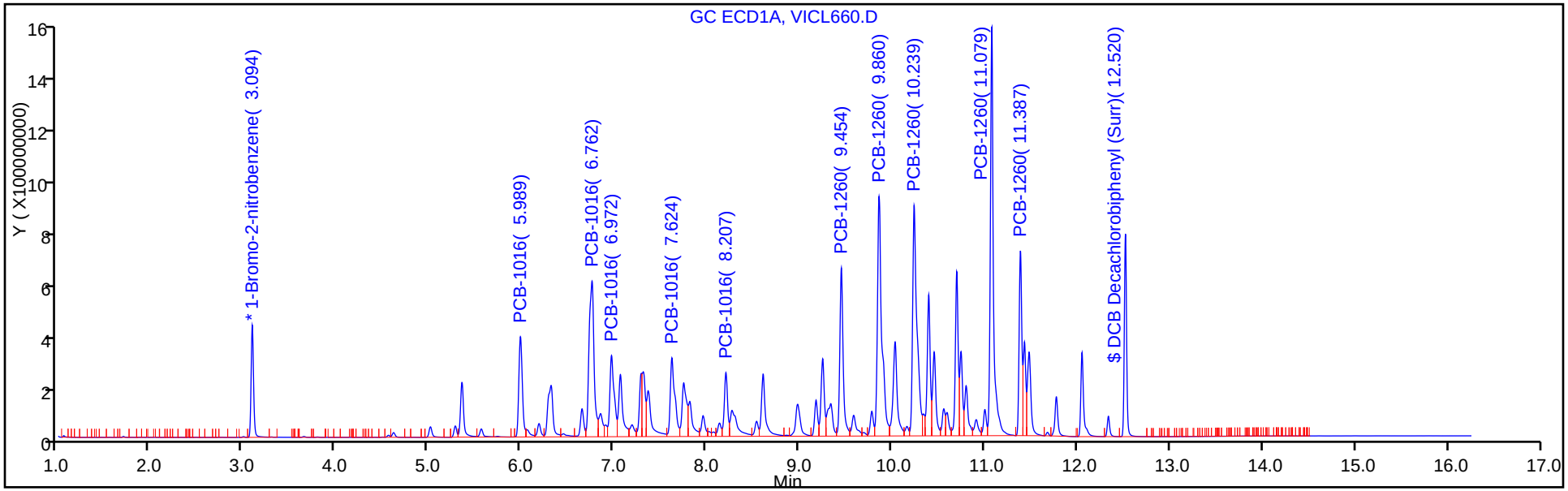
1016/1260Cal6_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:24 Chrom Revision: 2.2 20-Apr-2016 13:59:46

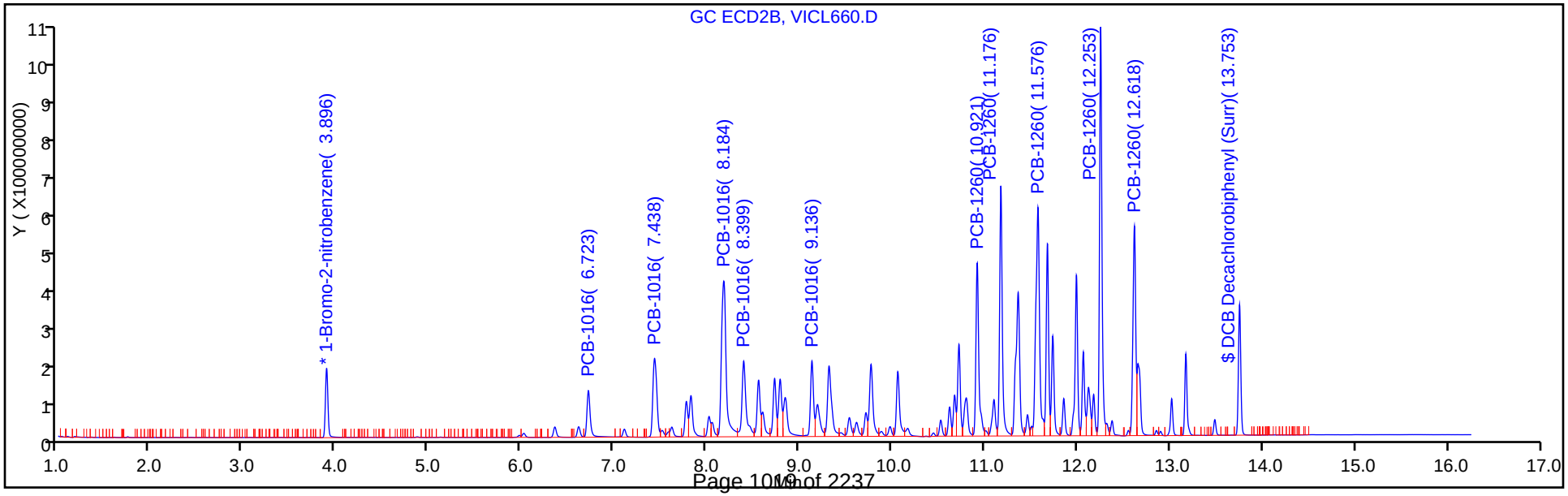
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL660.D				
Injection Date:	03-Aug-2016 17:29:18	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	20
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	20
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	7		
Inject. Date:	03-Aug-2016 17:51:52	ALS Bottle#:	21	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-021				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:26	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:29:46

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	755230641	50.4	50.4	
2	3.895	3.896	-0.001	331370829	50.4	50.4	
1 PCB-1016							
1	5.988	5.987	0.001	1944619770	4000.0	4010.5	
1	6.763	6.762	0.001	4877232662	4000.0	4245.9	
1	6.971	6.972	-0.001	1928695593	4000.0	3955.8	
1	7.623	7.622	0.001	2013928854	4000.0	4040.5	
1	8.206	8.207	-0.001	1175129464	4000.0	4052.3	
2	6.722	6.721	0.001	552414413	4000.0	3455.1	
2	7.435	7.436	-0.001	1100793005	4000.0	3380.7	
2	8.185	8.184	0.001	2745137393	4000.0	3900.0	
2	8.399	8.399	0.000	1158932524	4000.0	3765.9	
2	9.135	9.136	-0.001	841574191	4000.0	3835.3	
						RPD = 10.19	

Report Date: 04-Aug-2016 08:45:26 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.455	9.452	0.003	3434056016	4002.0	4475.3	
1	0.000	9.861	-9.861	0	4002.0	0	
1	10.251	10.241	0.010	8498624841	4002.0	6159.0	a
1	0.000	11.076	-11.076	0	4002.0	0	
1	11.390	11.387	0.003	3345476747	4002.0	4972.4	
2	10.920	10.919	0.001	1947979097	4002.0	4034.9	
2	11.175	11.176	-0.001	2666048023	4002.0	4302.3	
2	11.577	11.576	0.001	3381098424	4002.0	4298.2	
2	12.257	12.253	0.004	4991035804	4002.0	5323.3	
2	12.617	12.618	-0.001	2351191624	4002.0	4331.7	
						RPD = 15.41	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.523	12.519	0.004	2872586838	200.0	227.6	
2	13.752	13.753	-0.001	1160462738	200.0	205.7	
						RPD = 10.11	
S 7 Polychlorinated biphenyls, Total							
1						9263.3	
2						8125.5	
						RPD = 13.09	

Reagents:

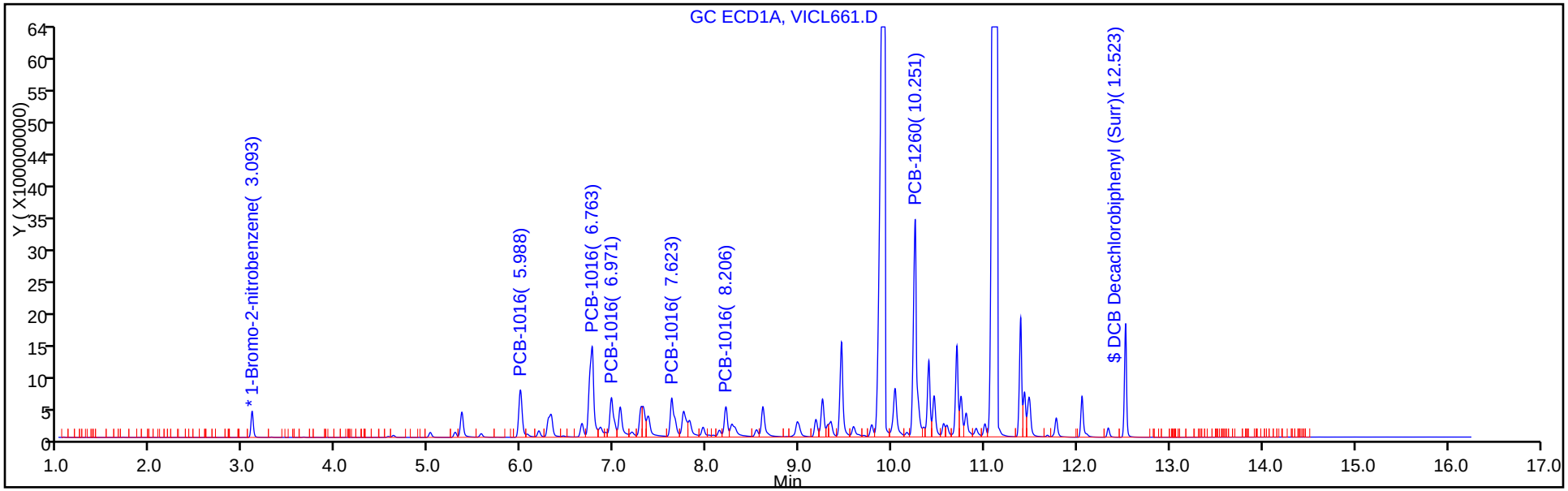
1016/1260Cal7_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:26 Chrom Revision: 2.2 20-Apr-2016 13:59:46

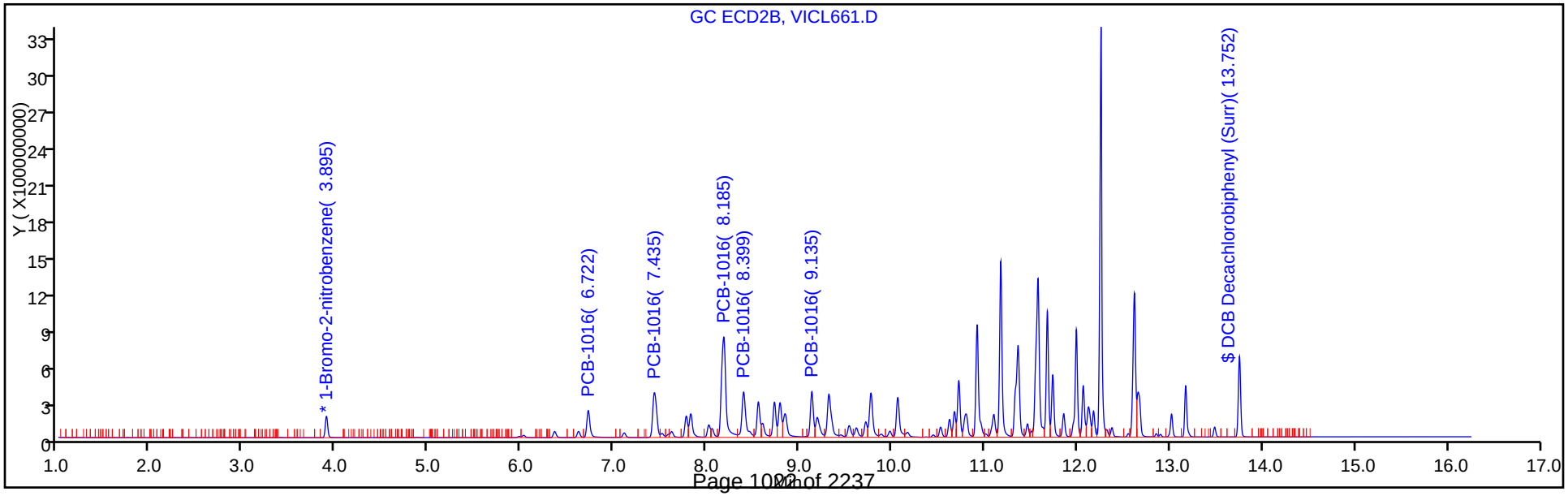
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Injection Date:	03-Aug-2016 17:51:52	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	21
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	21
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 15:59 Calibration End Date: 08/03/2016 17:51 Calibration ID: 11270

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/16	VICL656.D
Level 2	IC 160-263102/17	VICL657.D
Level 3	IC 160-263102/18	VICL658.D
Level 4	ICIS 160-263102/19	VICL659.D
Level 5	IC 160-263102/20	VICL660.D
Level 6	IC 160-263102/21	VICL661.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
PCB-1016 Peak 1	0.0284 0.0210	0.0254	0.0245	0.0245	0.0220	Ave		0.0243				10.7		20.0			
PCB-1016 Peak 2	0.0575 0.0419	0.0549	0.0495	0.0489	0.0445	Ave		0.0495				12.0		20.0			
PCB-1016 Peak 3	0.1135 0.1044	0.1089	0.1045	0.1073	0.1038	Ave		0.1071				3.5		20.0			
PCB-1016 Peak 4	0.0498 0.0441	0.0474	0.0474	0.0468	0.0454	Ave		0.0468				4.2		20.0			
PCB-1016 Peak 5	0.0365 0.0320	0.0337	0.0326	0.0328	0.0327	Ave		0.0334				4.8		20.0			
PCB-1260 Peak 1	0.0826 0.0740	0.0713	0.0691	0.0716	0.0719	Ave		0.0734				6.5		20.0			
PCB-1260 Peak 2	0.0968 0.1013	0.0936	0.0877	0.0921	0.0940	Ave		0.0943				4.8		20.0			
PCB-1260 Peak 3	0.1235 0.1285	0.1191	0.1084	0.1181	0.1201	Ave		0.1196				5.6		20.0			
PCB-1260 Peak 4	0.1377 0.1897	0.1372	0.1210	0.1313	0.1387	Ave		0.1426				16.8		20.0			
PCB-1260 Peak 5	0.0877 0.0894	0.0832	0.0731	0.0797	0.0823	Ave		0.0826				7.1		20.0			
DCB Decachlorobiphenyl (Surr)	0.9386 0.8825	0.8724	0.7763	0.8097	0.8698	Ave		0.8582				6.7		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
PCBS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 263102

SDG No.: Headworks/9720-8

Instrument ID: SGCV GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/03/2016 15:59 Calibration End Date: 08/03/2016 17:51 Calibration ID: 11270

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-263102/16	VICL656.D
Level 2	IC 160-263102/17	VICL657.D
Level 3	IC 160-263102/18	VICL658.D
Level 4	ICIS 160-263102/19	VICL659.D
Level 5	IC 160-263102/20	VICL660.D
Level 6	IC 160-263102/21	VICL661.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
PCB-1016 Peak 1	BNB	Ave	18334338 552414413	35098846	87838882	173007745	303597498	100 4000	200	500	1000	2000
PCB-1016 Peak 2	BNB	Ave	37088067 1100793005	75915806	177321866	344901974	612672112	100 4000	200	500	1000	2000
PCB-1016 Peak 3	BNB	Ave	73239971 2745137393	150566365	374438657	756360920	1429032653	100 4000	200	500	1000	2000
PCB-1016 Peak 4	BNB	Ave	32128988 1158932524	65482022	169910956	330260486	624561189	100 4000	200	500	1000	2000
PCB-1016 Peak 5	BNB	Ave	23525897 841574191	46582378	116893414	231110824	450140007	100 4000	200	500	1000	2000
PCB-1260 Peak 1	BNB	Ave	53325564 1947979097	98599947	247734856	505382388	990761013	100 4002	200	500	1001	2001
PCB-1260 Peak 2	BNB	Ave	62489991 2666048023	129514393	314504846	649291757	1294793480	100 4002	200	500	1001	2001
PCB-1260 Peak 3	BNB	Ave	79754502 3381098424	164767391	388823789	833319339	1654795112	100 4002	200	500	1001	2001
PCB-1260 Peak 4	BNB	Ave	88915189 4991035804	189779868	433727145	926061150	1911400334	100 4002	200	500	1001	2001
PCB-1260 Peak 5	BNB	Ave	56634276 2351191624	115078239	262241080	561946644	1133176533	100 4002	200	500	1001	2001
DCB Decachlorobiphenyl (Surr)	BNB	Ave	30281207 1160462738	60311994	139093822	285436153	598869799	5.00 200	10.0	25.0	50.0	100

Curve Type Legend:
Ave = Average ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL656.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	2		
Inject. Date:	03-Aug-2016 15:59:11	ALS Bottle#:	16	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-016				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:00	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:26:21

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	725270968	50.4	50.4	
2	3.895	3.896	-0.001	325189695	50.4	50.4	
1 PCB-1016							
1	5.986	5.987	-0.001	59896184	100.0	108.3	
1	6.760	6.762	-0.002	86673963	100.0	122.7	
1	6.975	6.972	0.003	27349811	100.0	113.1	
1	7.623	7.622	0.001	44640491	100.0	110.5	
1	8.206	8.207	-0.001	26622109	100.0	112.8	
2	6.720	6.721	-0.001	18334338	100.0	116.9	
2	7.435	7.436	-0.001	37088067	100.0	116.1	
2	8.184	8.184	0.000	73239971	100.0	106.0	
2	8.399	8.399	0.000	32128988	100.0	106.4	
2	9.135	9.136	-0.001	23525897	100.0	109.3	
						RPD = 2.28	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.451	9.452	-0.001	68079892	100.1	106.6	
1	9.860	9.861	-0.001	123522893	100.1	106.4	
1	10.240	10.241	-0.001	123261033	100.1	105.7	
1	11.075	11.076	-0.001	134016053	100.1	112.2	
1	11.386	11.387	-0.001	56368535	100.1	109.9	
2	10.920	10.919	0.001	53325564	100.1	112.6	
2	11.175	11.176	-0.001	62489991	100.1	102.8	
2	11.577	11.576	0.001	79754502	100.1	103.3	
2	12.252	12.253	-0.001	88915189	100.1	96.6	
2	12.617	12.618	-0.001	56634276	100.1	106.3	
						RPD = 3.61	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.520	0.000	64539525	5.00	5.39	
2	13.750	13.751	-0.001	30281207	5.00	5.61	
						RPD = 3.87	
S 7 Polychlorinated biphenyls, Total							
1						221.6	
2						215.2	
						RPD = 2.93	

Reagents:

1016/1260Cal2_00002 Amount Added: 20.00 Units: uL

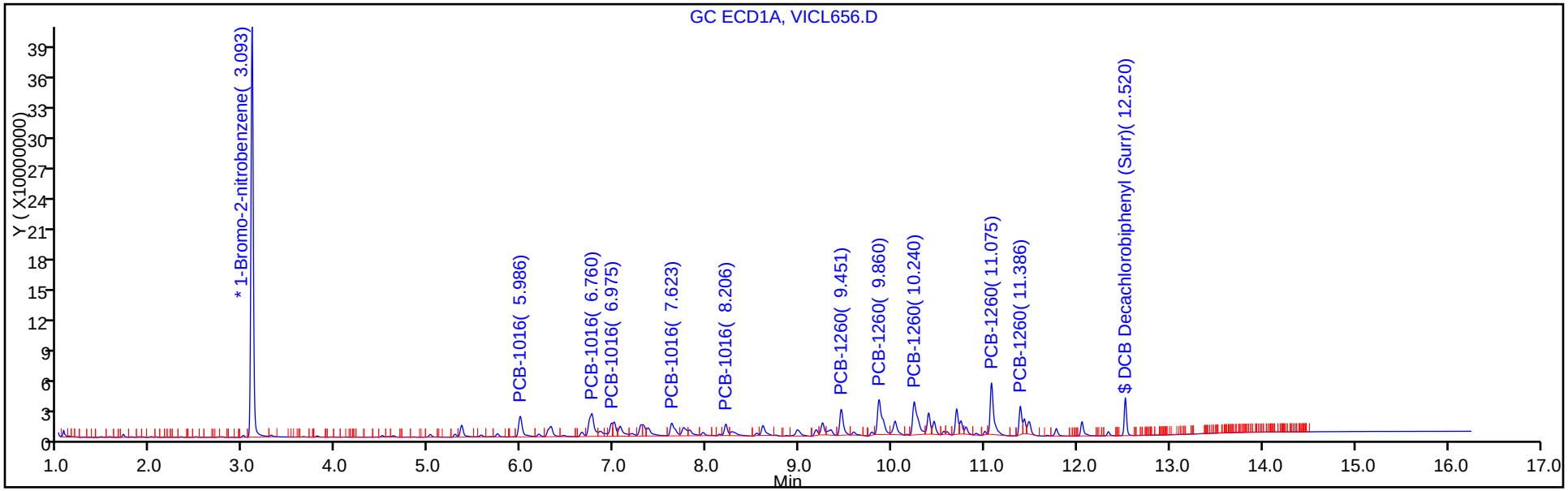
Report Date: 04-Aug-2016 08:45:01 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

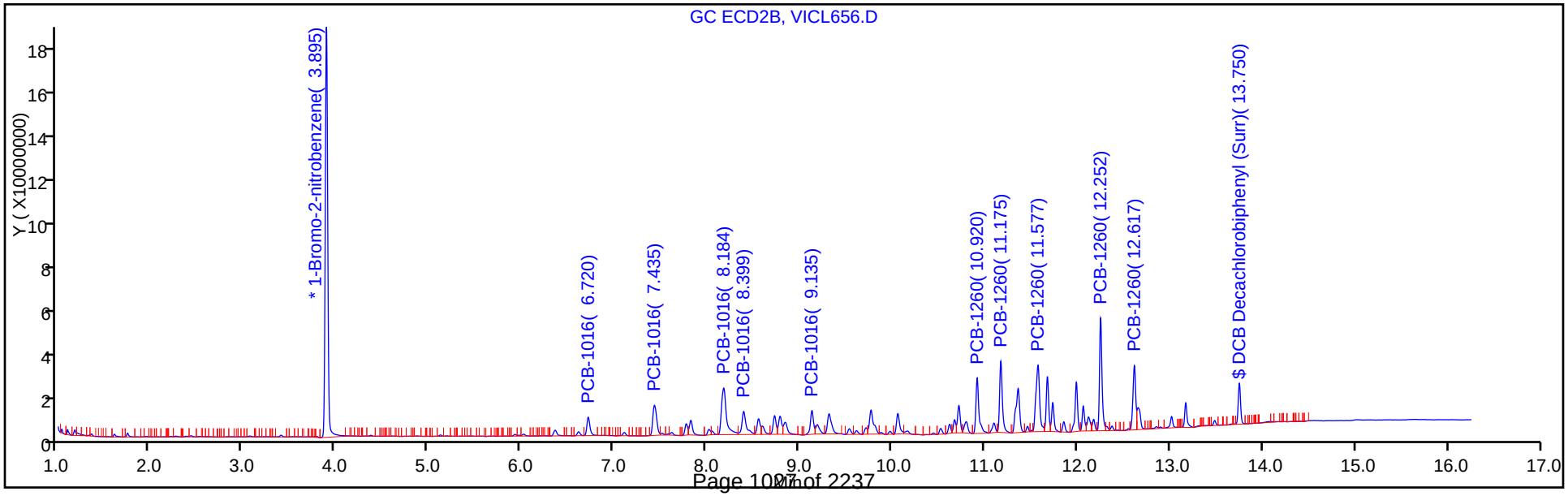
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL656.D

Injection Date:	03-Aug-2016 15:59:11	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	16
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	16
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL657.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	3		
Inject. Date:	03-Aug-2016 16:21:43	ALS Bottle#:	17	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-017				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:04	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:25:37

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.092	3.094	-0.001	783397946	50.4	50.4	
2	3.895	3.896	-0.001	348435954	50.4	50.4	
1 PCB-1016							
1	5.986	5.987	-0.001	104089352	200.0	187.0	
1	6.759	6.762	-0.003	182947212	200.0	196.9	
1	6.974	6.972	0.002	56221296	200.0	165.1	
1	7.623	7.622	0.001	93089720	200.0	196.9	
1	8.208	8.207	0.001	53785812	200.0	195.6	
2	6.721	6.721	0.000	35098846	200.0	208.8	
2	7.436	7.436	0.000	75915806	200.0	221.7	
2	8.186	8.184	0.002	150566365	200.0	203.4	
2	8.400	8.399	0.001	65482022	200.0	202.4	
2	9.136	9.136	0.000	46582378	200.0	201.9	
						RPD = 9.76	

Report Date: 04-Aug-2016 08:45:05 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL657.D

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.453	9.452	0.001	143222426	200.1	193.9	
1	9.861	9.861	0.000	266525137	200.1	197.0	
1	10.239	10.241	-0.002	259210625	200.1	193.6	
1	11.076	11.076	0.000	289228488	200.1	194.4	
1	11.388	11.387	0.001	120009621	200.1	194.2	
2	10.920	10.919	0.001	98599947	200.1	194.2	
2	11.176	11.176	0.000	129514393	200.1	198.8	
2	11.576	11.576	0.000	164767391	200.1	199.2	
2	12.253	12.253	0.000	189779868	200.1	192.5	
2	12.618	12.618	0.000	115078239	200.1	201.6	
						RPD = 1.36	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.520	0.001	124739077	10.0	9.53	
2	13.753	13.751	0.002	60311994	10.0	10.3	
						RPD = 7.40	
S 7 Polychlorinated biphenyls, Total							
1						382.9	
2						404.9	
						RPD = 5.58	

Reagents:

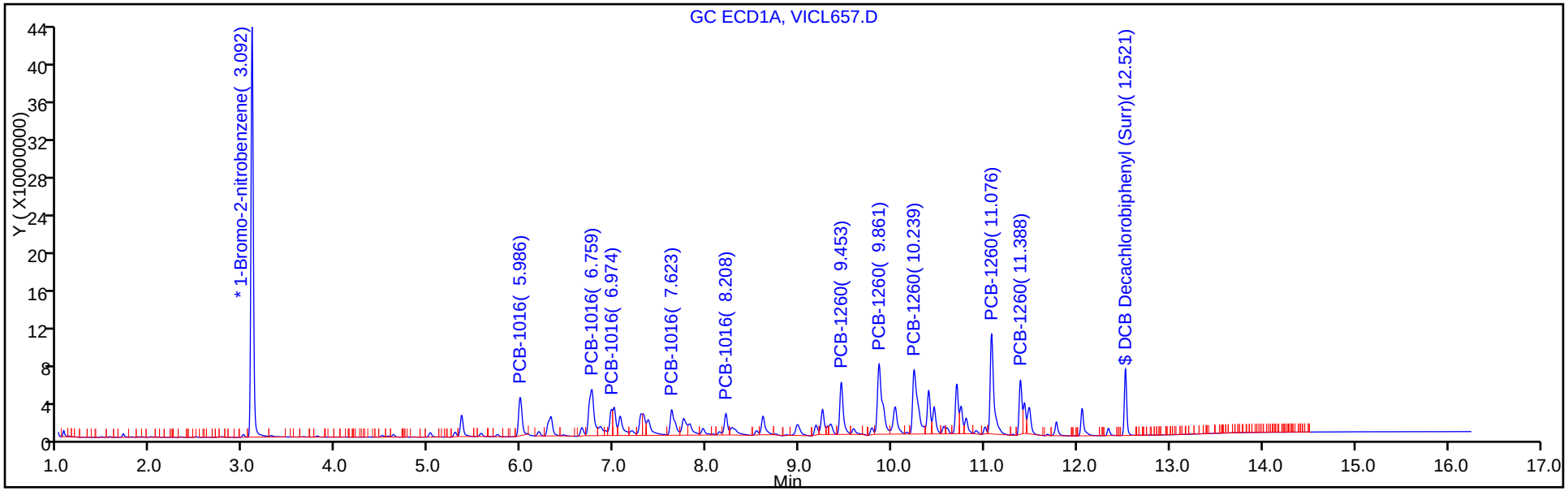
1016/1260Cal3_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:05 Chrom Revision: 2.2 20-Apr-2016 13:59:46

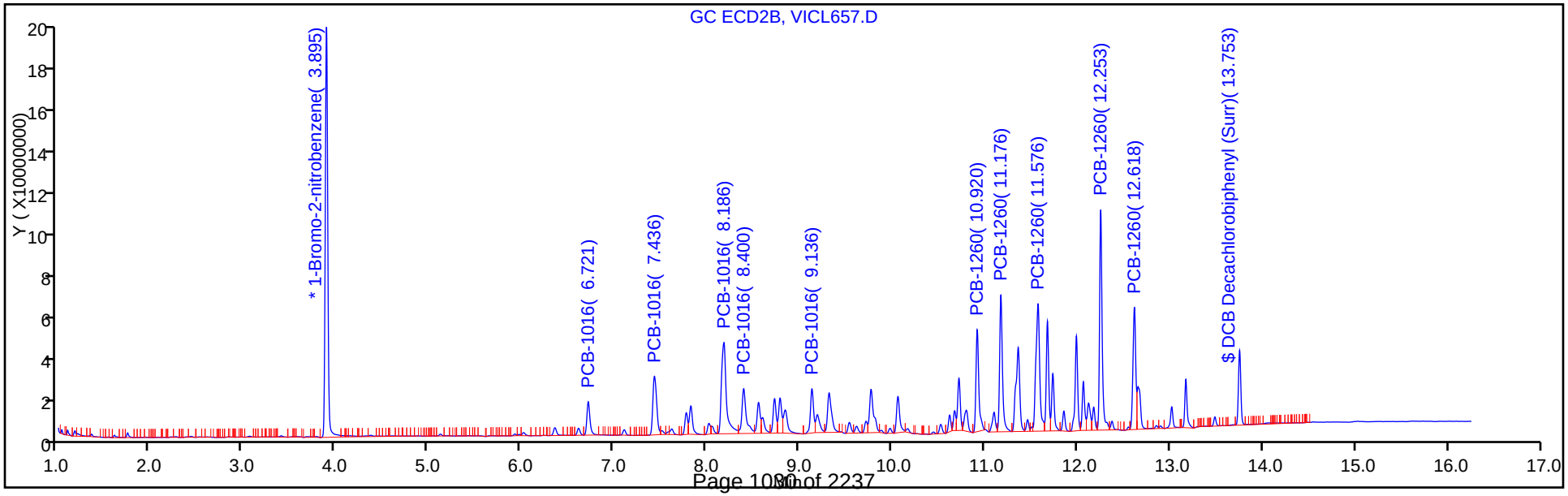
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL657.D				
Injection Date:	03-Aug-2016 16:21:43	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	17
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	17
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL658.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	4		
Inject. Date:	03-Aug-2016 16:44:15	ALS Bottle#:	18	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-018				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:10	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:24:39

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	816855242	50.4	50.4	
2	3.895	3.896	-0.001	361216953	50.4	50.4	
1 PCB-1016							
1	5.986	5.987	-0.001	260197038	500.0	477.7	
1	6.760	6.762	-0.002	479722197	500.0	427.0	
1	6.971	6.972	-0.001	234734069	500.0	494.4	
1	7.623	7.622	0.001	230019102	500.0	442.5	
1	8.206	8.207	-0.001	131632163	500.0	435.5	
2	6.722	6.721	0.001	87838882	500.0	504.0	
2	7.437	7.436	0.001	177321866	500.0	499.6	
2	8.184	8.184	0.000	374438657	500.0	488.0	
2	8.399	8.399	0.000	169910956	500.0	506.5	
2	9.135	9.136	-0.001	116893414	500.0	488.7	
						RPD = 8.81	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.453	9.452	0.001	378660744	500.3	469.3	
1	9.860	9.861	-0.001	690930395	500.3	466.4	
1	10.238	10.241	-0.003	687391253	500.3	472.5	
1	11.075	11.076	-0.001	772174115	500.3	451.0	
1	11.386	11.387	-0.001	316706473	500.3	456.2	
2	10.920	10.919	0.001	247734856	500.3	470.7	
2	11.175	11.176	-0.001	314504846	500.3	465.6	
2	11.577	11.576	0.001	388823789	500.3	453.5	
2	12.252	12.253	-0.001	433727145	500.3	424.4	
2	12.617	12.618	-0.001	262241080	500.3	443.2	
						RPD = 2.54	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.520	0.001	305007915	25.0	22.4	
2	13.752	13.751	0.001	139093822	25.0	23.0	
						RPD = 2.43	
S 7 Polychlorinated biphenyls, Total							
1						918.5	
2						948.8	
						RPD = 3.25	

Reagents:

1016/1260Cal4_00002 Amount Added: 20.00 Units: uL

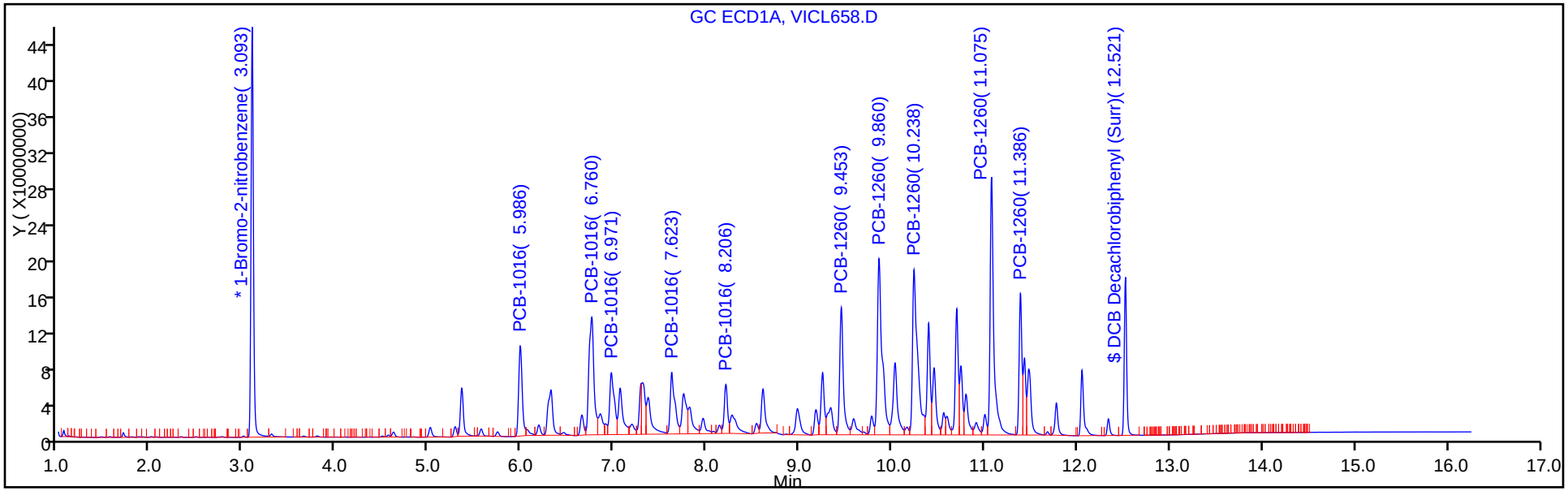
Report Date: 04-Aug-2016 08:45:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

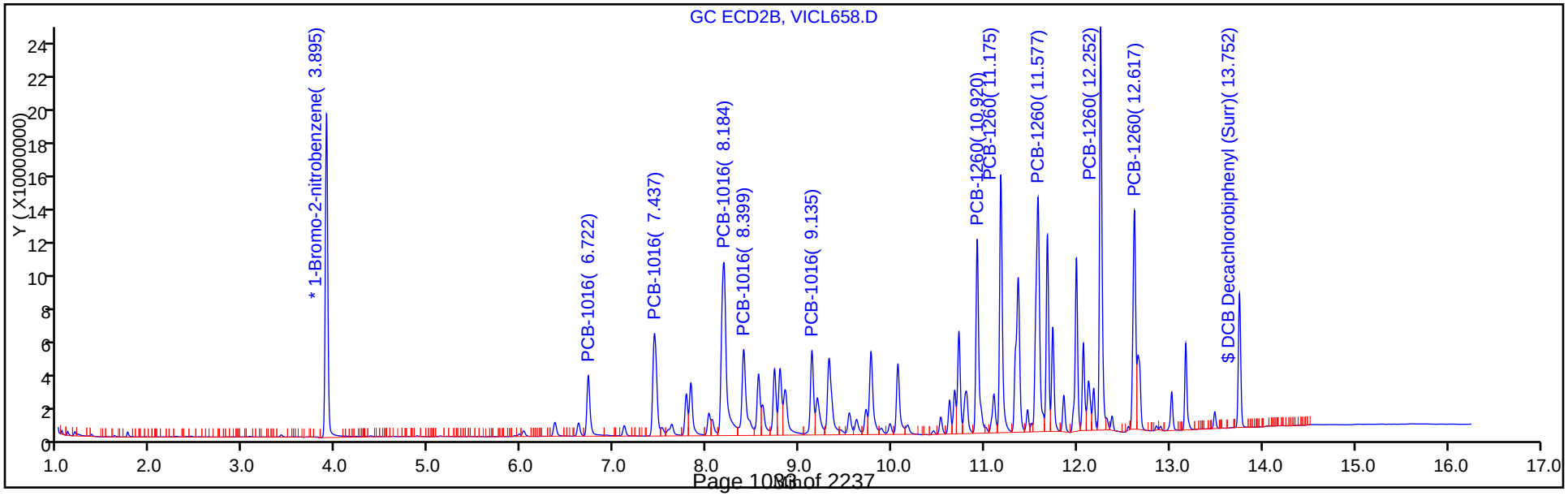
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL658.D

Injection Date:	03-Aug-2016 16:44:15	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	18
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	18
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL659.D				
Lims ID:	ICIS				
Client ID:					
Sample Type:	ICIS	Calib Level:	5		
Inject. Date:	03-Aug-2016 17:06:47	ALS Bottle#:	19	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	ICIS				
Misc. Info.:	160-0008076-019				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:18	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:13:08

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	808574174	50.4	50.4	
2	3.896	3.896	0.000	355323807	50.4	50.4	
1 PCB-1016							
1	5.987	5.987	0.000	543592981	1000.0	1031.6	
1	6.762	6.762	0.000	1110122499	1000.0	938.1	
1	6.972	6.972	0.000	532135711	1000.0	1060.6	
1	7.622	7.622	0.000	537553442	1000.0	1020.6	
1	8.207	8.207	0.000	311219058	1000.0	1015.7	
2	6.721	6.721	0.000	173007745	1000.0	1009.1	
2	7.436	7.436	0.000	344901974	1000.0	987.9	
2	8.184	8.184	0.000	756360920	1000.0	1002.1	
2	8.399	8.399	0.000	330260486	1000.0	1000.8	
2	9.136	9.136	0.000	231110824	1000.0	982.2	
						RPD = 1.68	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.452	9.452	0.000	832512026	1000.5	1024.6	
1	9.861	9.861	0.000	1508038401	1000.5	1009.7	
1	10.241	10.241	0.000	1513777940	1000.5	1035.4	
1	11.076	11.076	0.000	1703621536	1000.5	968.5	
1	11.387	11.387	0.000	706645033	1000.5	999.5	
2	10.919	10.919	0.000	505382388	1000.5	976.2	
2	11.176	11.176	0.000	649291757	1000.5	977.2	
2	11.576	11.576	0.000	833319339	1000.5	987.9	
2	12.253	12.253	0.000	926061150	1000.5	921.1	
2	12.618	12.618	0.000	561946644	1000.5	965.5	
						RPD = 4.25	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.519	12.519	0.000	640227228	50.0	48.1	
2	13.753	13.753	0.000	285436153	50.0	48.4	
						RPD = 0.70	

Reagents:

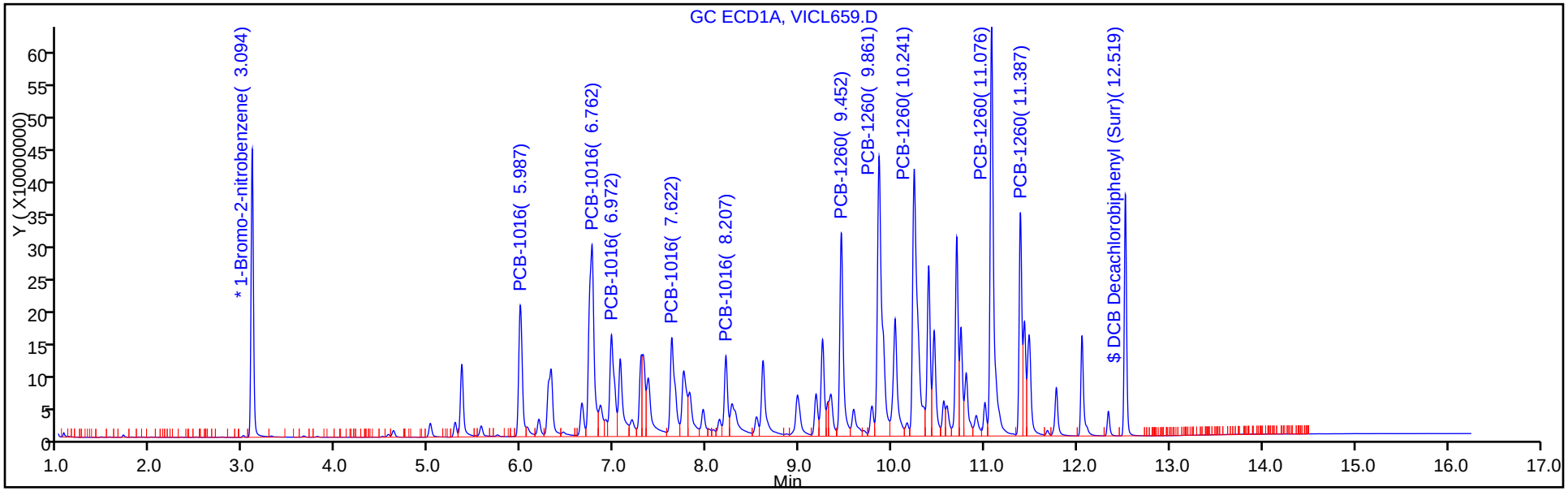
1016/1260Cal5_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:19 Chrom Revision: 2.2 20-Apr-2016 13:59:46

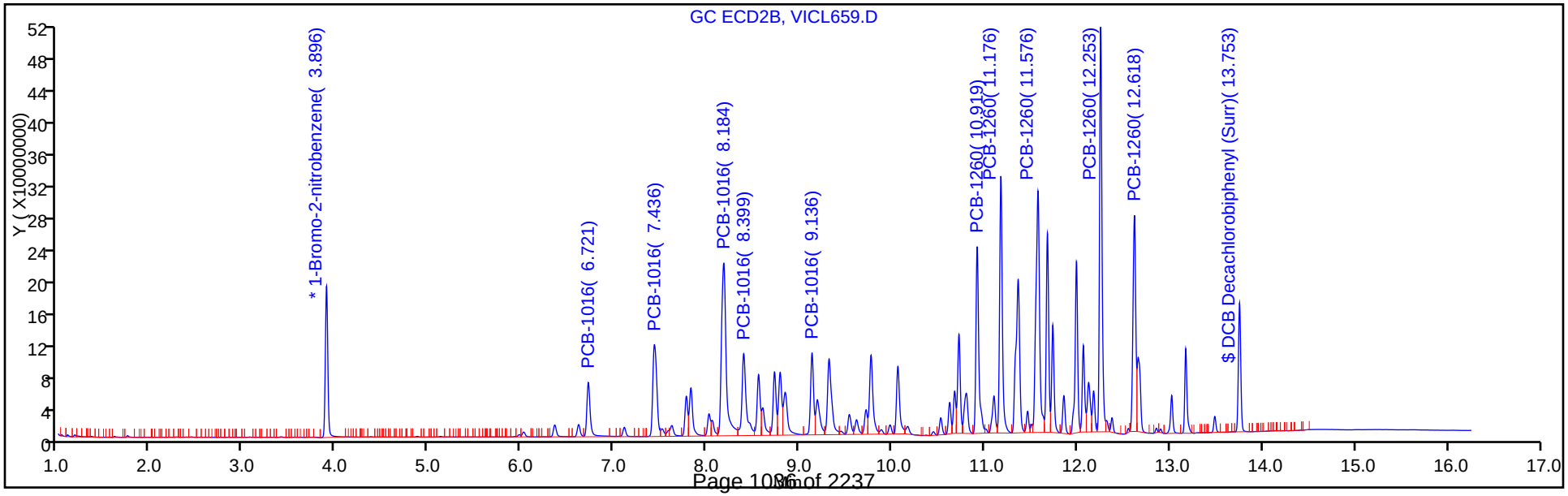
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL659.D				
Injection Date:	03-Aug-2016 17:06:47	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ICIS			Worklist Smp#:	19
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	19
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL660.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	6		
Inject. Date:	03-Aug-2016 17:29:18	ALS Bottle#:	20	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-020				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:23	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				

First Level Reviewer: bonkoskig Date: 04-Aug-2016 07:27:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.094	3.094	0.000	786881894	50.4	50.4	
2	3.896	3.896	0.000	347008035	50.4	50.4	
1 PCB-1016							
1	5.989	5.987	0.002	1008091551	2000.0	1984.9	
1	6.762	6.762	0.000	2206780571	2000.0	1869.3	
1	6.972	6.972	0.000	1007530037	2000.0	2011.0	
1	7.624	7.622	0.002	1028259826	2000.0	1989.0	
1	8.207	8.207	0.000	597996792	2000.0	1988.2	
2	6.723	6.721	0.002	303597498	2000.0	1813.3	
2	7.438	7.436	0.002	612672112	2000.0	1796.8	
2	8.184	8.184	0.000	1429032653	2000.0	1938.7	
2	8.399	8.399	0.000	624561189	2000.0	1938.0	
2	9.136	9.136	0.000	450140007	2000.0	1959.0	
						RPD = 4.11	

Report Date: 04-Aug-2016 08:45:24 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL660.D

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.454	9.452	0.002	1598563037	2001.0	2007.5	
1	9.860	9.861	-0.001	2962716140	2001.0	2022.4	
1	10.239	10.241	-0.002	2855321508	2001.0	1994.8	
1	11.079	11.076	0.003	3614124005	2001.0	2075.8	
1	11.387	11.387	0.000	1422006469	2001.0	2042.2	
2	10.921	10.919	0.002	990761013	2001.0	1959.7	
2	11.176	11.176	0.000	1294793480	2001.0	1995.3	
2	11.576	11.576	0.000	1654795112	2001.0	2008.9	
2	12.253	12.253	0.000	1911400334	2001.0	1946.8	
2	12.618	12.618	0.000	1133176533	2001.0	1993.6	
						RPD = 2.38	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.520	12.519	0.001	1320000433	100.0	101.3	
2	13.753	13.753	0.000	598869799	100.0	102.5	
						RPD = 1.16	
S 7 Polychlorinated biphenyls, Total							
1						3997.0	
2						3870.0	
						RPD = 3.23	

Reagents:

1016/1260Cal6_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:24 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL660.D

Injection Date: 03-Aug-2016 17:29:18 Instrument ID: SGCV Operator ID: GLB

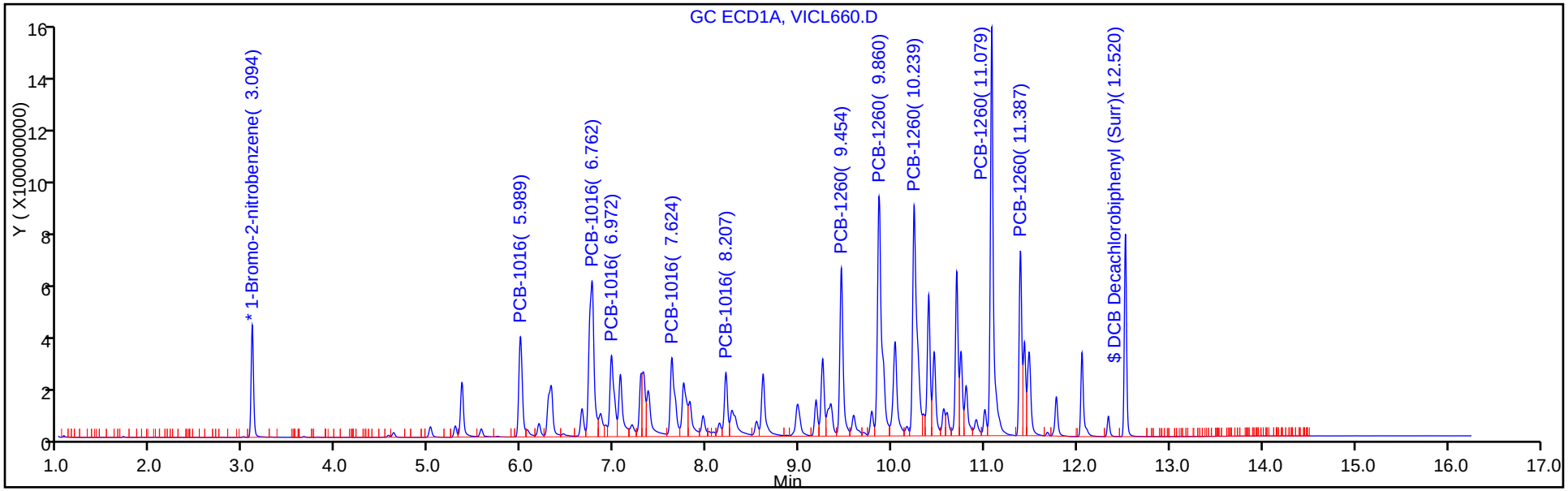
Lims ID: IC Worklist Smp#: 20

Client ID:

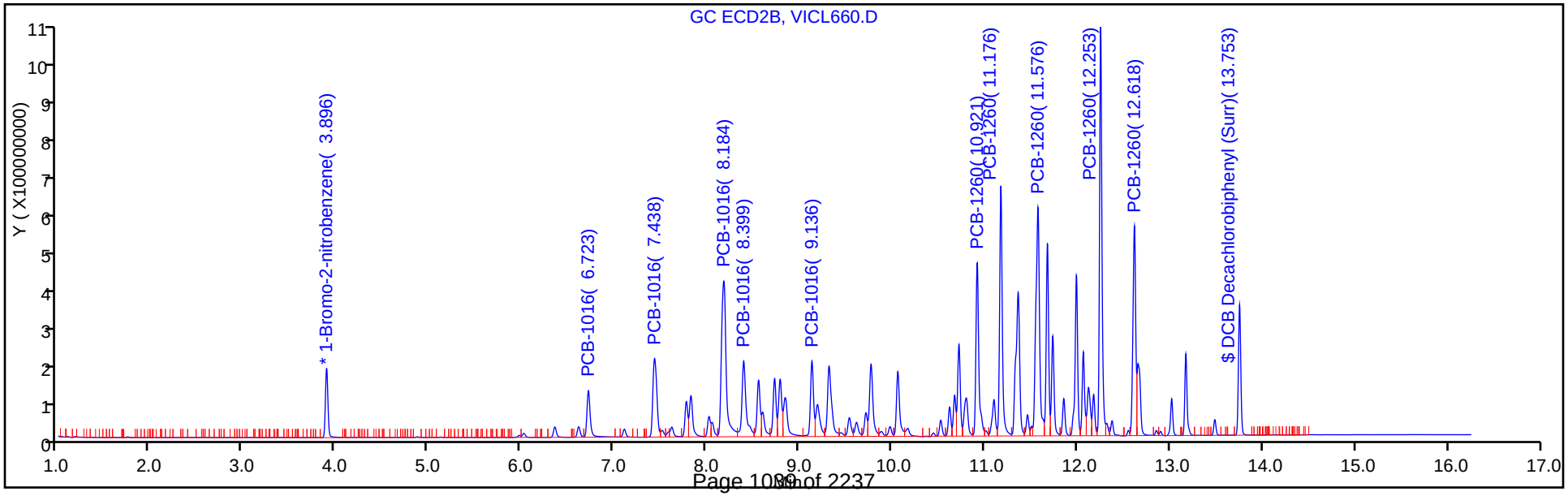
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 20

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Lims ID:	IC				
Client ID:					
Sample Type:	IC	Calib Level:	7		
Inject. Date:	03-Aug-2016 17:51:52	ALS Bottle#:	21	Worklist Smp#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	IC				
Misc. Info.:	160-0008076-021				
Operator ID:	GLB	Instrument ID:	SGCV		
Sublist:	chrom-8082_IS_SGCV*sub9				
Method:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m				
Limit Group:	GC 8082A_ICAL_IS				
Last Update:	04-Aug-2016 08:45:26	Calib Date:	03-Aug-2016 17:51:52		
Integrator:	Falcon				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK049				
First Level Reviewer: bonkoskig		Date:	04-Aug-2016 07:29:46		

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	755230641	50.4	50.4	
2	3.895	3.896	-0.001	331370829	50.4	50.4	
1 PCB-1016							
1	5.988	5.987	0.001	1944619770	4000.0	4010.5	
1	6.763	6.762	0.001	4877232662	4000.0	4245.9	
1	6.971	6.972	-0.001	1928695593	4000.0	3955.8	
1	7.623	7.622	0.001	2013928854	4000.0	4040.5	
1	8.206	8.207	-0.001	1175129464	4000.0	4052.3	
2	6.722	6.721	0.001	552414413	4000.0	3455.1	
2	7.435	7.436	-0.001	1100793005	4000.0	3380.7	
2	8.185	8.184	0.001	2745137393	4000.0	3900.0	
2	8.399	8.399	0.000	1158932524	4000.0	3765.9	
2	9.135	9.136	-0.001	841574191	4000.0	3835.3	
						RPD = 10.19	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.455	9.452	0.003	3434056016	4002.0	4475.3	
1	0.000	9.861	-9.861	0	4002.0	0	
1	10.251	10.241	0.010	8498624841	4002.0	6159.0	a
1	0.000	11.076	-11.076	0	4002.0	0	
1	11.390	11.387	0.003	3345476747	4002.0	4972.4	
2	10.920	10.919	0.001	1947979097	4002.0	4034.9	
2	11.175	11.176	-0.001	2666048023	4002.0	4302.3	
2	11.577	11.576	0.001	3381098424	4002.0	4298.2	
2	12.257	12.253	0.004	4991035804	4002.0	5323.3	
2	12.617	12.618	-0.001	2351191624	4002.0	4331.7	
						RPD = 15.41	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.523	12.519	0.004	2872586838	200.0	227.6	
2	13.752	13.753	-0.001	1160462738	200.0	205.7	
						RPD = 10.11	
S 7 Polychlorinated biphenyls, Total							
1						9263.3	
2						8125.5	
						RPD = 13.09	

Reagents:

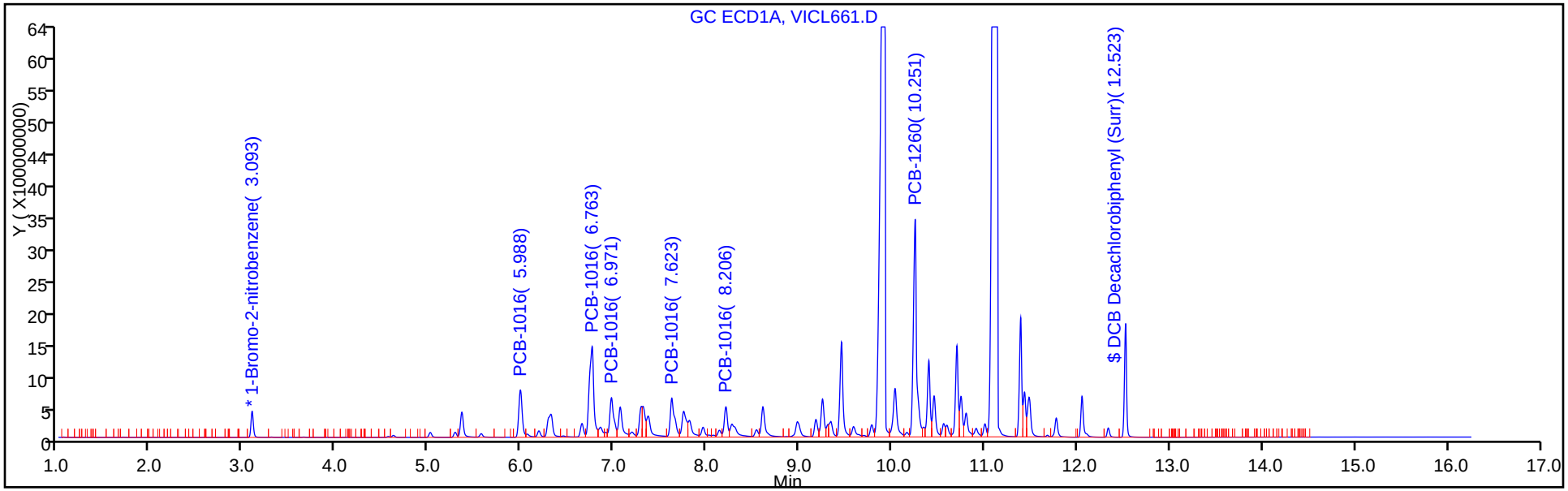
1016/1260Cal7_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:27 Chrom Revision: 2.2 20-Apr-2016 13:59:46

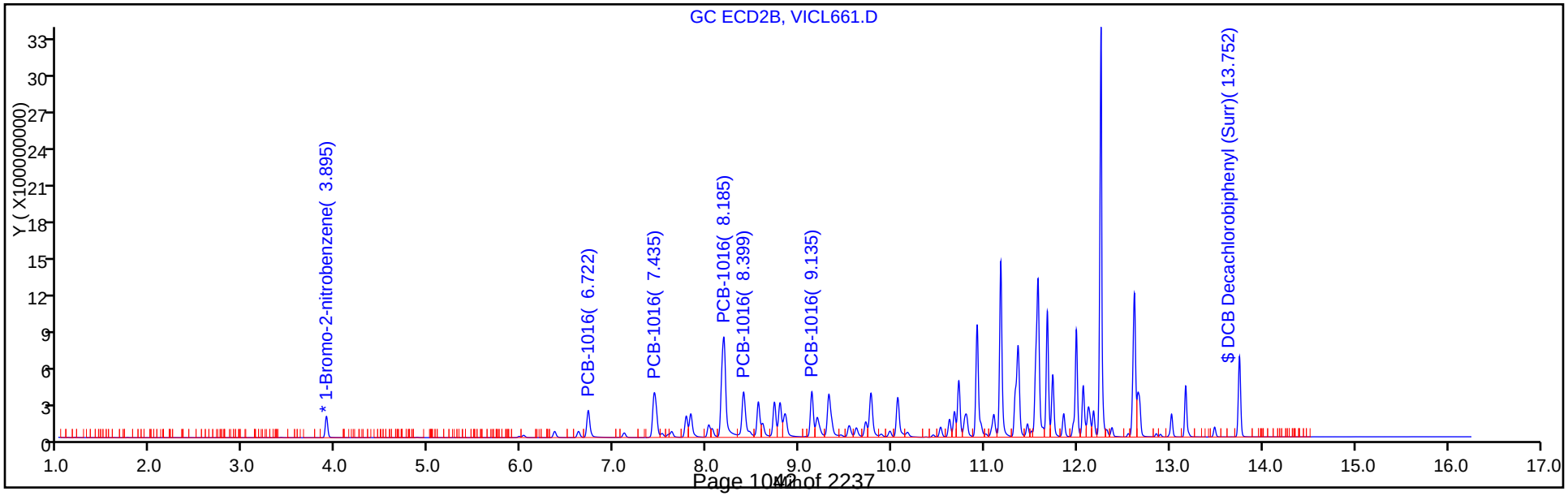
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D				
Injection Date:	03-Aug-2016 17:51:52	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	IC			Worklist Smp#:	21
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	21
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-263102/14 Calibration Date: 08/03/2016 15:14

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VICL654.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Ave	0.0097	0.0112		1170	1010	16.4	20.0
PCB-1221 Peak 2	Ave	0.0056	0.0063		1140	1010	13.4	20.0
PCB-1221 Peak 3	Ave	0.0234	0.0272		1170	1010	16.0	20.0
PCB-1254 Peak 1	Ave	0.0313	0.0368		1170	996	17.8	20.0
PCB-1254 Peak 2	Ave	0.0403	0.0472		1170	996	17.2	20.0
PCB-1254 Peak 3	Ave	0.0627	0.0741		1180	996	18.2	20.0
PCB-1254 Peak 4	Ave	0.0444	0.0546		1220	996	22.8*	20.0
PCB-1254 Peak 5	Ave	0.0629	0.0776		1230	996	23.4*	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8037	0.9336		58.1	50.0	16.2	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-263102/14 Calibration Date: 08/03/2016 15:14

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VICL654.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1221 Peak 1	5.01	5.00	5.02
PCB-1221 Peak 2	5.28	5.27	5.29
PCB-1221 Peak 3	5.35	5.35	5.37
PCB-1254 Peak 1	8.21	8.20	8.22
PCB-1254 Peak 2	8.61	8.60	8.62
PCB-1254 Peak 3	9.18	9.17	9.19
PCB-1254 Peak 4	9.86	9.85	9.87
PCB-1254 Peak 5	10.24	10.23	10.25
DCB Decachlorobiphenyl (Surr)	12.52	12.51	12.53

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL654.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-Aug-2016 15:14:08 ALS Bottle#: 14 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: 160-0008076-014
Operator ID: GLB Instrument ID: SGCV
Sublist:

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:51 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 08:43:45

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	709671131	50.4	50.4	
2	3.895	3.896	-0.001	328826094	50.4	50.4	
2 PCB-1221							
1	5.014	5.014	0.000	159546310	1008.0	1172.9	
1	5.284	5.284	0.000	89475347	1008.0	1142.9	
1	5.354	5.355	-0.001	385289625	1008.0	1168.9	
2	6.358	6.358	0.000	106087272	1008.0	1157.3	
2	6.616	6.616	0.000	63630217	1008.0	1215.5	
2	6.721	6.721	0.000	245709318	1008.0	1225.1	
						RPD = 3.20	
8 PCB-1254							M
1	8.208	8.207	0.001	516507361	996.0	1173.6	M
1	8.608	8.607	0.001	661975481	996.0	1167.3	M
1	9.179	9.179	0.000	1038769003	996.0	1177.4	M
1	9.858	9.855	0.003	765281111	996.0	1222.9	M
1	10.239	10.237	0.002	1088191113	996.0	1228.9	M
2	9.773	9.771	0.002	429382882	996.0	1129.3	
2	10.063	10.063	0.000	441026258	996.0	1186.3	
2	10.676	10.676	0.000	657961355	996.0	1167.4	
2	11.363	11.364	-0.001	361132064	996.0	1232.4	
2	11.578	11.578	0.000	622655864	996.0	1253.4	
						RPD = 0.02	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.519	12.520	-0.001	657253157	50.0	58.1	
2	13.751	13.751	0.000	312341725	50.0	59.3	
						RPD = 2.16	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

21/54ICVw/IS_00004 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:53 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL654.D

Injection Date: 03-Aug-2016 15:14:08 Instrument ID: SGCV Operator ID: GLB

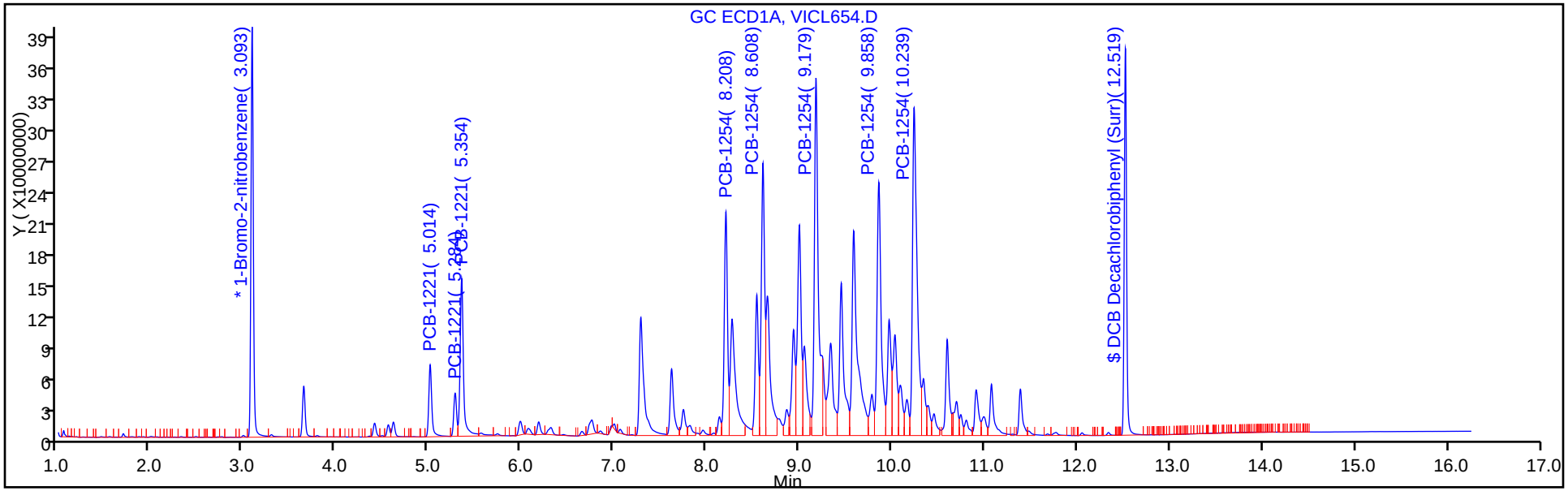
Lims ID: ICV Worklist Smp#: 14

Client ID:

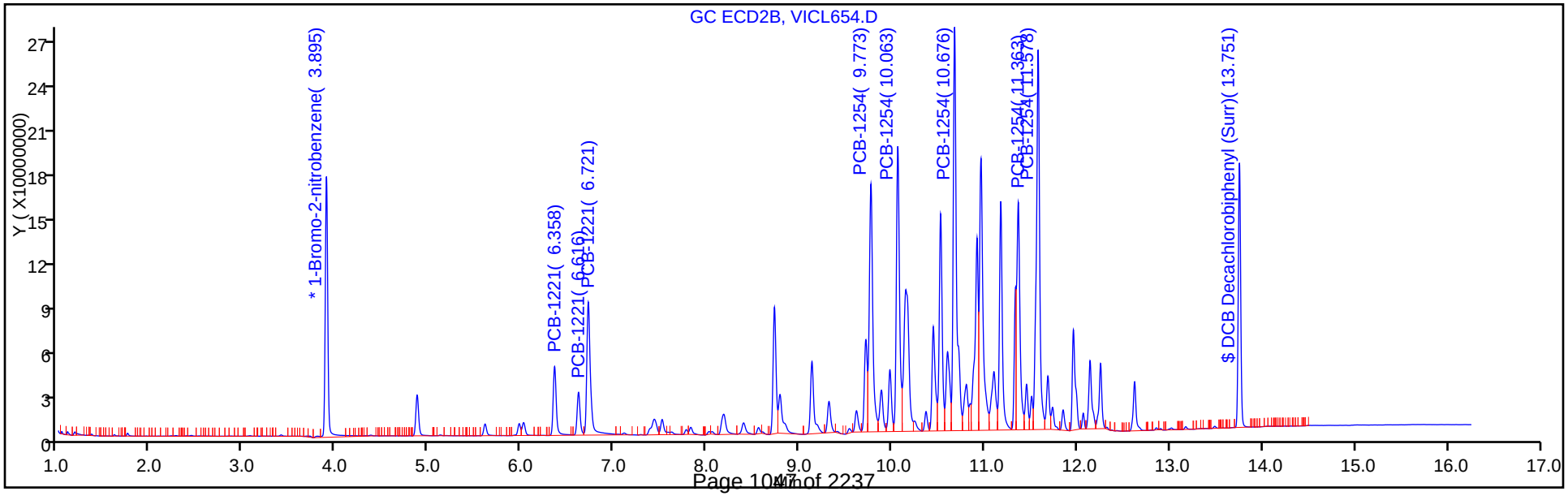
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 14

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1

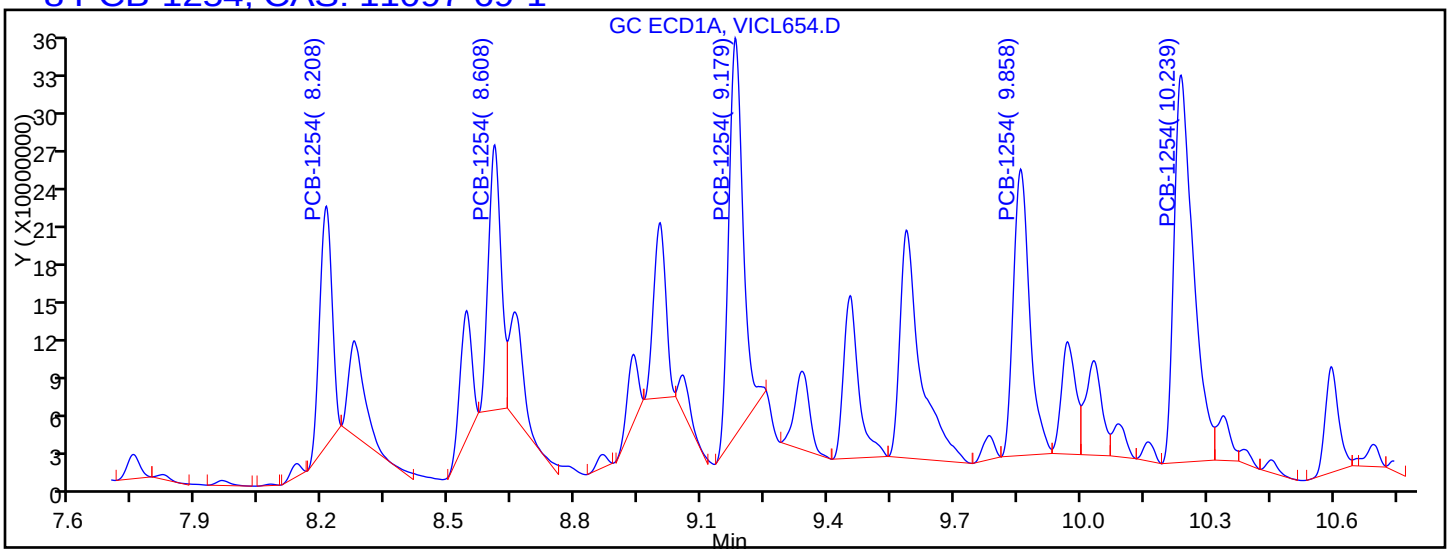


Report Date: 04-Aug-2016 08:44:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

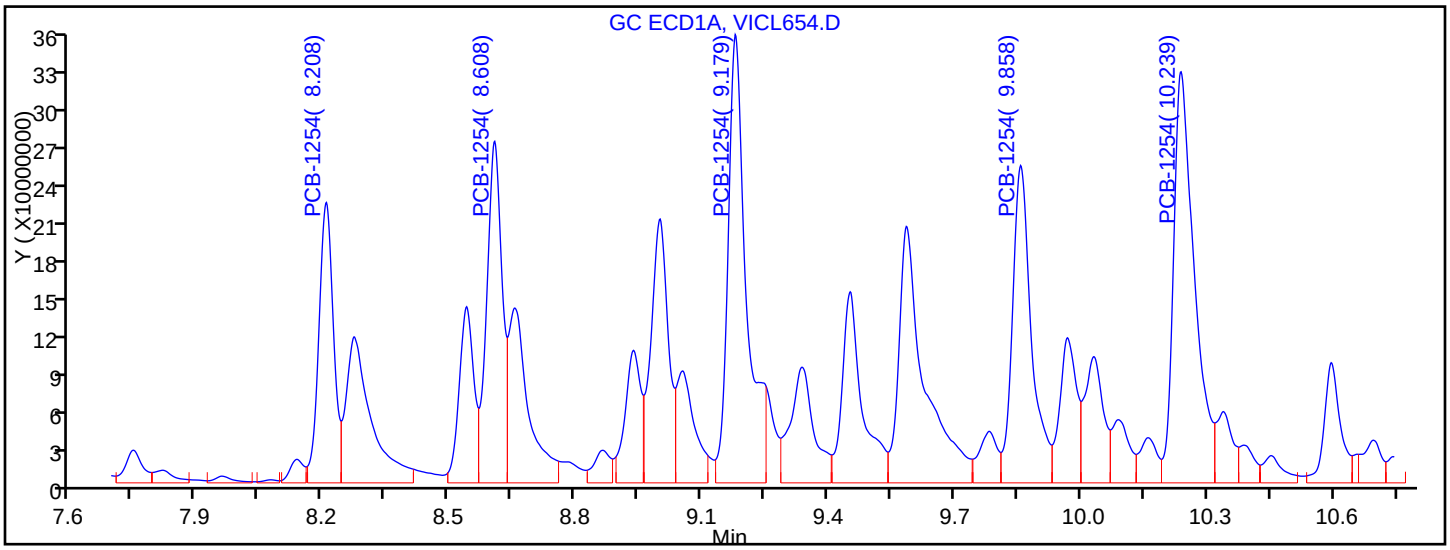
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL654.D				
Injection Date:	03-Aug-2016 15:14:08	Instrument ID:	SGCV		
Lims ID:	ICV				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	14	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

8 PCB-1254, CAS: 11097-69-1



Processing Integration Results

RT = 8.208	Response = 374796472	M
RT = 8.608	Response = 422082439	M
RT = 9.179	Response = 711291749	M
RT = 9.858	Response = 587332175	M
RT = 10.239	Response = 941911443	M



Manual Integration Results

RT = 8.208	Response = 516507361	M
RT = 8.608	Response = 661975481	M
RT = 9.179	Response = 1038769003	M
RT = 9.858	Response = 765281111	M
RT = 10.239	Response = 1088191113	M

Reviewer: bonkoskig, 04-Aug-2016 08:43:45

Audit Action: Assigned New Baseline Audit Reason: Baseline Smoothing

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-263102/14 Calibration Date: 08/03/2016 15:14

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VICL654.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Ave	0.0140	0.0161		1160	1010	14.8	20.0
PCB-1221 Peak 2	Ave	0.0080	0.0097		1220	1010	20.6*	20.0
PCB-1221 Peak 3	Ave	0.0307	0.0374		1230	1010	21.5*	20.0
PCB-1254 Peak 1	Ave	0.0583	0.0661		1130	996	13.4	20.0
PCB-1254 Peak 2	Ave	0.0570	0.0679		1190	996	19.1	20.0
PCB-1254 Peak 3	Ave	0.0864	0.1013		1170	996	17.2	20.0
PCB-1254 Peak 4	Ave	0.0449	0.0556		1230	996	23.7*	20.0
PCB-1254 Peak 5	Ave	0.0761	0.0958		1250	996	25.8*	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8067	0.9575		59.3	50.0	18.7	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-263102/14 Calibration Date: 08/03/2016 15:14

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VICL654.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1221 Peak 1	6.36	6.35	6.37
PCB-1221 Peak 2	6.62	6.61	6.63
PCB-1221 Peak 3	6.72	6.71	6.73
PCB-1254 Peak 1	9.77	9.76	9.78
PCB-1254 Peak 2	10.06	10.05	10.07
PCB-1254 Peak 3	10.68	10.67	10.69
PCB-1254 Peak 4	11.36	11.35	11.37
PCB-1254 Peak 5	11.58	11.57	11.59
DCB Decachlorobiphenyl (Surr)	13.75	13.74	13.76

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL654.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-Aug-2016 15:14:08 ALS Bottle#: 14 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: 160-0008076-014
Operator ID: GLB Instrument ID: SGCV
Sublist:

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:44:51 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 08:43:45

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.093	3.094	-0.001	709671131	50.4	50.4	
2	3.895	3.896	-0.001	328826094	50.4	50.4	
2 PCB-1221							
1	5.014	5.014	0.000	159546310	1008.0	1172.9	
1	5.284	5.284	0.000	89475347	1008.0	1142.9	
1	5.354	5.355	-0.001	385289625	1008.0	1168.9	
2	6.358	6.358	0.000	106087272	1008.0	1157.3	
2	6.616	6.616	0.000	63630217	1008.0	1215.5	
2	6.721	6.721	0.000	245709318	1008.0	1225.1	
						RPD = 3.20	
8 PCB-1254							M
1	8.208	8.207	0.001	516507361	996.0	1173.6	M
1	8.608	8.607	0.001	661975481	996.0	1167.3	M
1	9.179	9.179	0.000	1038769003	996.0	1177.4	M
1	9.858	9.855	0.003	765281111	996.0	1222.9	M
1	10.239	10.237	0.002	1088191113	996.0	1228.9	M
2	9.773	9.771	0.002	429382882	996.0	1129.3	
2	10.063	10.063	0.000	441026258	996.0	1186.3	
2	10.676	10.676	0.000	657961355	996.0	1167.4	
2	11.363	11.364	-0.001	361132064	996.0	1232.4	
2	11.578	11.578	0.000	622655864	996.0	1253.4	
						RPD = 0.02	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.519	12.520	-0.001	657253157	50.0	58.1	
2	13.751	13.751	0.000	312341725	50.0	59.3	
						RPD = 2.16	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

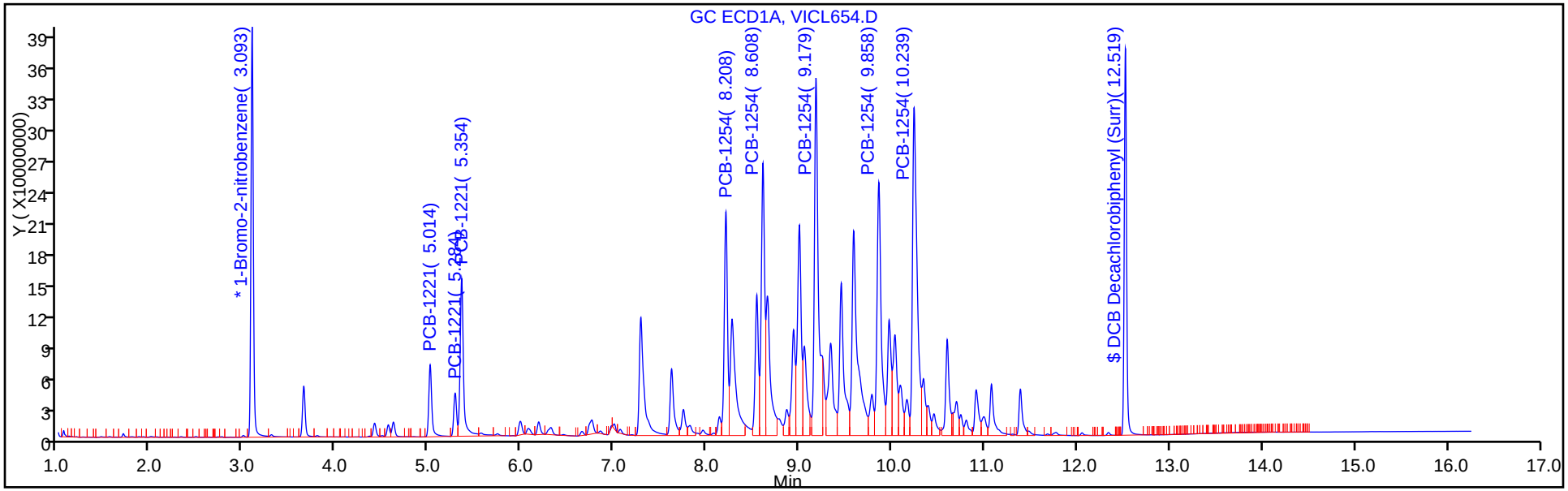
21/54ICVw/IS_00004 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:44:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

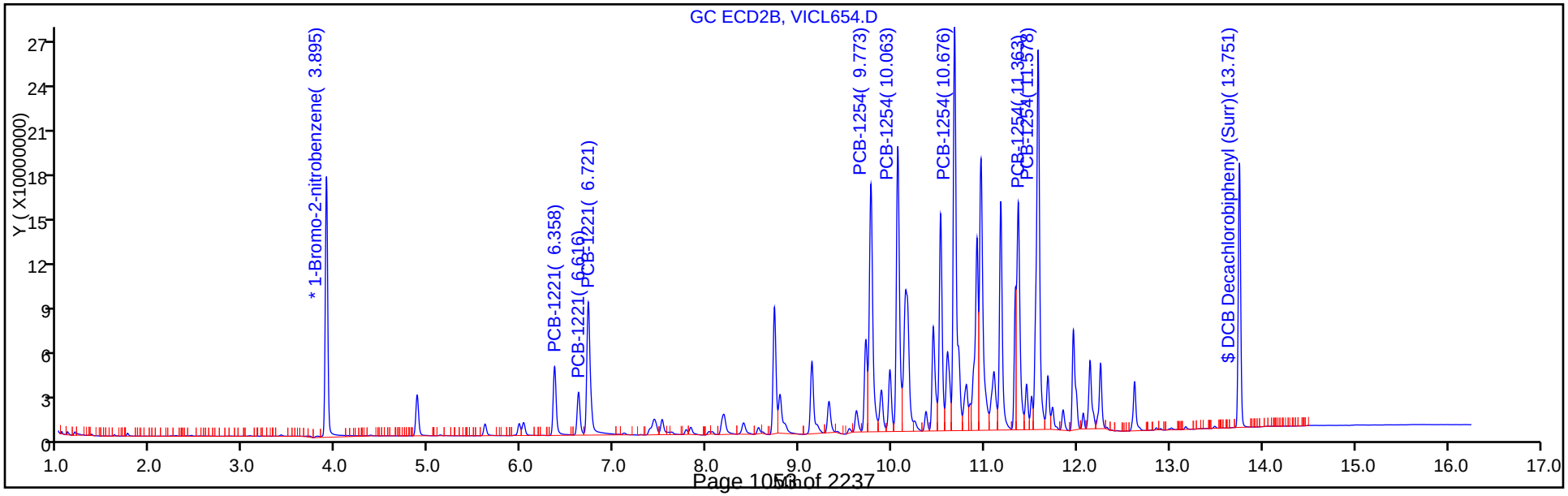
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL654.D				
Injection Date:	03-Aug-2016 15:14:08	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ICV			Worklist Smp#:	14
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	14
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-263102/22 Calibration Date: 08/03/2016 18:14

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VICL662.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Lin1		0.0383		1170	1000	16.7	20.0
PCB-1016 Peak 2	Lin1		0.0799		1080	1000	7.6	20.0
PCB-1016 Peak 3	Lin1		0.0372		1180	1000	18.2	20.0
PCB-1016 Peak 4	Lin1		0.0374		1140	1000	13.6	20.0
PCB-1016 Peak 5	Lin1		0.0187		978	1000	-2.2	20.0
PCB-1260 Peak 1	Lin1		0.0585		1150	1000	15.2	20.0
PCB-1260 Peak 2	Lin1		0.1063		1140	1000	13.9	20.0
PCB-1260 Peak 3	Lin1		0.1017		1120	1000	11.5	20.0
PCB-1260 Peak 4	Lin1		0.1236		1120	1000	12.2	20.0
PCB-1260 Peak 5	Lin1		0.0522		1180	1000	18.1	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8424	0.9669		57.4	50.0	14.8	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-263102/22 Calibration Date: 08/03/2016 18:14

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VICL662.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1016 Peak 1	5.99	5.98	6.00
PCB-1016 Peak 2	6.76	6.75	6.77
PCB-1016 Peak 3	6.97	6.96	6.98
PCB-1016 Peak 4	7.62	7.61	7.63
PCB-1016 Peak 5	8.21	8.20	8.22
PCB-1260 Peak 1	9.45	9.44	9.46
PCB-1260 Peak 2	9.86	9.85	9.87
PCB-1260 Peak 3	10.24	10.23	10.25
PCB-1260 Peak 4	11.08	11.07	11.09
PCB-1260 Peak 5	11.39	11.38	11.40
DCB Decachlorobiphenyl (Surr)	12.52	12.51	12.53

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL662.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-Aug-2016 18:14:24 ALS Bottle#: 22 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: 160-0008076-022
Operator ID: GLB Instrument ID: SGCV
Sublist:

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:45:26 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 08:41:57

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.092	3.094	-0.002	819714699	50.4	50.4	
2	3.896	3.896	0.000	357774945	50.4	50.4	
1 PCB-1016							
1	5.987	5.987	0.000	622044003	1000.0	1167.1	
1	6.757	6.762	-0.005	1299144742	1000.0	1076.0	
1	6.969	6.972	-0.003	604685078	1000.0	1182.1	
1	7.622	7.622	0.000	607861973	1000.0	1136.4	
1	8.206	8.207	-0.001	303569035	1000.0	977.9	
2	6.721	6.721	0.000	179212705	1000.0	1038.2	
2	7.436	7.436	0.000	399779023	1000.0	1137.2	
2	8.185	8.184	0.001	908540101	1000.0	1195.5	
2	8.398	8.399	-0.001	396545882	1000.0	1193.5	
2	9.135	9.136	-0.001	278076688	1000.0	1173.8	
						RPD = 3.52	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.452	9.452	0.000	951139246	1000.5	1152.8	
1	9.859	9.861	-0.002	1728965102	1000.5	1139.8	
1	10.239	10.241	-0.002	1654448281	1000.5	1115.2	
1	11.076	11.076	0.000	2010660840	1000.5	1122.5	
1	11.386	11.387	-0.001	850038493	1000.5	1181.7	
2	10.920	10.919	0.001	591544449	1000.5	1134.9	
2	11.175	11.176	-0.001	776633562	1000.5	1160.8	
2	11.576	11.576	0.000	989605783	1000.5	1165.2	
2	12.253	12.253	0.000	1146535611	1000.5	1132.6	
2	12.616	12.618	-0.002	708544149	1000.5	1209.0	
						RPD = 1.57	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.519	0.002	786312307	50.0	57.4	
2	13.751	13.753	-0.002	377448719	50.0	62.0	
						RPD = 7.65	

Reagents:

16/60ICVw/IS_00002 Amount Added: 20.00 Units: uL

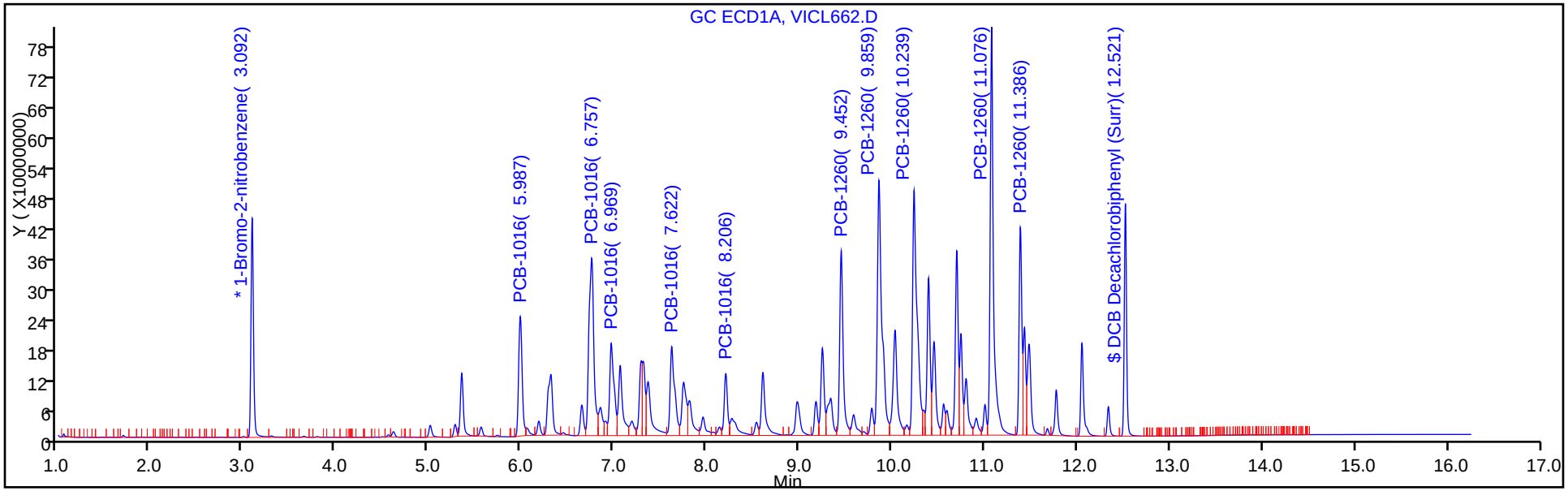
Report Date: 04-Aug-2016 08:45:33 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

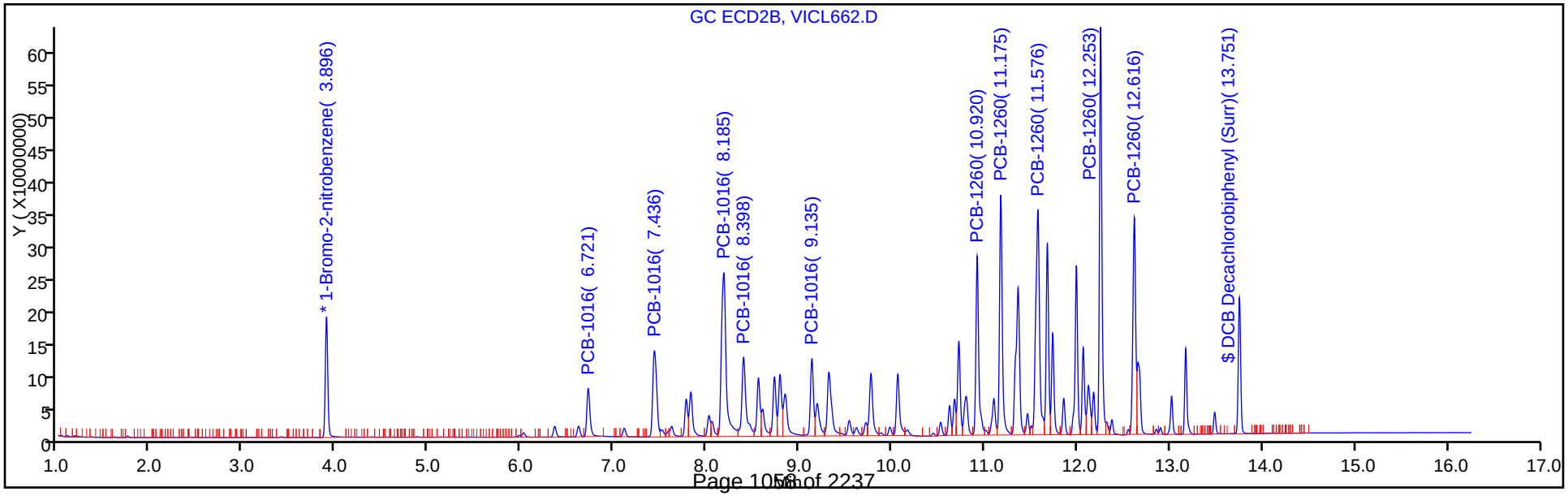
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL662.D

Injection Date:	03-Aug-2016 18:14:24	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ICV			Worklist Smp#:	22
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	22
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-263102/22 Calibration Date: 08/03/2016 18:14

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VICL662.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Ave	0.0243	0.0253		1040	1000	3.8	20.0
PCB-1016 Peak 2	Ave	0.0495	0.0563		1140	1000	13.7	20.0
PCB-1016 Peak 3	Ave	0.1071	0.1280		1200	1000	19.6	20.0
PCB-1016 Peak 4	Ave	0.0468	0.0559		1190	1000	19.3	20.0
PCB-1016 Peak 5	Ave	0.0334	0.0392		1170	1000	17.4	20.0
PCB-1260 Peak 1	Ave	0.0734	0.0833		1130	1000	13.4	20.0
PCB-1260 Peak 2	Ave	0.0943	0.1094		1160	1000	16.0	20.0
PCB-1260 Peak 3	Ave	0.1196	0.1393		1170	1000	16.5	20.0
PCB-1260 Peak 4	Ave	0.1426	0.1614		1130	1000	13.2	20.0
PCB-1260 Peak 5	Ave	0.0826	0.0998		1210	1000	20.8*	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8582	1.063		62.0	50.0	23.9*	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-263102/22 Calibration Date: 08/03/2016 18:14

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VICL662.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1016 Peak 1	6.72	6.71	6.73
PCB-1016 Peak 2	7.44	7.43	7.45
PCB-1016 Peak 3	8.19	8.17	8.19
PCB-1016 Peak 4	8.40	8.39	8.41
PCB-1016 Peak 5	9.14	9.13	9.15
PCB-1260 Peak 1	10.92	10.91	10.93
PCB-1260 Peak 2	11.18	11.17	11.19
PCB-1260 Peak 3	11.58	11.57	11.59
PCB-1260 Peak 4	12.25	12.24	12.26
PCB-1260 Peak 5	12.62	12.61	12.63
DCB Decachlorobiphenyl (Surr)	13.75	13.74	13.76

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL662.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-Aug-2016 18:14:24 ALS Bottle#: 22 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: 160-0008076-022
Operator ID: GLB Instrument ID: SGCV
Sublist:

Method: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 04-Aug-2016 08:45:26 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK049

First Level Reviewer: bonkoskig Date: 04-Aug-2016 08:41:57

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.092	3.094	-0.002	819714699	50.4	50.4	
2	3.896	3.896	0.000	357774945	50.4	50.4	
1 PCB-1016							
1	5.987	5.987	0.000	622044003	1000.0	1167.1	
1	6.757	6.762	-0.005	1299144742	1000.0	1076.0	
1	6.969	6.972	-0.003	604685078	1000.0	1182.1	
1	7.622	7.622	0.000	607861973	1000.0	1136.4	
1	8.206	8.207	-0.001	303569035	1000.0	977.9	
2	6.721	6.721	0.000	179212705	1000.0	1038.2	
2	7.436	7.436	0.000	399779023	1000.0	1137.2	
2	8.185	8.184	0.001	908540101	1000.0	1195.5	
2	8.398	8.399	-0.001	396545882	1000.0	1193.5	
2	9.135	9.136	-0.001	278076688	1000.0	1173.8	
						RPD = 3.52	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.452	9.452	0.000	951139246	1000.5	1152.8	
1	9.859	9.861	-0.002	1728965102	1000.5	1139.8	
1	10.239	10.241	-0.002	1654448281	1000.5	1115.2	
1	11.076	11.076	0.000	2010660840	1000.5	1122.5	
1	11.386	11.387	-0.001	850038493	1000.5	1181.7	
2	10.920	10.919	0.001	591544449	1000.5	1134.9	
2	11.175	11.176	-0.001	776633562	1000.5	1160.8	
2	11.576	11.576	0.000	989605783	1000.5	1165.2	
2	12.253	12.253	0.000	1146535611	1000.5	1132.6	
2	12.616	12.618	-0.002	708544149	1000.5	1209.0	
						RPD = 1.57	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.521	12.519	0.002	786312307	50.0	57.4	
2	13.751	13.753	-0.002	377448719	50.0	62.0	
						RPD = 7.65	

Reagents:

16/60ICVw/IS_00002 Amount Added: 20.00 Units: uL

Report Date: 04-Aug-2016 08:45:34 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL662.D

Injection Date: 03-Aug-2016 18:14:24 Instrument ID: SGCV Operator ID: GLB

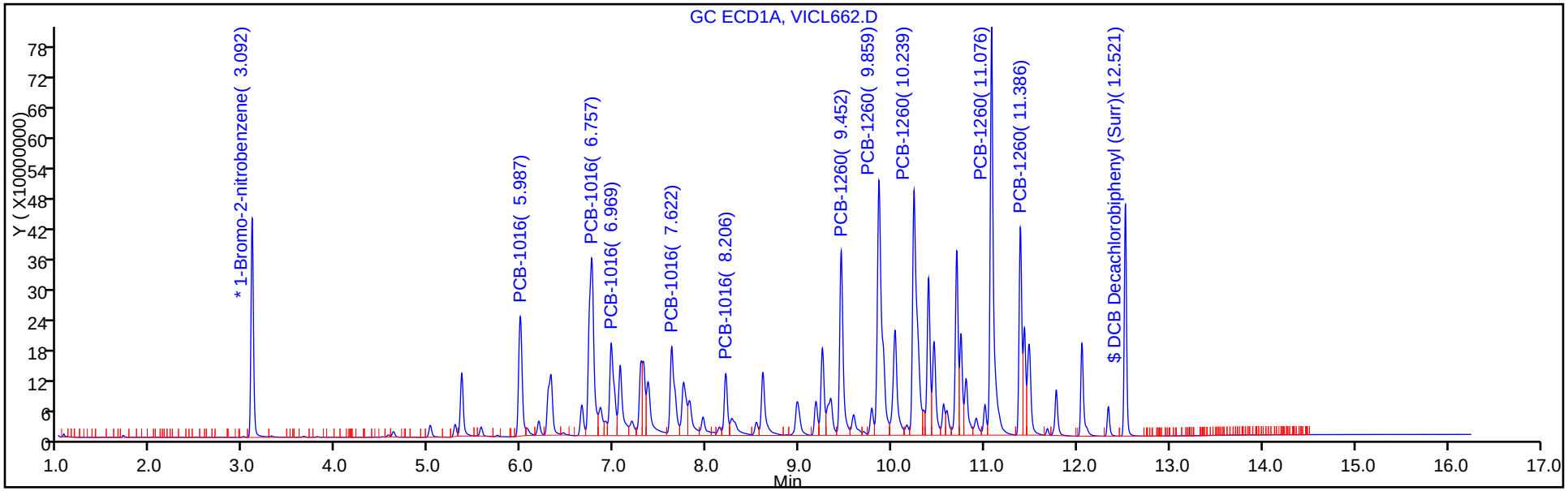
Lims ID: ICV Worklist Smp#: 22

Client ID:

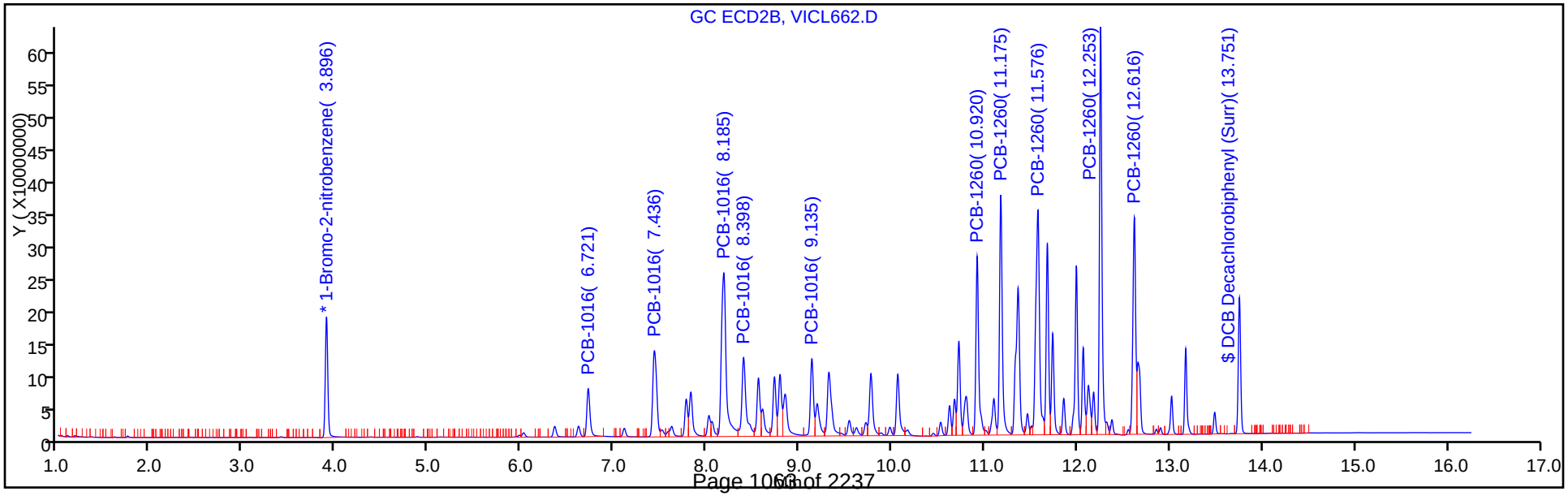
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 22

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-265137/3 Calibration Date: 08/17/2016 10:21

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV903.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Lin1		0.0372		1130	1000	13.3	20.0
PCB-1016 Peak 2	Lin1		0.0566		776	1000	-22.4*	20.0
PCB-1016 Peak 3	Lin1		0.0295		950	1000	-5.0	20.0
PCB-1016 Peak 4	Lin1		0.0261		798	1000	-20.2*	20.0
PCB-1016 Peak 5	Lin1		0.0175		918	1000	-8.2	20.0
PCB-1260 Peak 1	Lin1		0.0503		993	1000	-0.7	20.0
PCB-1260 Peak 2	Lin1		0.0917		986	1000	-1.5	20.0
PCB-1260 Peak 3	Lin1		0.0849		933	1000	-6.7	20.0
PCB-1260 Peak 4	Lin1		0.1081		986	1000	-1.5	20.0
PCB-1260 Peak 5	Lin1		0.0395		900	1000	-10.1	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8424	0.9736		57.9	50.0	15.6	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-265137/3 Calibration Date: 08/17/2016 10:21

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV903.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1016 Peak 1	6.00	5.99	6.01
PCB-1016 Peak 2	6.78	6.77	6.79
PCB-1016 Peak 3	6.99	6.98	7.00
PCB-1016 Peak 4	7.64	7.63	7.65
PCB-1016 Peak 5	8.23	8.22	8.24
PCB-1260 Peak 1	9.47	9.46	9.48
PCB-1260 Peak 2	9.88	9.87	9.89
PCB-1260 Peak 3	10.26	10.25	10.27
PCB-1260 Peak 4	11.09	11.08	11.10
PCB-1260 Peak 5	11.40	11.39	11.41
DCB Decachlorobiphenyl (Surr)	12.54	12.53	12.55

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV903.D
Lims ID: ccvis
Client ID:
Sample Type: CCVIS
Inject. Date: 17-Aug-2016 10:21:22 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVIS
Misc. Info.: 160-0008226-003
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub9

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:44:38 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 17-Aug-2016 12:35:00

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.108	3.108	0.000	539595349	50.4	50.4	
2	3.913	3.913	0.000	324297997	50.4	50.4	
1 PCB-1016							
1	6.003	6.003	0.000	397725884	1000.0	1133.0	
1	6.778	6.778	0.000	606330208	1000.0	775.9	
1	6.988	6.988	0.000	316055462	1000.0	950.1	
1	7.640	7.640	0.000	279009101	1000.0	797.7	
1	8.225	8.225	0.000	187309913	1000.0	917.7	
2	6.740	6.740	0.000	139137947	1000.0	889.2	
2	7.455	7.455	0.000	265365137	1000.0	832.8	
2	8.202	8.202	0.000	558617599	1000.0	810.9	
2	8.417	8.417	0.000	249837694	1000.0	829.5	
2	9.155	9.155	0.000	157066448	1000.0	731.4	
						RPD = 11.09	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.471	9.471	0.000	538452136	1000.5	993.5	
1	9.878	9.878	0.000	982051589	1000.5	985.7	
1	10.256	10.256	0.000	909311322	1000.5	933.3	
1	11.091	11.091	0.000	1157945865	1000.5	985.8	
1	11.401	11.401	0.000	423329848	1000.5	899.6	
2	10.935	10.935	0.000	433006961	1000.5	916.5	
2	11.190	11.190	0.000	546191988	1000.5	900.6	
2	11.592	11.592	0.000	734396257	1000.5	954.0	
2	12.268	12.268	0.000	900303091	1000.5	981.2	
2	12.632	12.632	0.000	530756741	1000.5	999.2	
						RPD = 0.97	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.535	12.535	0.000	521156684	50.0	57.9	
2	13.768	13.768	0.000	311352053	50.0	59.4	
						RPD = 2.63	

Reagents:

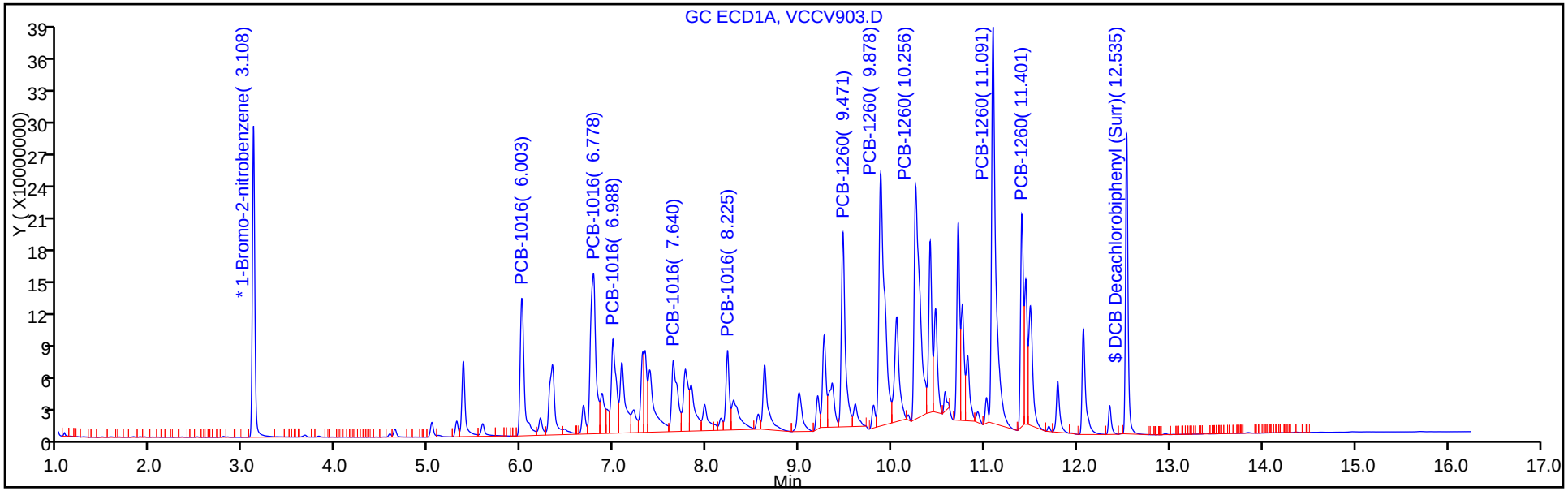
1016/1260CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 06:44:38 Chrom Revision: 2.2 20-Apr-2016 13:59:46

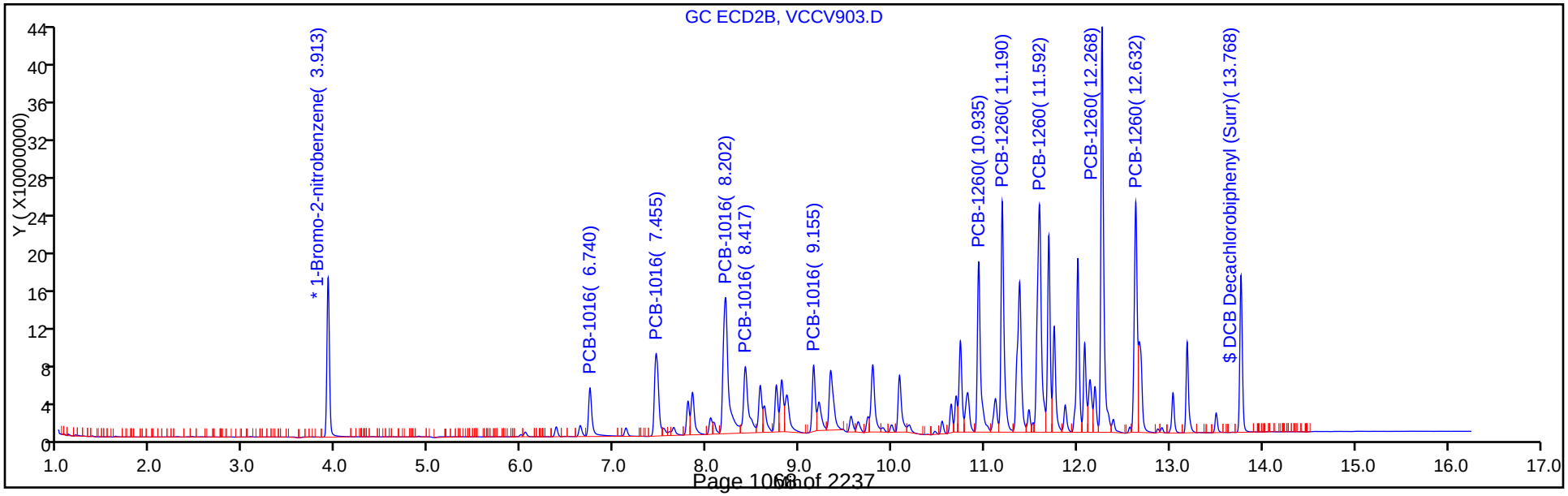
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV903.D				
Injection Date:	17-Aug-2016 10:21:22	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccvis			Worklist Smp#:	3
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-265137/3 Calibration Date: 08/17/2016 10:21

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV903.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Ave	0.0243	0.0216		889	1000	-11.1	20.0
PCB-1016 Peak 2	Ave	0.0495	0.0412		833	1000	-16.7	20.0
PCB-1016 Peak 3	Ave	0.1071	0.0868		811	1000	-18.9	20.0
PCB-1016 Peak 4	Ave	0.0468	0.0388		830	1000	-17.0	20.0
PCB-1016 Peak 5	Ave	0.0334	0.0244		731	1000	-26.9*	20.0
PCB-1260 Peak 1	Ave	0.0734	0.0673		916	1000	-8.4	20.0
PCB-1260 Peak 2	Ave	0.0943	0.0848		901	1000	-10.0	20.0
PCB-1260 Peak 3	Ave	0.1196	0.1141		954	1000	-4.7	20.0
PCB-1260 Peak 4	Ave	0.1426	0.1399		981	1000	-1.9	20.0
PCB-1260 Peak 5	Ave	0.0826	0.0825		999	1000	-0.1	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8582	0.9678		59.4	50.0	12.8	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-265137/3 Calibration Date: 08/17/2016 10:21

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV903.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1016 Peak 1	6.74	6.73	6.75
PCB-1016 Peak 2	7.46	7.45	7.47
PCB-1016 Peak 3	8.20	8.19	8.21
PCB-1016 Peak 4	8.42	8.41	8.43
PCB-1016 Peak 5	9.16	9.15	9.17
PCB-1260 Peak 1	10.94	10.93	10.95
PCB-1260 Peak 2	11.19	11.18	11.20
PCB-1260 Peak 3	11.59	11.58	11.60
PCB-1260 Peak 4	12.27	12.26	12.28
PCB-1260 Peak 5	12.63	12.62	12.64
DCB Decachlorobiphenyl (Surr)	13.77	13.76	13.78

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV903.D
Lims ID: ccvis
Client ID:
Sample Type: CCVIS
Inject. Date: 17-Aug-2016 10:21:22 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVIS
Misc. Info.: 160-0008226-003
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub9

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:44:38 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 17-Aug-2016 12:35:00

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.108	3.108	0.000	539595349	50.4	50.4	
2	3.913	3.913	0.000	324297997	50.4	50.4	
1 PCB-1016							
1	6.003	6.003	0.000	397725884	1000.0	1133.0	
1	6.778	6.778	0.000	606330208	1000.0	775.9	
1	6.988	6.988	0.000	316055462	1000.0	950.1	
1	7.640	7.640	0.000	279009101	1000.0	797.7	
1	8.225	8.225	0.000	187309913	1000.0	917.7	
2	6.740	6.740	0.000	139137947	1000.0	889.2	
2	7.455	7.455	0.000	265365137	1000.0	832.8	
2	8.202	8.202	0.000	558617599	1000.0	810.9	
2	8.417	8.417	0.000	249837694	1000.0	829.5	
2	9.155	9.155	0.000	157066448	1000.0	731.4	
						RPD = 11.09	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.471	9.471	0.000	538452136	1000.5	993.5	
1	9.878	9.878	0.000	982051589	1000.5	985.7	
1	10.256	10.256	0.000	909311322	1000.5	933.3	
1	11.091	11.091	0.000	1157945865	1000.5	985.8	
1	11.401	11.401	0.000	423329848	1000.5	899.6	
2	10.935	10.935	0.000	433006961	1000.5	916.5	
2	11.190	11.190	0.000	546191988	1000.5	900.6	
2	11.592	11.592	0.000	734396257	1000.5	954.0	
2	12.268	12.268	0.000	900303091	1000.5	981.2	
2	12.632	12.632	0.000	530756741	1000.5	999.2	
						RPD = 0.97	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.535	12.535	0.000	521156684	50.0	57.9	
2	13.768	13.768	0.000	311352053	50.0	59.4	
						RPD = 2.63	

Reagents:

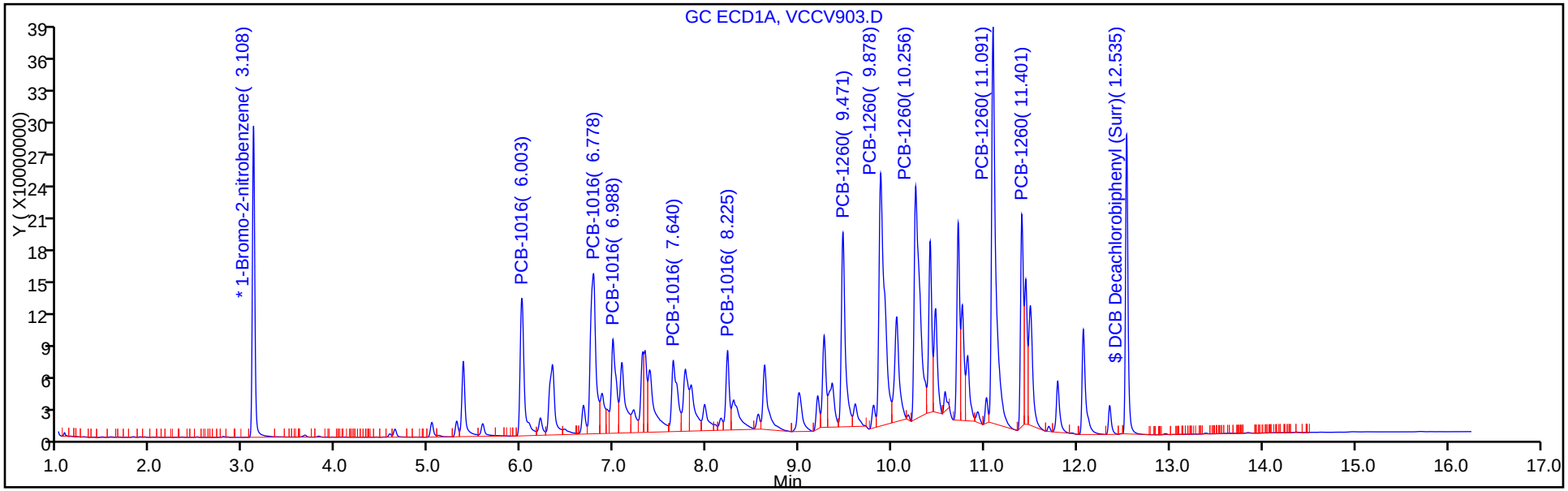
1016/1260CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 06:44:40 Chrom Revision: 2.2 20-Apr-2016 13:59:46

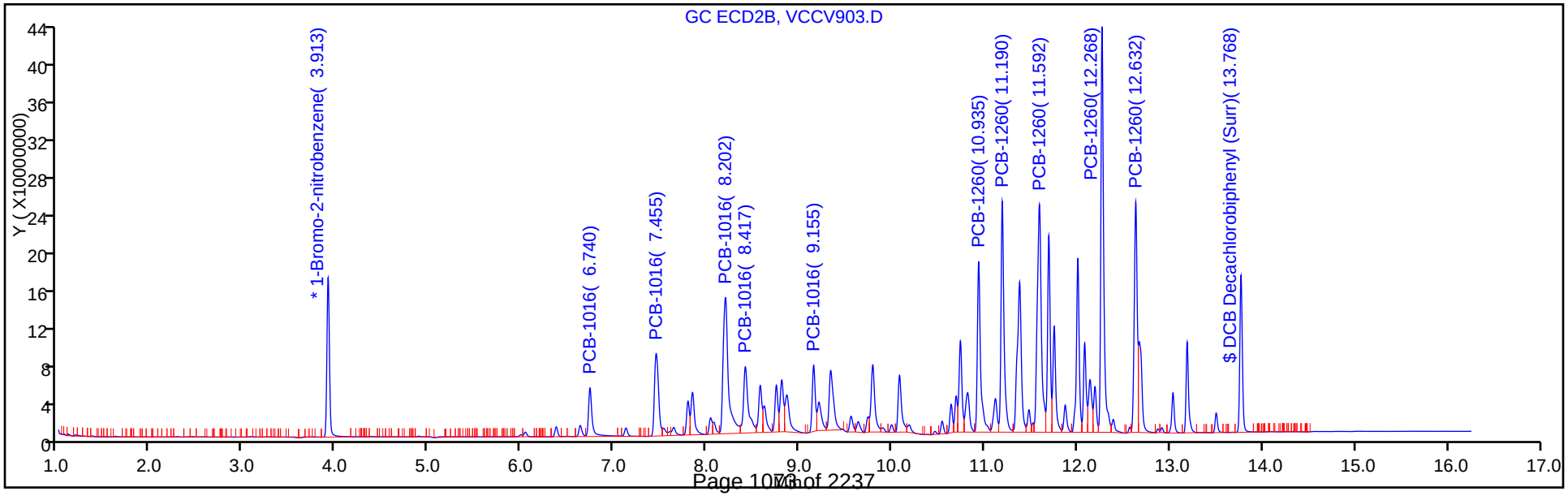
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV903.D				
Injection Date:	17-Aug-2016 10:21:22	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccvis			Worklist Smp#:	3
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/4 Calibration Date: 08/17/2016 10:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV904.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Ave	0.0097	0.0052		543	1010	-46.1*	20.0
PCB-1221 Peak 2	Ave	0.0056	0.0037		674	1010	-33.2*	20.0
PCB-1221 Peak 3	Ave	0.0234	0.0289		1240	1010	23.5*	20.0
PCB-1254 Peak 1	Ave	0.0313	0.0220		710	1010	-29.5*	20.0
PCB-1254 Peak 2	Ave	0.0403	0.0328		821	1010	-18.6	20.0
PCB-1254 Peak 3	Ave	0.0627	0.0098		158	1010	-84.3*	20.0
PCB-1254 Peak 4	Ave	0.0444	0.1073		2430	1010	141.4*	20.0
PCB-1254 Peak 5	Ave	0.0629	0.1065		1710	1010	69.4*	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/4 Calibration Date: 08/17/2016 10:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV904.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1221 Peak 1	5.03	5.02	5.04
PCB-1221 Peak 2	5.30	5.29	5.31
PCB-1221 Peak 3	5.37	5.36	5.38
PCB-1254 Peak 1	8.23	8.22	8.24
PCB-1254 Peak 2	8.63	8.62	8.64
PCB-1254 Peak 3	9.20	9.19	9.21
PCB-1254 Peak 4	9.88	9.87	9.89
PCB-1254 Peak 5	10.26	10.25	10.27

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 10:43:52 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 10:07:17 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 10:06:47

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							M
1	3.108	3.109	-0.002	486395498	50.4	50.4	M
2	3.912	3.915	-0.003	275599963	50.4	50.4	M
2 PCB-1221							M
1	5.033	5.034	-0.001	50621859	1008.0	543.0	M
1	5.301	5.304	-0.003	36155364	1008.0	673.8	M
1	5.373	5.374	-0.001	281161991	1008.0	1244.5	M
2	6.377	6.380	-0.003	38960660	1008.0	507.1	M
2	6.635	6.638	-0.003	31499192	1008.0	717.9	M
2	6.740	6.743	-0.003	204429162	1008.0	1216.1	M
						RPD = 0.82	
8 PCB-1254							
1	8.226	8.228	-0.002	214291943	1008.0	710.4	
1	8.626	8.628	-0.002	318986473	1008.0	820.7	
1	9.198	9.201	-0.003	95624538	1008.0	158.1	
1	9.879	9.879	0.000	1043677360	1008.0	2433.3	
1	10.258	10.259	-0.001	1036269516	1008.0	1707.5	
2	9.792	9.795	-0.003	215891702	1008.0	677.5	
2	10.080	10.085	-0.005	171742523	1008.0	551.2	
2	10.693	10.695	-0.002	74278637	1008.0	157.2	
2	11.378	11.383	-0.005	475052693	1008.0	1934.2	
2	11.592	11.597	-0.005	712465131	1008.0	1711.2	
						RPD = 14.71	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.533	12.536	-0.003	482785370	50.0	59.4	
2	13.768	13.772	-0.004	287616191	50.0	64.5	
						RPD = 8.24	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
S 7 Polychlorinated biphenyls, Total							
1						1986.4	
2						1820.0	
						RPD = 8.75	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

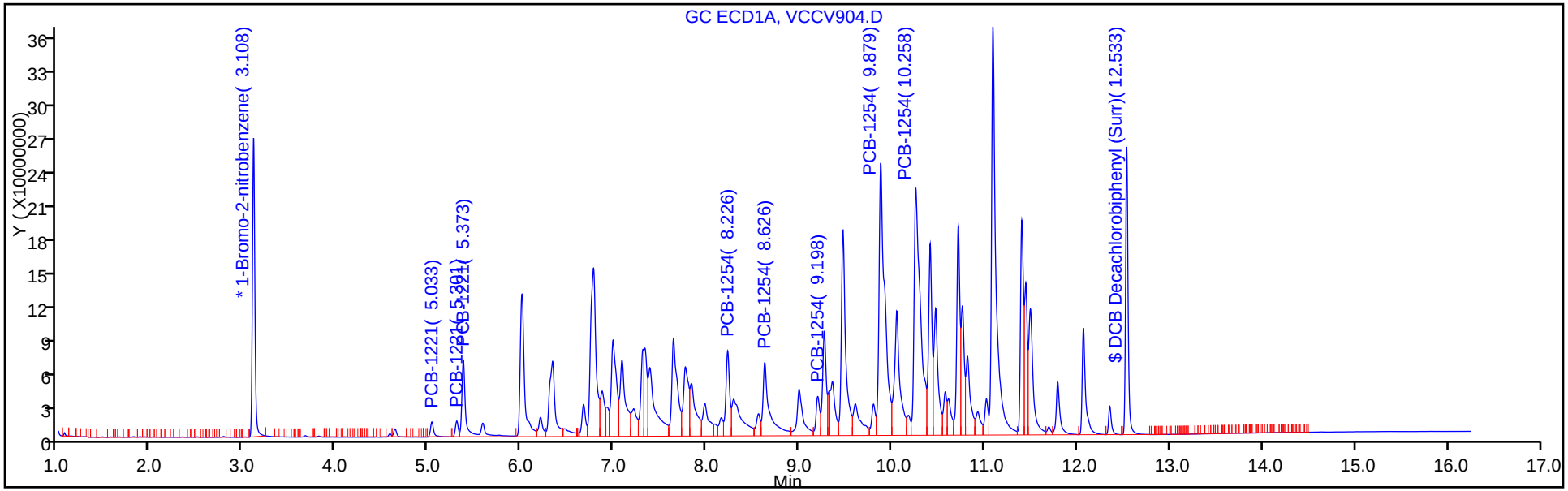
1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 10:07:18 Chrom Revision: 2.2 20-Apr-2016 13:59:46

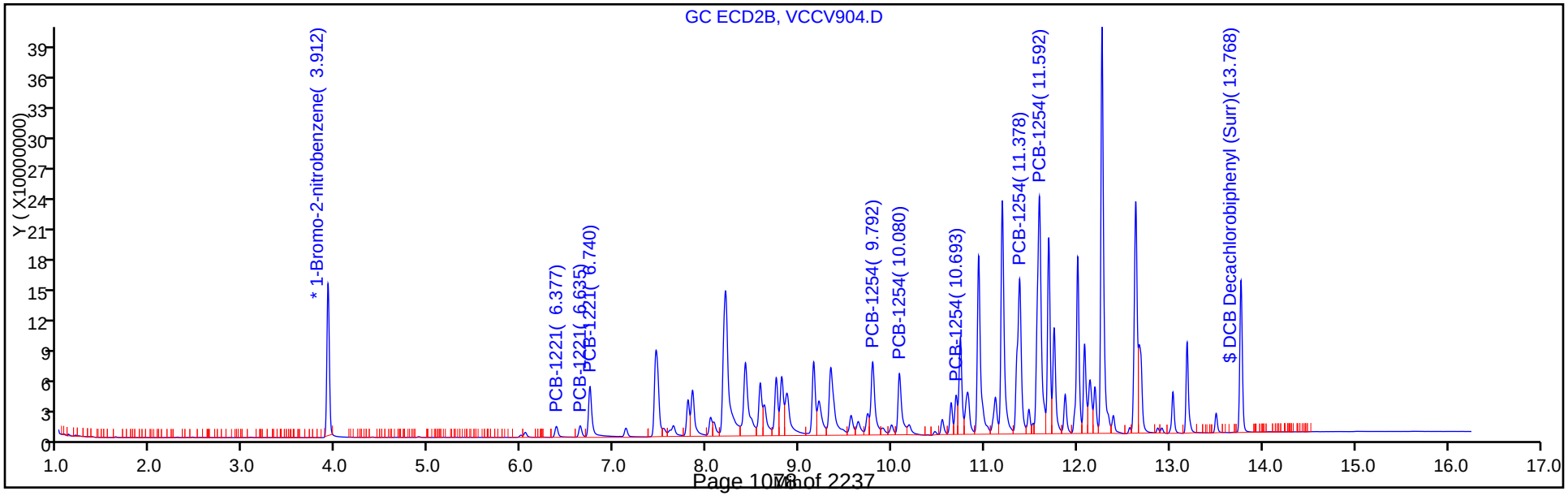
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D				
Injection Date:	17-Aug-2016 10:43:52	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	4
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

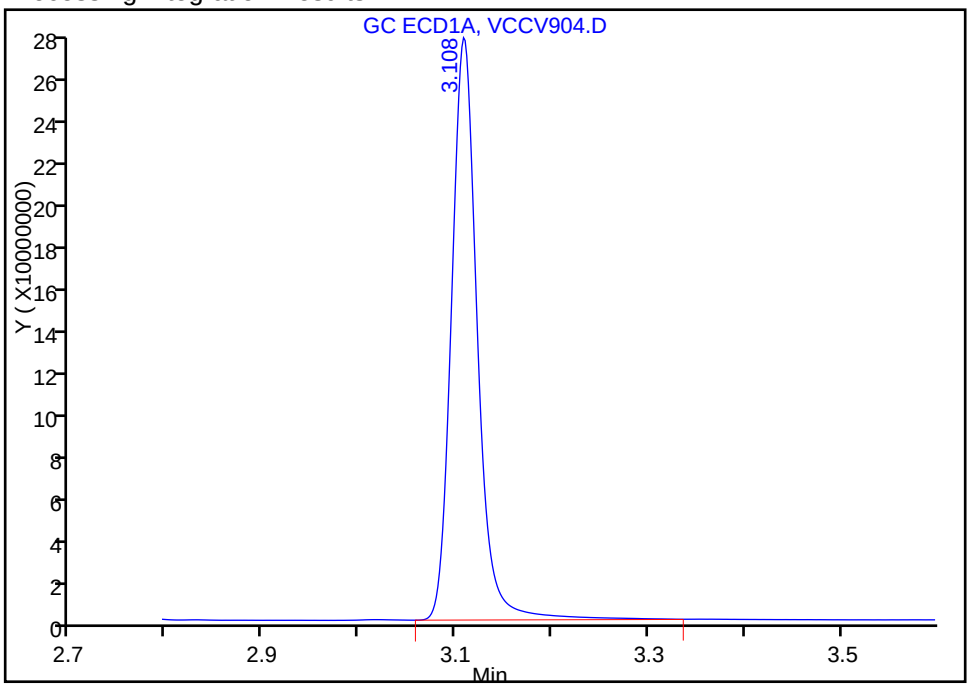
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D				
Injection Date:	17-Aug-2016 10:43:52	Instrument ID:	SGCV		
Lims ID:	ccv				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

* 12 1-Bromo-2-nitrobenzene, CAS: 577-19-5

Signal: 1

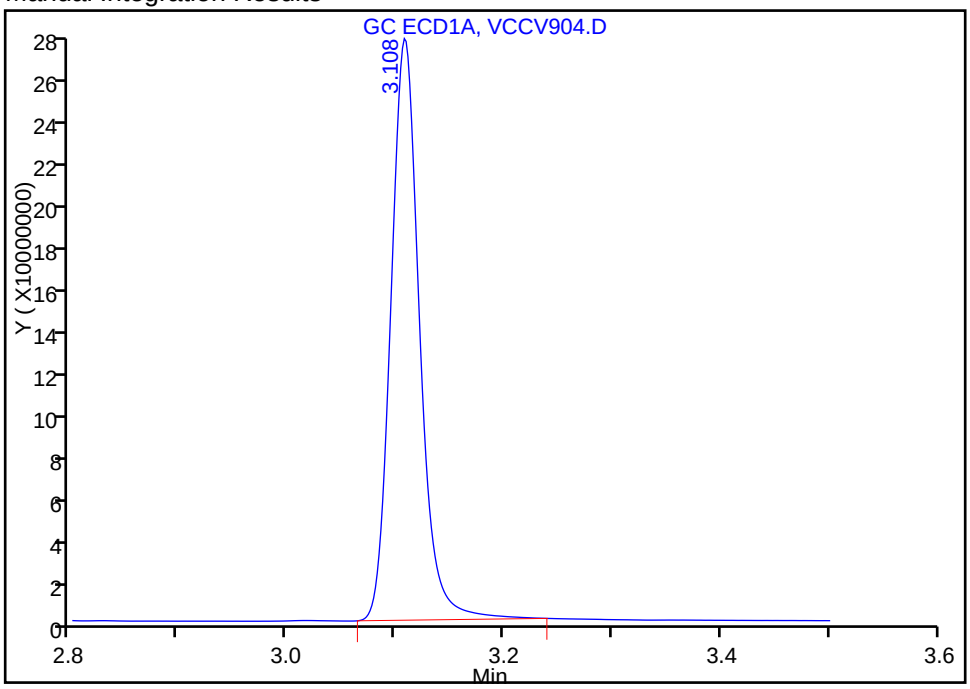
Processing Integration Results

RT: 3.11
Area: 494901403
Amount: 50.400000
Amount Units: ng/ml



Manual Integration Results

RT: 3.11
Area: 486395498
Amount: 50.400000
Amount Units: ng/ml



Reviewer: bonkoskig, 19-Aug-2016 10:06:47

Audit Action: Manually Integrated Audit Reason: Peak Tail

Report Date: 19-Aug-2016 10:07:18 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D

Injection Date: 17-Aug-2016 10:43:52 Instrument ID: SGCV

Lims ID: ccv

Client ID:

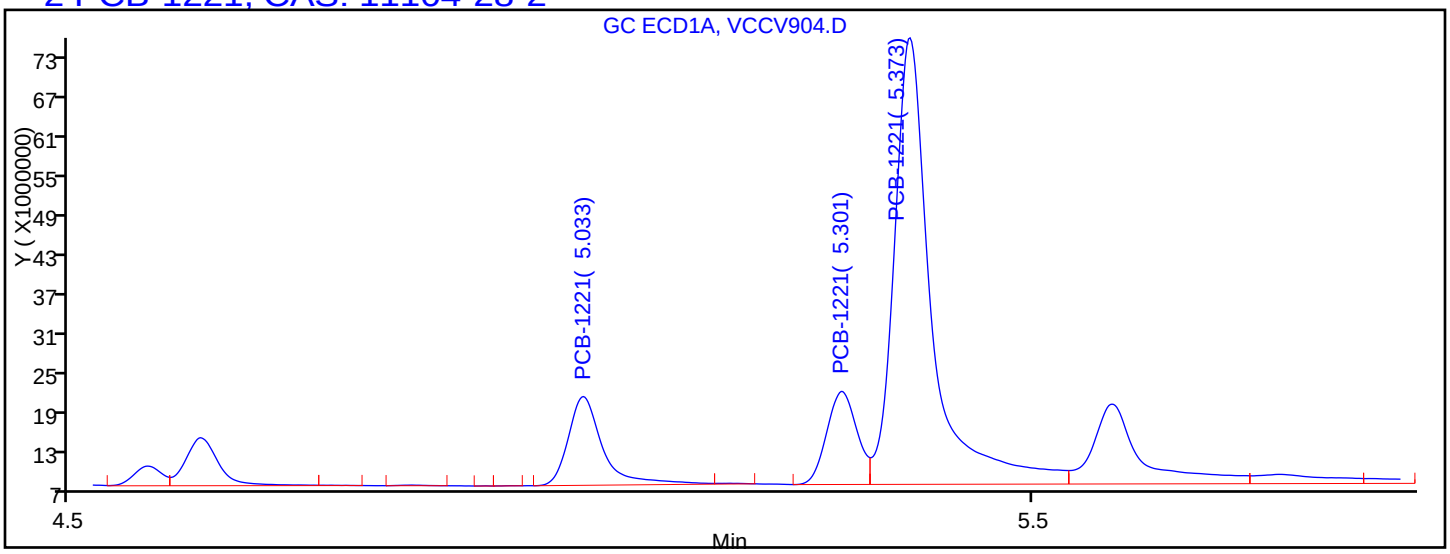
Operator ID: GLB ALS Bottle#: 4 Worklist Smp#: 4

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

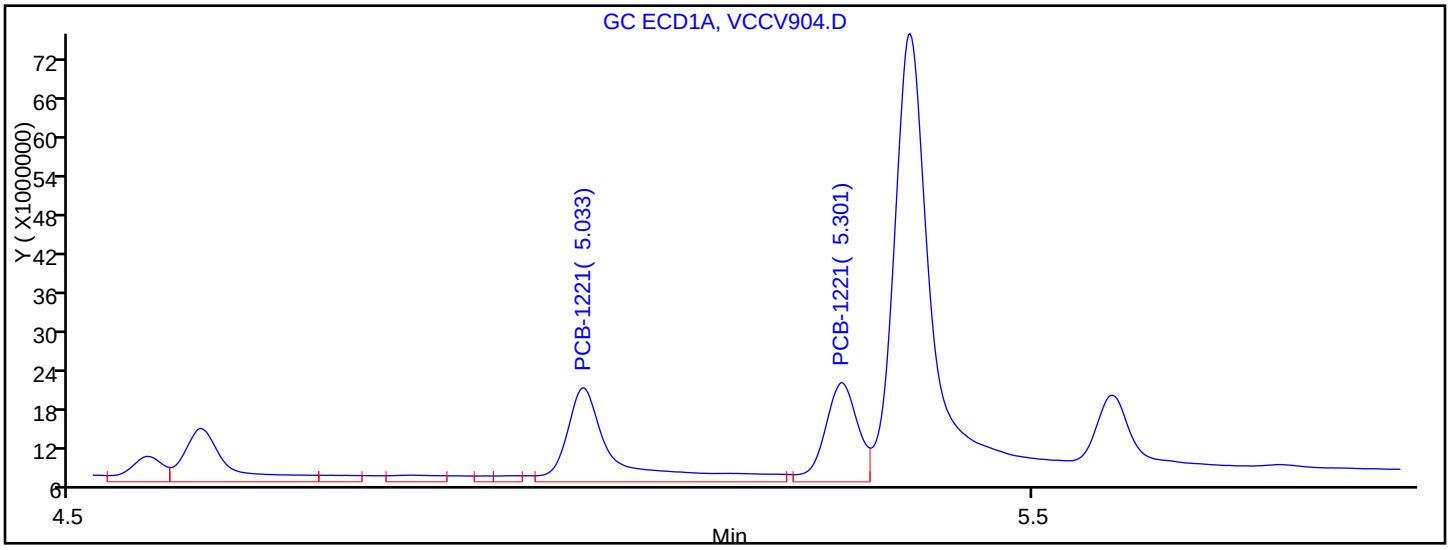
Column: RTX-CLP Pesticides (0.53 mm) Detector GC ECD1A

2 PCB-1221, CAS: 11104-28-2



Processing Integration Results

RT = 5.033	Response = 33376034	M
RT = 5.301	Response = 30795862	M
RT = 5.373	Response = 184506010	M



Manual Integration Results

RT = 5.033	Response = 50621859	M
RT = 5.301	Response = 36155364	M
RT = 5.373	Response = 281161991	M

Reviewer: bonkoskig, 19-Aug-2016 10:06:47

Audit Action: Assigned New Baseline Audit Reason: Baseline Smoothing

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/4 Calibration Date: 08/17/2016 10:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV904.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
DCB Decachlorobiphenyl (Surr)	Ave	0.8424	1.001		59.4	50.0	18.8	20.0

FORM VII 8082A

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/4 Calibration Date: 08/17/2016 10:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV904.D

Analyte	RT	RT WINDOW	
		FROM	TO
DCB Decachlorobiphenyl (Surr)	12.53	12.53	12.55

Form VII 8082A

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 10:43:52 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 10:07:17 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 10:06:47

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							M
1	3.108	3.109	-0.002	486395498	50.4	50.4	M
2	3.912	3.915	-0.003	275599963	50.4	50.4	M
2 PCB-1221							M
1	5.033	5.034	-0.001	50621859	1008.0	543.0	M
1	5.301	5.304	-0.003	36155364	1008.0	673.8	M
1	5.373	5.374	-0.001	281161991	1008.0	1244.5	M
2	6.377	6.380	-0.003	38960660	1008.0	507.1	M
2	6.635	6.638	-0.003	31499192	1008.0	717.9	M
2	6.740	6.743	-0.003	204429162	1008.0	1216.1	M
						RPD = 0.82	
8 PCB-1254							
1	8.226	8.228	-0.002	214291943	1008.0	710.4	
1	8.626	8.628	-0.002	318986473	1008.0	820.7	
1	9.198	9.201	-0.003	95624538	1008.0	158.1	
1	9.879	9.879	0.000	1043677360	1008.0	2433.3	
1	10.258	10.259	-0.001	1036269516	1008.0	1707.5	
2	9.792	9.795	-0.003	215891702	1008.0	677.5	
2	10.080	10.085	-0.005	171742523	1008.0	551.2	
2	10.693	10.695	-0.002	74278637	1008.0	157.2	
2	11.378	11.383	-0.005	475052693	1008.0	1934.2	
2	11.592	11.597	-0.005	712465131	1008.0	1711.2	
						RPD = 14.71	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.533	12.536	-0.003	482785370	50.0	59.4	
2	13.768	13.772	-0.004	287616191	50.0	64.5	
						RPD = 8.24	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
S 7 Polychlorinated biphenyls, Total							
1						1986.4	
2						1820.0	
						RPD = 8.75	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

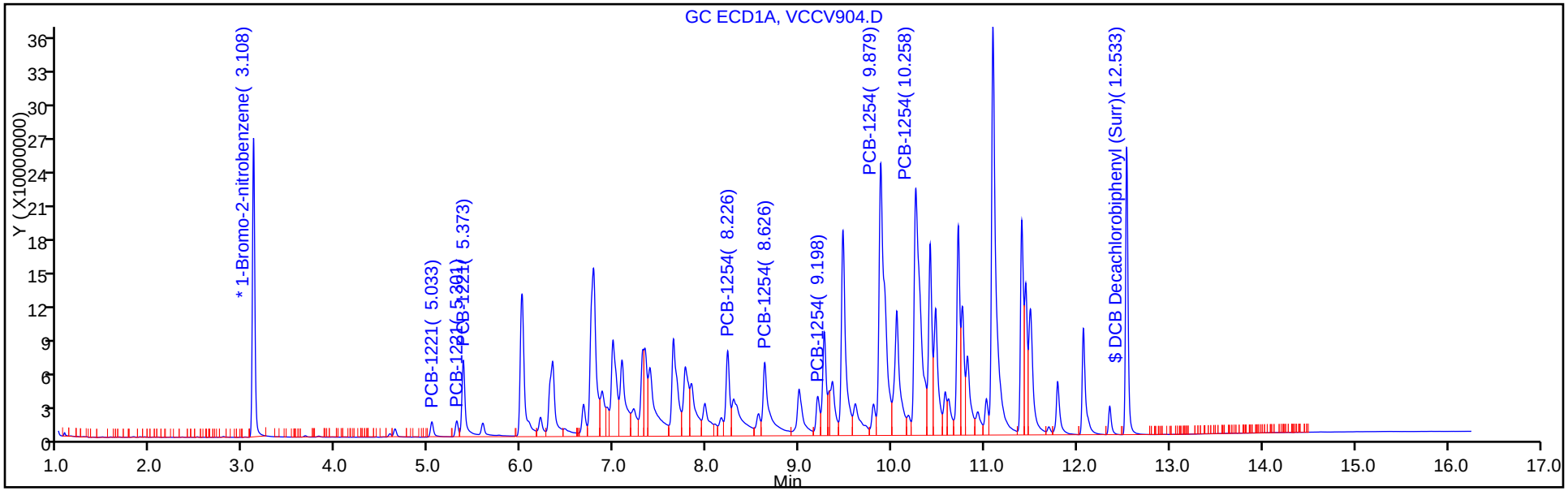
1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 10:07:18 Chrom Revision: 2.2 20-Apr-2016 13:59:46

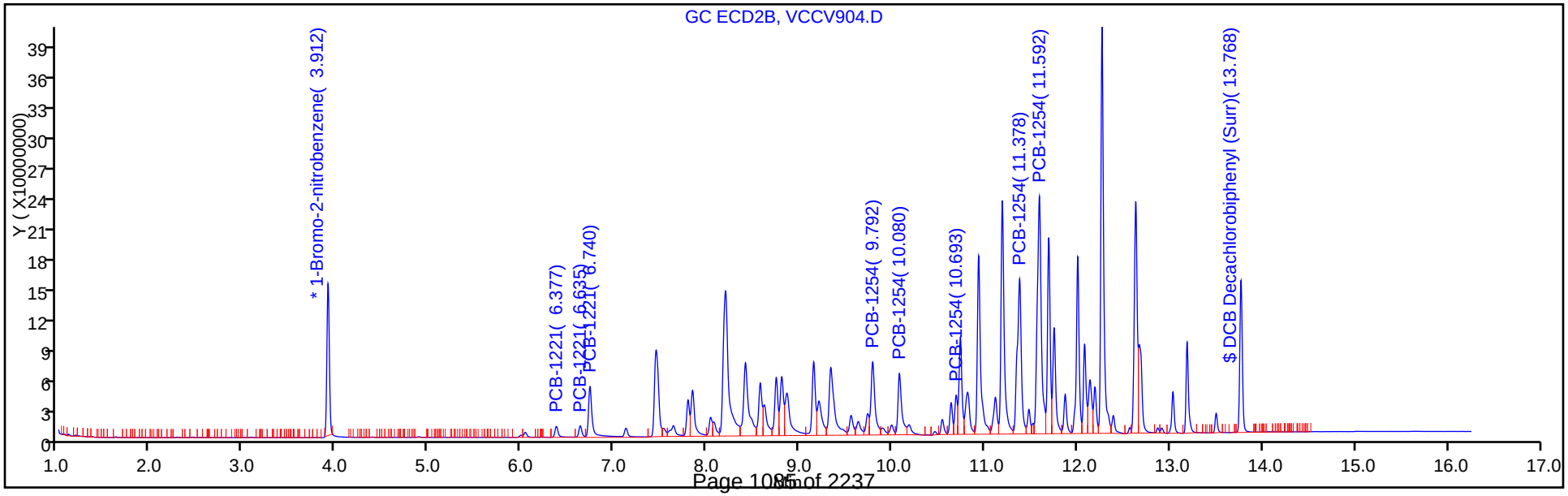
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D				
Injection Date:	17-Aug-2016 10:43:52	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	4
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

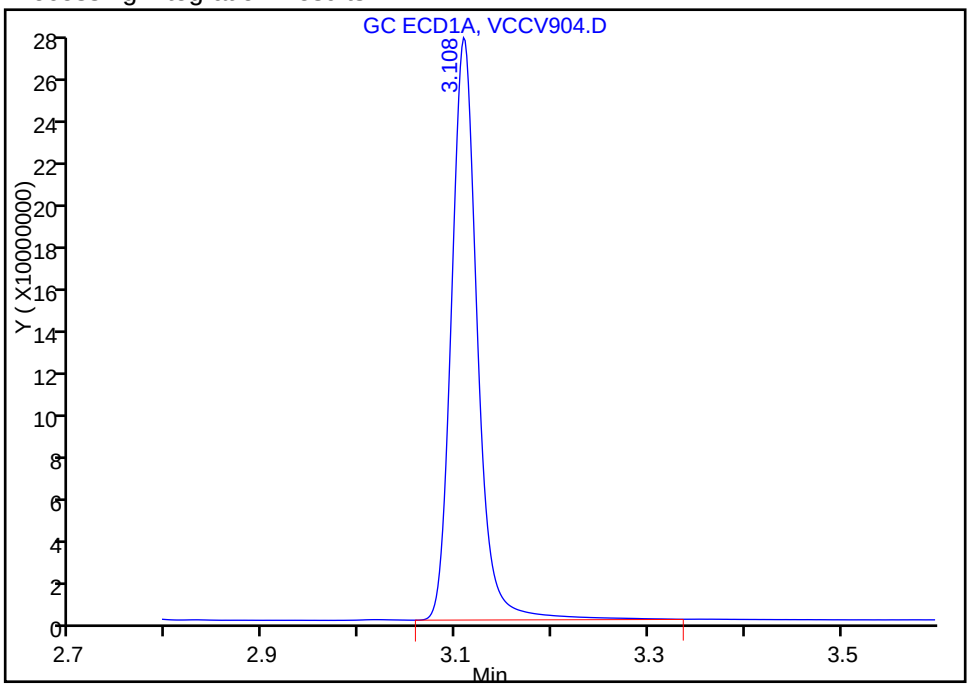
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D				
Injection Date:	17-Aug-2016 10:43:52	Instrument ID:	SGCV		
Lims ID:	ccv				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

* 12 1-Bromo-2-nitrobenzene, CAS: 577-19-5

Signal: 1

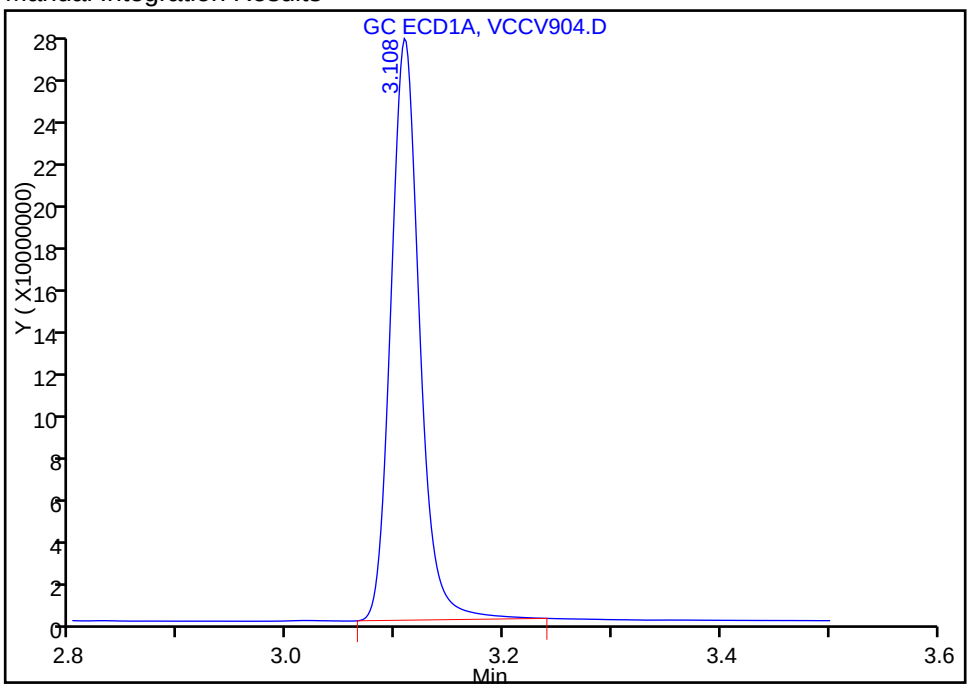
Processing Integration Results

RT: 3.11
Area: 494901403
Amount: 50.400000
Amount Units: ng/ml



Manual Integration Results

RT: 3.11
Area: 486395498
Amount: 50.400000
Amount Units: ng/ml



Reviewer: bonkoskig, 19-Aug-2016 10:06:47

Audit Action: Manually Integrated Audit Reason: Peak Tail

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/4 Calibration Date: 08/17/2016 10:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV904.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Ave	0.0140	0.0071		507	1010	-49.7*	20.0
PCB-1221 Peak 2	Ave	0.0080	0.0057		718	1010	-28.8*	20.0
PCB-1221 Peak 3	Ave	0.0307	0.0371		1220	1010	20.6*	20.0
PCB-1254 Peak 1	Ave	0.0583	0.0392		677	1010	-32.8*	20.0
PCB-1254 Peak 2	Ave	0.0570	0.0312		551	1010	-45.3*	20.0
PCB-1254 Peak 3	Ave	0.0864	0.0135		157	1010	-84.4*	20.0
PCB-1254 Peak 4	Ave	0.0449	0.0862		1930	1010	91.9*	20.0
PCB-1254 Peak 5	Ave	0.0761	0.1293		1710	1010	69.8*	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/4 Calibration Date: 08/17/2016 10:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV904.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1221 Peak 1	6.38	6.37	6.39
PCB-1221 Peak 2	6.64	6.63	6.65
PCB-1221 Peak 3	6.74	6.73	6.75
PCB-1254 Peak 1	9.79	9.79	9.81
PCB-1254 Peak 2	10.08	10.08	10.10
PCB-1254 Peak 3	10.69	10.69	10.71
PCB-1254 Peak 4	11.38	11.37	11.39
PCB-1254 Peak 5	11.59	11.59	11.61

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 10:43:52 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 10:07:17 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 10:06:47

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							M
1	3.108	3.109	-0.002	486395498	50.4	50.4	M
2	3.912	3.915	-0.003	275599963	50.4	50.4	M
2 PCB-1221							M
1	5.033	5.034	-0.001	50621859	1008.0	543.0	M
1	5.301	5.304	-0.003	36155364	1008.0	673.8	M
1	5.373	5.374	-0.001	281161991	1008.0	1244.5	M
2	6.377	6.380	-0.003	38960660	1008.0	507.1	M
2	6.635	6.638	-0.003	31499192	1008.0	717.9	M
2	6.740	6.743	-0.003	204429162	1008.0	1216.1	M
						RPD = 0.82	
8 PCB-1254							
1	8.226	8.228	-0.002	214291943	1008.0	710.4	
1	8.626	8.628	-0.002	318986473	1008.0	820.7	
1	9.198	9.201	-0.003	95624538	1008.0	158.1	
1	9.879	9.879	0.000	1043677360	1008.0	2433.3	
1	10.258	10.259	-0.001	1036269516	1008.0	1707.5	
2	9.792	9.795	-0.003	215891702	1008.0	677.5	
2	10.080	10.085	-0.005	171742523	1008.0	551.2	
2	10.693	10.695	-0.002	74278637	1008.0	157.2	
2	11.378	11.383	-0.005	475052693	1008.0	1934.2	
2	11.592	11.597	-0.005	712465131	1008.0	1711.2	
						RPD = 14.71	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.533	12.536	-0.003	482785370	50.0	59.4	
2	13.768	13.772	-0.004	287616191	50.0	64.5	
						RPD = 8.24	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
S 7 Polychlorinated biphenyls, Total							
1						1986.4	
2						1820.0	
						RPD = 8.75	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

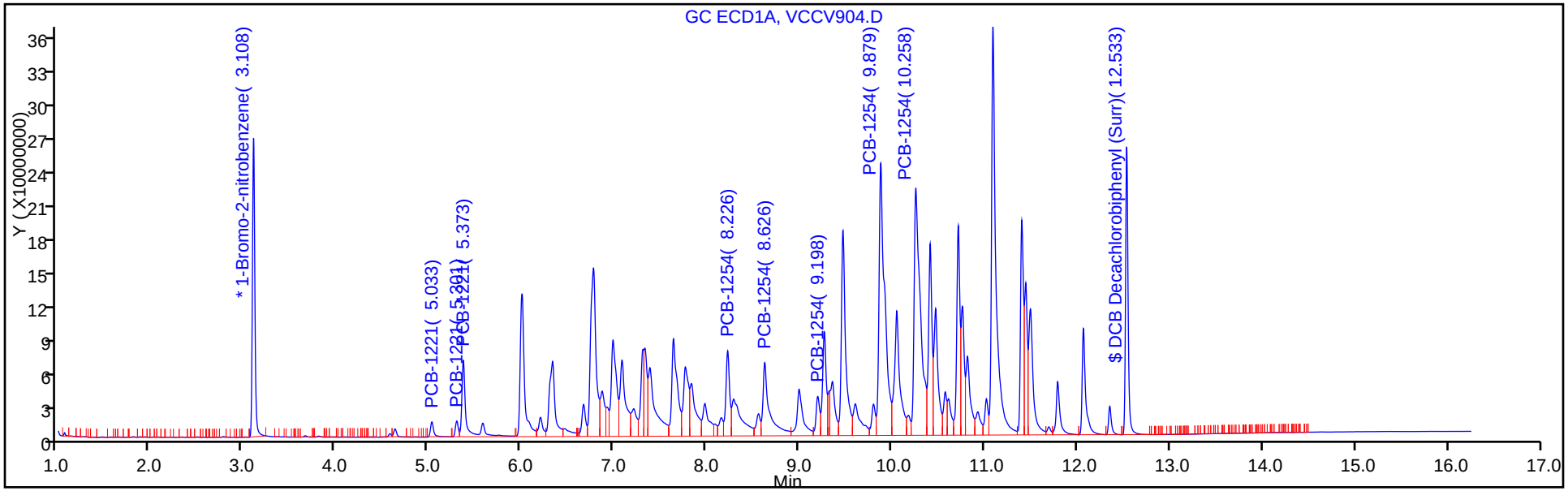
1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 10:07:19 Chrom Revision: 2.2 20-Apr-2016 13:59:46

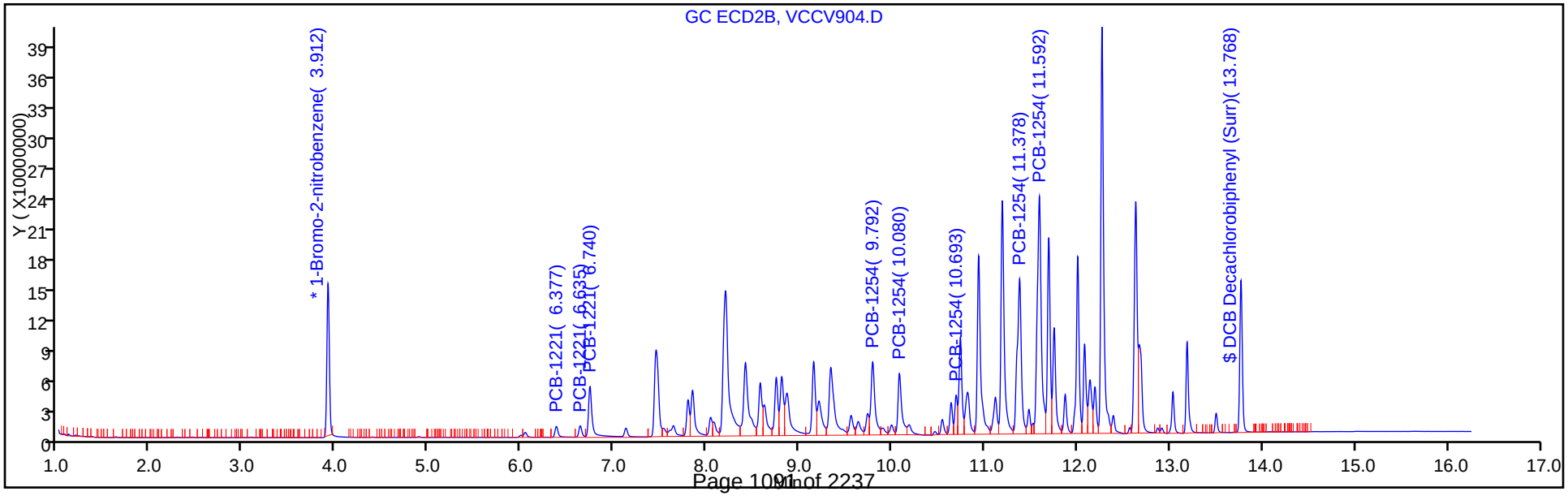
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D				
Injection Date:	17-Aug-2016 10:43:52	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	4
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

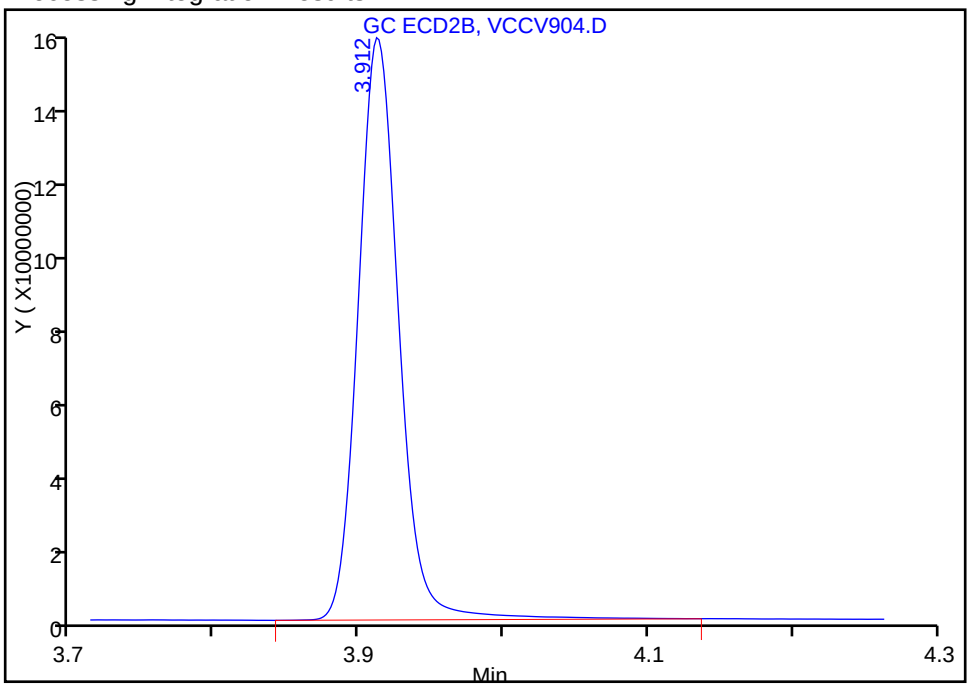
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D				
Injection Date:	17-Aug-2016 10:43:52	Instrument ID:	SGCV		
Lims ID:	ccv				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

* 12 1-Bromo-2-nitrobenzene, CAS: 577-19-5

Signal: 2

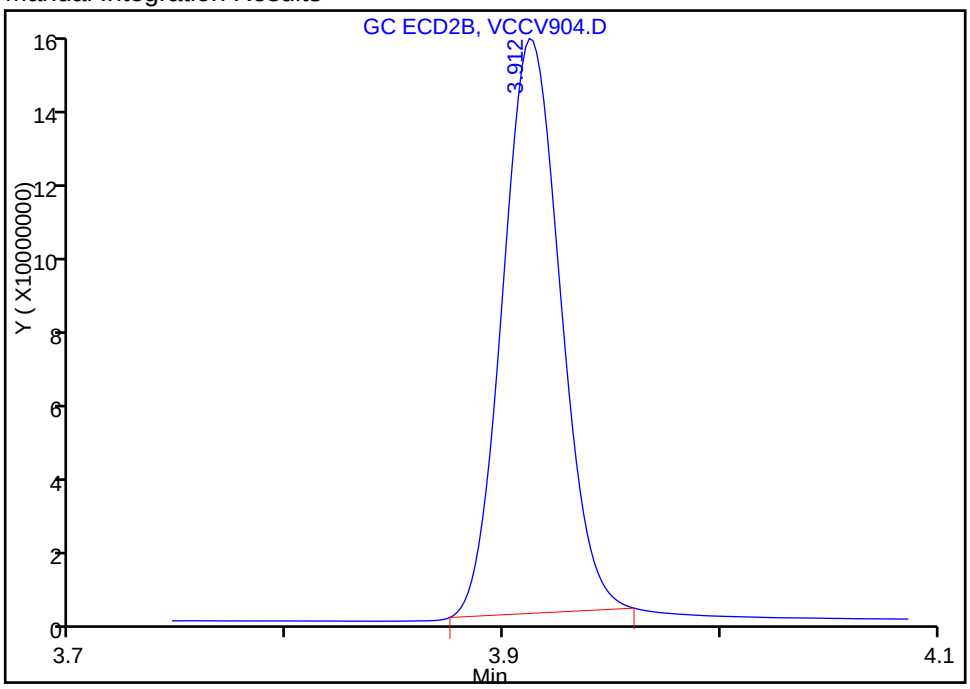
Processing Integration Results

RT: 3.91
Area: 294004091
Amount: 50.400000
Amount Units: ng/ml



Manual Integration Results

RT: 3.91
Area: 275599963
Amount: 50.400000
Amount Units: ng/ml



Reviewer: bonkoskig, 19-Aug-2016 10:06:47

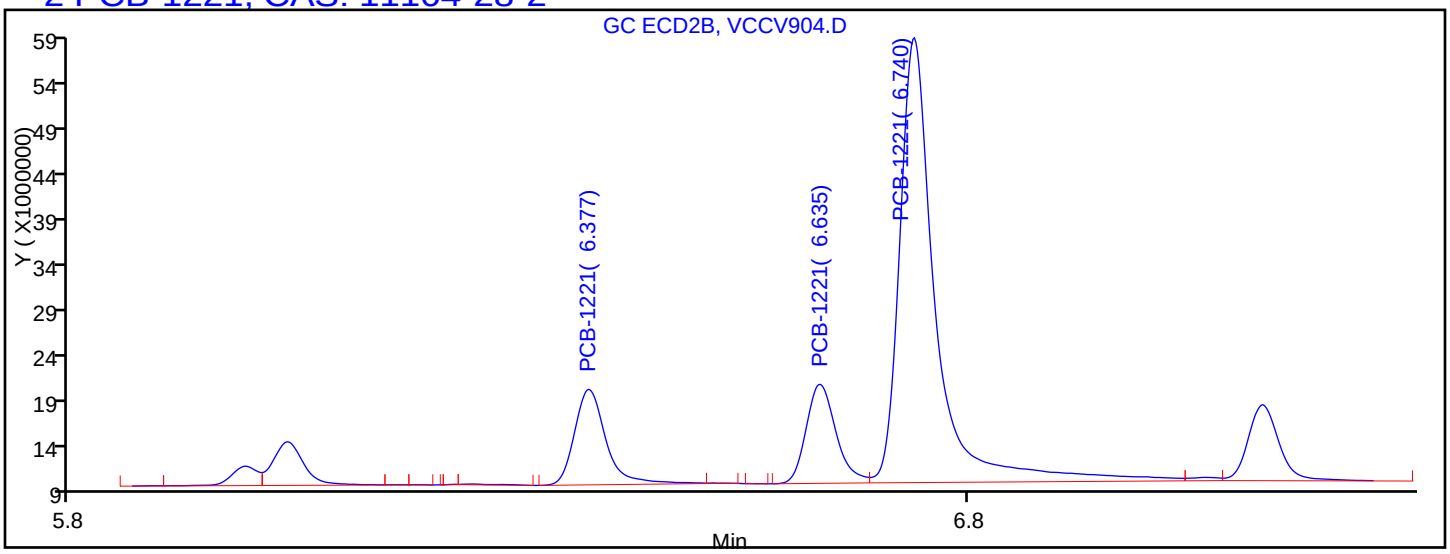
Audit Action: Manually Integrated Audit Reason: Peak Tail

Report Date: 19-Aug-2016 10:07:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

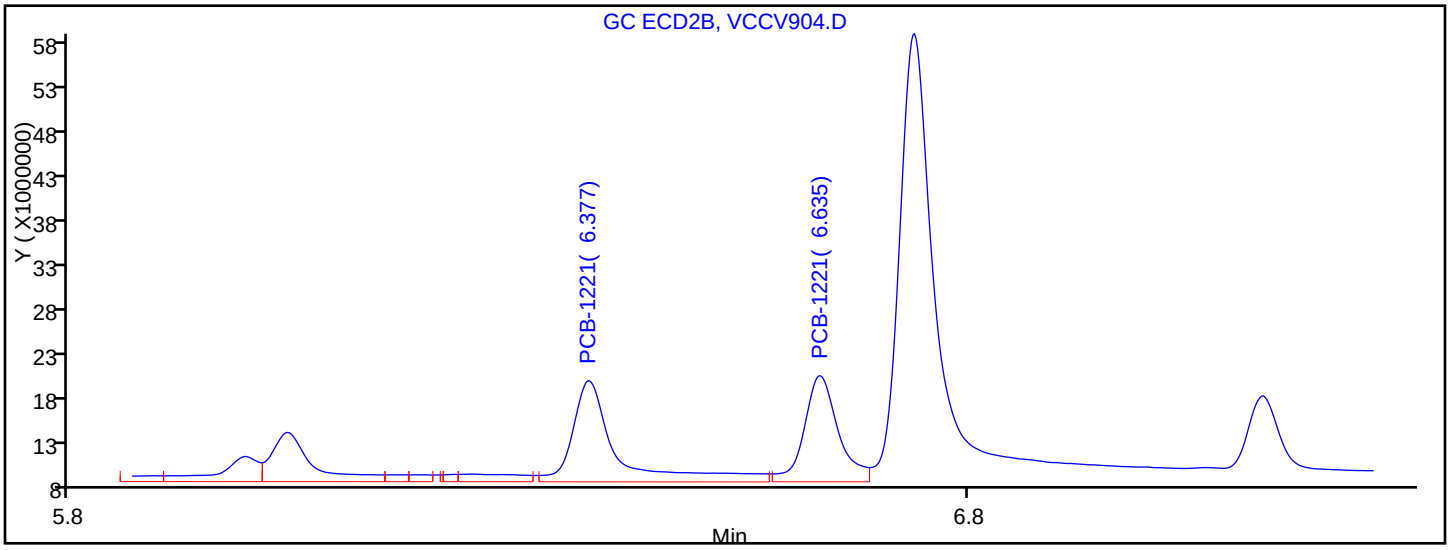
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D				
Injection Date:	17-Aug-2016 10:43:52	Instrument ID:	SGCV		
Lims ID:	ccv				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

2 PCB-1221, CAS: 11104-28-2



Processing Integration Results

RT = 6.377	Response = 25815432	M
RT = 6.635	Response = 25402058	M
RT = 6.740	Response = 137583447	M



Manual Integration Results

RT = 6.377	Response = 38960660	M
RT = 6.635	Response = 31499192	M
RT = 6.740	Response = 204429162	M

Reviewer: bonkoskig, 19-Aug-2016 10:06:47

Audit Action: Assigned New Baseline Audit Reason: Baseline Smoothing

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/4 Calibration Date: 08/17/2016 10:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV904.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
DCB Decachlorobiphenyl (Surr)	Ave	0.8582	1.052		64.5	50.0	22.6*	20.0

FORM VII 8082A

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/4 Calibration Date: 08/17/2016 10:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV904.D

Analyte	RT	RT WINDOW	
		FROM	TO
DCB Decachlorobiphenyl (Surr)	13.77	13.76	13.78

Form VII 8082A

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 10:43:52 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 10:07:17 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 10:06:47

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							M
1	3.108	3.109	-0.002	486395498	50.4	50.4	M
2	3.912	3.915	-0.003	275599963	50.4	50.4	M
2 PCB-1221							M
1	5.033	5.034	-0.001	50621859	1008.0	543.0	M
1	5.301	5.304	-0.003	36155364	1008.0	673.8	M
1	5.373	5.374	-0.001	281161991	1008.0	1244.5	M
2	6.377	6.380	-0.003	38960660	1008.0	507.1	M
2	6.635	6.638	-0.003	31499192	1008.0	717.9	M
2	6.740	6.743	-0.003	204429162	1008.0	1216.1	M
						RPD = 0.82	
8 PCB-1254							
1	8.226	8.228	-0.002	214291943	1008.0	710.4	
1	8.626	8.628	-0.002	318986473	1008.0	820.7	
1	9.198	9.201	-0.003	95624538	1008.0	158.1	
1	9.879	9.879	0.000	1043677360	1008.0	2433.3	
1	10.258	10.259	-0.001	1036269516	1008.0	1707.5	
2	9.792	9.795	-0.003	215891702	1008.0	677.5	
2	10.080	10.085	-0.005	171742523	1008.0	551.2	
2	10.693	10.695	-0.002	74278637	1008.0	157.2	
2	11.378	11.383	-0.005	475052693	1008.0	1934.2	
2	11.592	11.597	-0.005	712465131	1008.0	1711.2	
						RPD = 14.71	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.533	12.536	-0.003	482785370	50.0	59.4	
2	13.768	13.772	-0.004	287616191	50.0	64.5	
						RPD = 8.24	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags

S 7 Polychlorinated biphenyls, Total

1	1986.4
2	1820.0
	RPD = 8.75

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

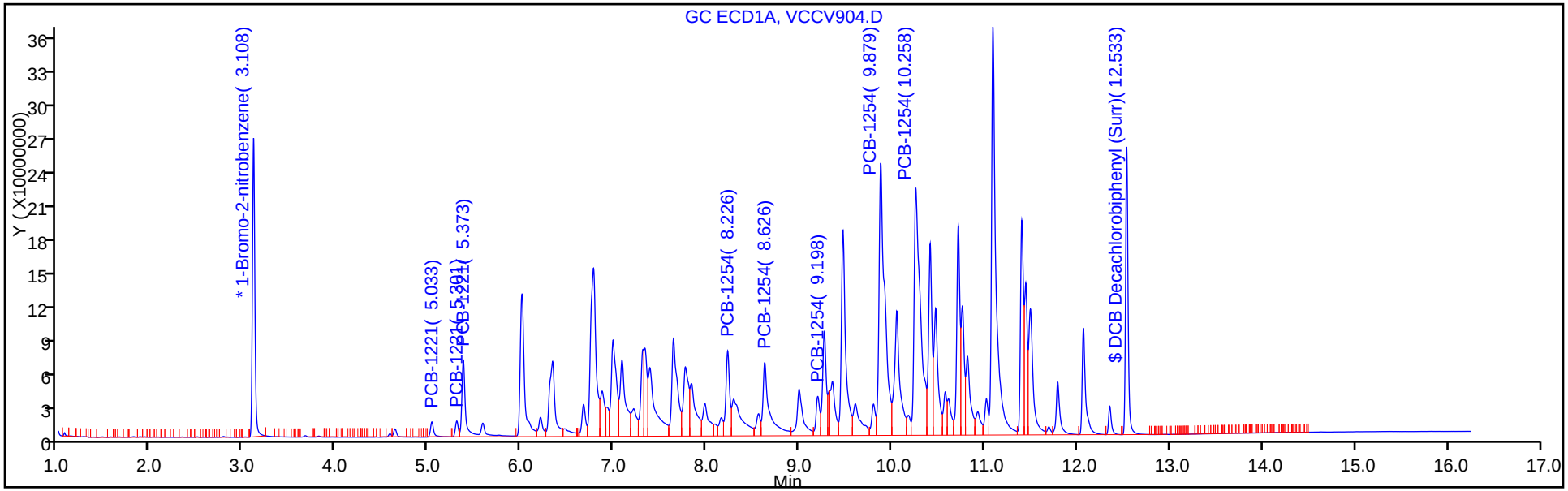
1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 10:07:19 Chrom Revision: 2.2 20-Apr-2016 13:59:46

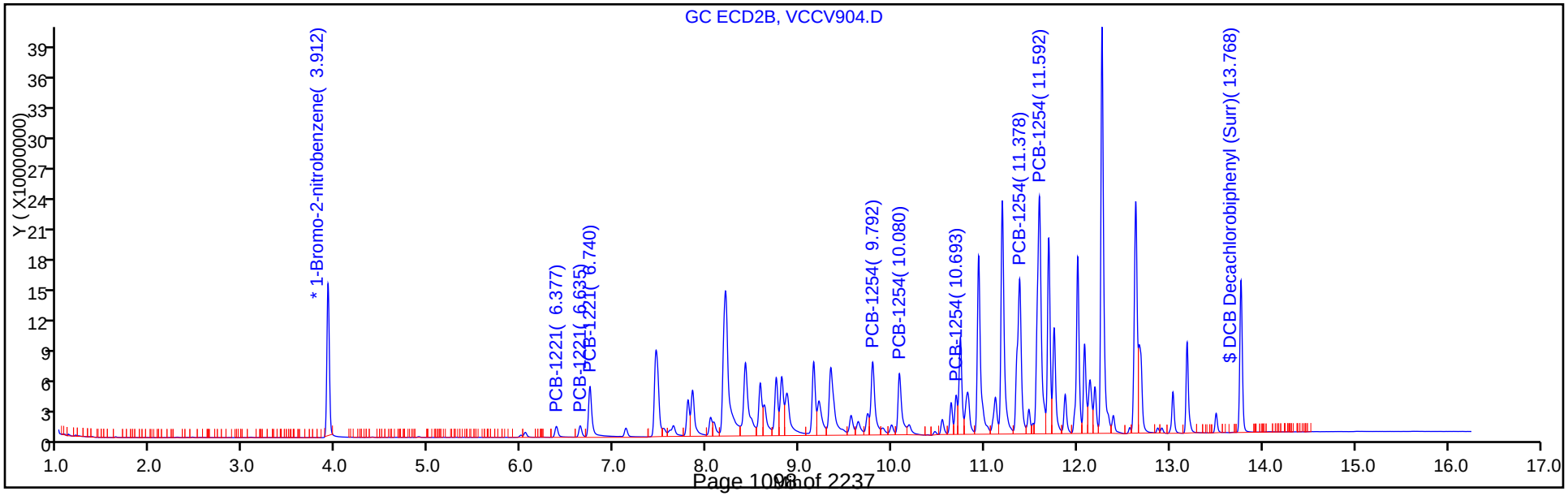
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D				
Injection Date:	17-Aug-2016 10:43:52	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	4
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

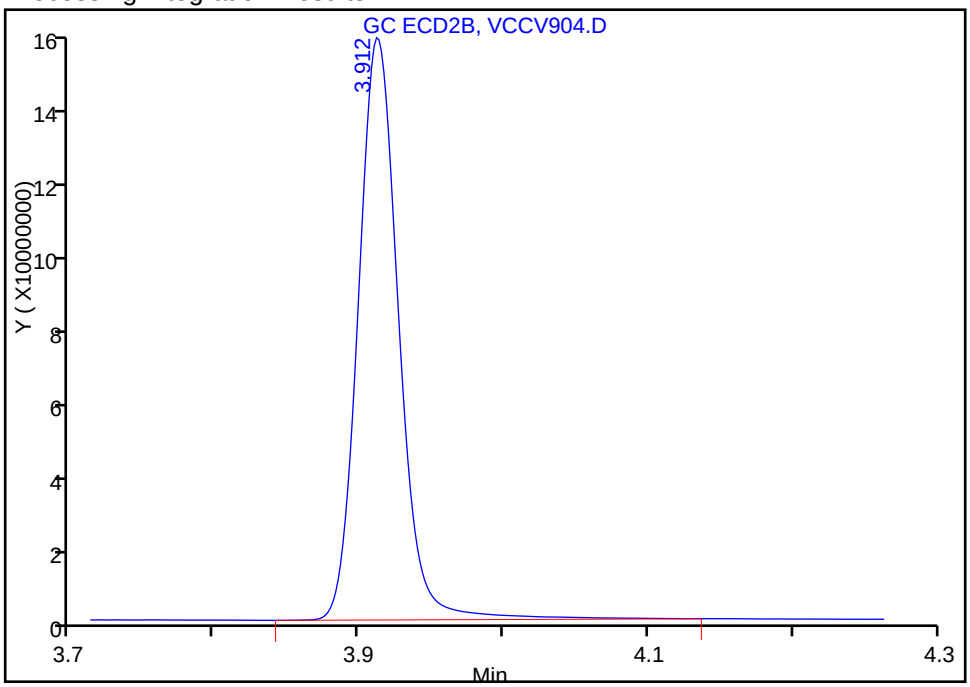
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV904.D				
Injection Date:	17-Aug-2016 10:43:52	Instrument ID:	SGCV		
Lims ID:	ccv				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

* 12 1-Bromo-2-nitrobenzene, CAS: 577-19-5

Signal: 2

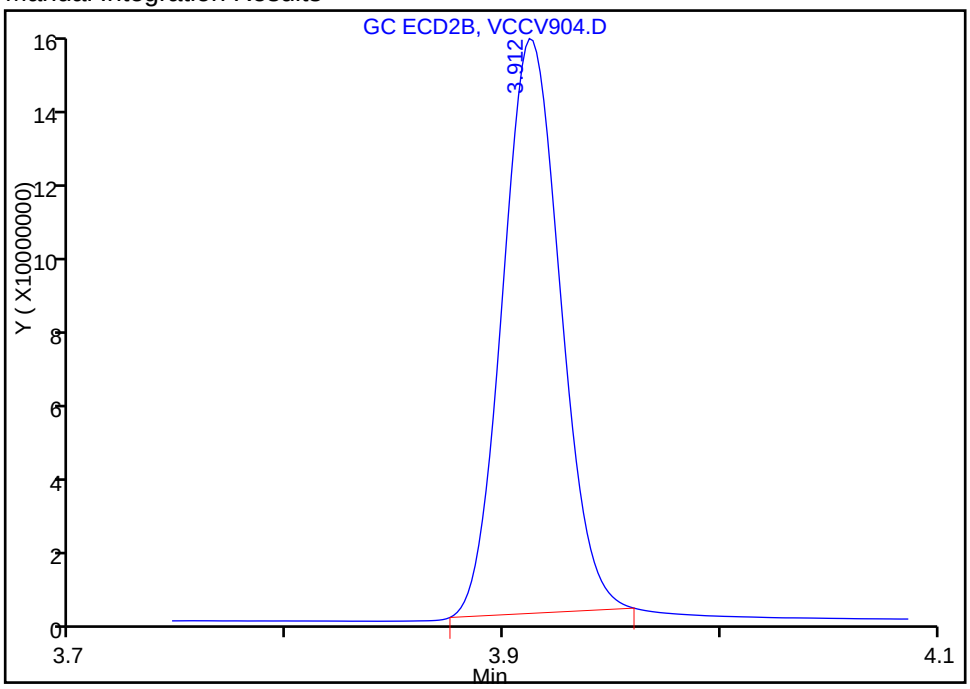
Processing Integration Results

RT: 3.91
Area: 294004091
Amount: 50.400000
Amount Units: ng/ml



Manual Integration Results

RT: 3.91
Area: 275599963
Amount: 50.400000
Amount Units: ng/ml



Reviewer: bonkoskig, 19-Aug-2016 10:06:47

Audit Action: Manually Integrated Audit Reason: Peak Tail

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/15 Calibration Date: 08/17/2016 15:00

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV915.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Lin1		0.0339		1030	1000	3.2	20.0
PCB-1016 Peak 2	Lin1		0.0544		747	1000	-25.3*	20.0
PCB-1016 Peak 3	Lin1		0.0292		939	1000	-6.1	20.0
PCB-1016 Peak 4	Lin1		0.0256		783	1000	-21.7*	20.0
PCB-1016 Peak 5	Lin1		0.0174		913	1000	-8.7	20.0
PCB-1260 Peak 1	Lin1		0.0477		944	1000	-5.6	20.0
PCB-1260 Peak 2	Lin1		0.0851		916	1000	-8.5	20.0
PCB-1260 Peak 3	Lin1		0.0839		922	1000	-7.8	20.0
PCB-1260 Peak 4	Lin1		0.0940		861	1000	-13.9	20.0
PCB-1260 Peak 5	Lin1		0.0351		802	1000	-19.9	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8424	0.7396		44.3	50.0	-12.2	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/15 Calibration Date: 08/17/2016 15:00

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV915.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1016 Peak 1	6.01	5.99	6.01
PCB-1016 Peak 2	6.78	6.77	6.79
PCB-1016 Peak 3	6.99	6.98	7.00
PCB-1016 Peak 4	7.64	7.63	7.65
PCB-1016 Peak 5	8.23	8.22	8.24
PCB-1260 Peak 1	9.47	9.46	9.48
PCB-1260 Peak 2	9.88	9.87	9.89
PCB-1260 Peak 3	10.26	10.25	10.27
PCB-1260 Peak 4	11.09	11.08	11.10
PCB-1260 Peak 5	11.40	11.39	11.41
DCB Decachlorobiphenyl (Surr)	12.53	12.53	12.55

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV915.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 15:00:39 ALS Bottle#: 3 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-015
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub9

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:45:05 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 06:12:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.109	3.108	0.001	659132192	50.4	50.4	
2	3.913	3.913	0.000	370756598	50.4	50.4	
1 PCB-1016							
1	6.006	6.003	0.003	443409583	1000.0	1032.3	
1	6.778	6.778	0.000	711351813	1000.0	747.0	
1	6.989	6.988	0.001	381437107	1000.0	939.3	
1	7.643	7.640	0.003	334578663	1000.0	783.4	
1	8.226	8.225	0.001	227531947	1000.0	912.7	
2	6.742	6.740	0.002	151837851	1000.0	848.8	
2	7.457	7.455	0.002	289813583	1000.0	795.5	
2	8.203	8.202	0.001	639966457	1000.0	812.6	
2	8.420	8.417	0.003	294879904	1000.0	856.4	
2	9.157	9.155	0.002	192401942	1000.0	783.7	
						RPD = 7.47	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							M
1	9.473	9.471	0.002	624547113	1000.5	944.1	
1	9.879	9.878	0.001	1113112206	1000.5	915.7	
1	10.256	10.256	0.000	1097701432	1000.5	922.5	
1	11.091	11.091	0.000	1230048566	1000.5	861.2	
1	11.401	11.401	0.000	459380801	1000.5	801.7	
2	10.937	10.935	0.002	452832592	1000.5	838.3	M
2	11.192	11.190	0.002	559807478	1000.5	807.4	M
2	11.593	11.592	0.001	707162039	1000.5	803.5	M
2	12.268	12.268	0.000	837250583	1000.5	798.1	M
2	12.633	12.632	0.001	483939225	1000.5	796.9	M
						RPD = 9.45	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.533	12.535	-0.002	483654006	50.0	44.3	
2	13.768	13.768	0.000	284925542	50.0	47.6	
						RPD = 7.23	
S 7 Polychlorinated biphenyls, Total							
1						1772.0	
2						1628.3	
						RPD = 8.45	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

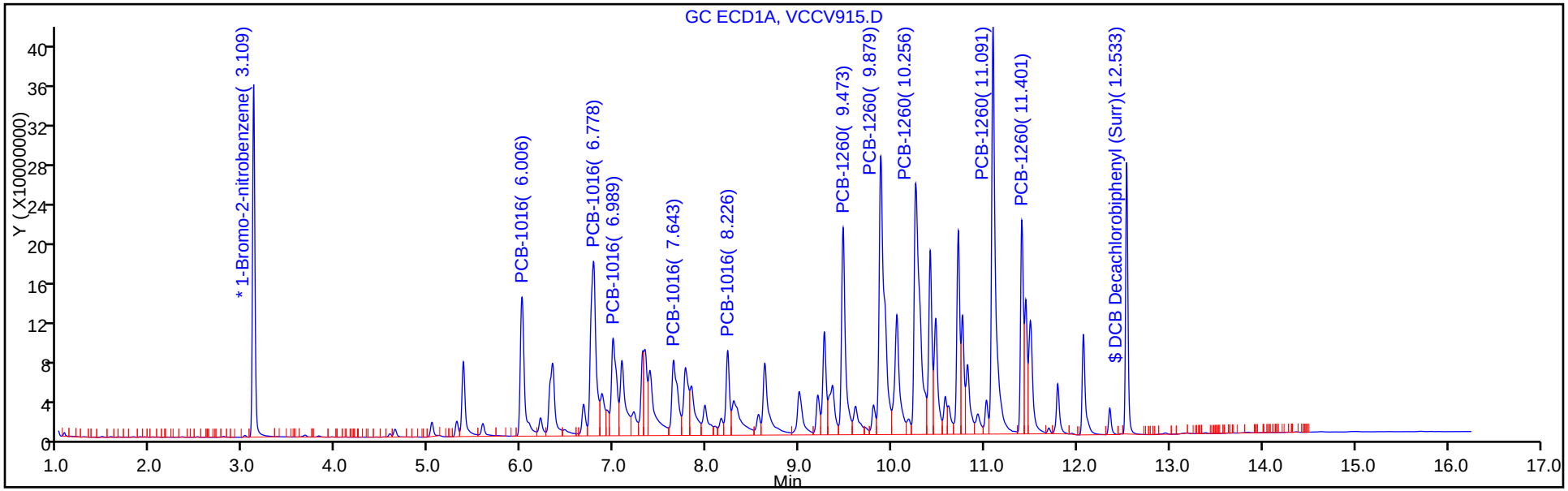
1016/1260CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 06:45:06 Chrom Revision: 2.2 20-Apr-2016 13:59:46

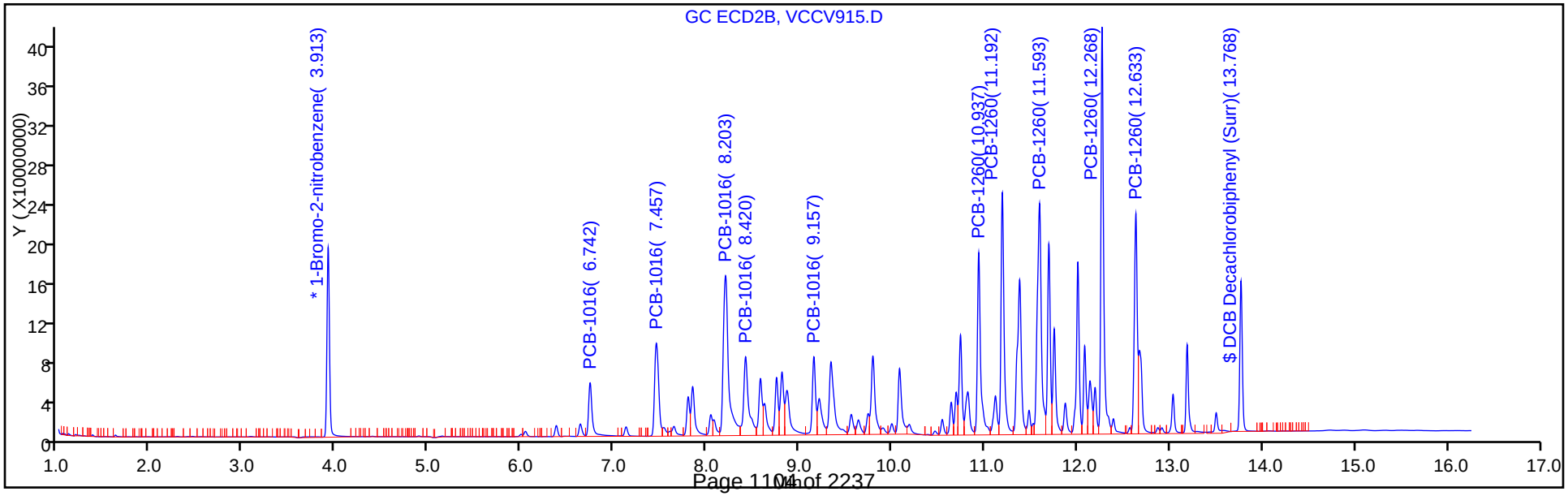
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV915.D				
Injection Date:	17-Aug-2016 15:00:39	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	15
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/15 Calibration Date: 08/17/2016 15:00

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV915.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Ave	0.0243	0.0206		849	1000	-15.1	20.0
PCB-1016 Peak 2	Ave	0.0495	0.0394		796	1000	-20.4*	20.0
PCB-1016 Peak 3	Ave	0.1071	0.0870		813	1000	-18.7	20.0
PCB-1016 Peak 4	Ave	0.0468	0.0401		856	1000	-14.4	20.0
PCB-1016 Peak 5	Ave	0.0334	0.0262		784	1000	-21.6*	20.0
PCB-1260 Peak 1	Ave	0.0734	0.0615		838	1000	-16.2	20.0
PCB-1260 Peak 2	Ave	0.0943	0.0761		807	1000	-19.3	20.0
PCB-1260 Peak 3	Ave	0.1196	0.0961		803	1000	-19.7	20.0
PCB-1260 Peak 4	Ave	0.1426	0.1138		798	1000	-20.2*	20.0
PCB-1260 Peak 5	Ave	0.0826	0.0658		797	1000	-20.4*	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8582	0.7747		47.6	50.0	-9.7	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/15 Calibration Date: 08/17/2016 15:00

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV915.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1016 Peak 1	6.74	6.73	6.75
PCB-1016 Peak 2	7.46	7.45	7.47
PCB-1016 Peak 3	8.20	8.19	8.21
PCB-1016 Peak 4	8.42	8.41	8.43
PCB-1016 Peak 5	9.16	9.15	9.17
PCB-1260 Peak 1	10.94	10.93	10.95
PCB-1260 Peak 2	11.19	11.18	11.20
PCB-1260 Peak 3	11.59	11.58	11.60
PCB-1260 Peak 4	12.27	12.26	12.28
PCB-1260 Peak 5	12.63	12.62	12.64
DCB Decachlorobiphenyl (Surr)	13.77	13.76	13.78

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV915.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 15:00:39 ALS Bottle#: 3 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-015
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub9

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:45:05 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 06:12:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.109	3.108	0.001	659132192	50.4	50.4	
2	3.913	3.913	0.000	370756598	50.4	50.4	
1 PCB-1016							
1	6.006	6.003	0.003	443409583	1000.0	1032.3	
1	6.778	6.778	0.000	711351813	1000.0	747.0	
1	6.989	6.988	0.001	381437107	1000.0	939.3	
1	7.643	7.640	0.003	334578663	1000.0	783.4	
1	8.226	8.225	0.001	227531947	1000.0	912.7	
2	6.742	6.740	0.002	151837851	1000.0	848.8	
2	7.457	7.455	0.002	289813583	1000.0	795.5	
2	8.203	8.202	0.001	639966457	1000.0	812.6	
2	8.420	8.417	0.003	294879904	1000.0	856.4	
2	9.157	9.155	0.002	192401942	1000.0	783.7	
						RPD = 7.47	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							M
1	9.473	9.471	0.002	624547113	1000.5	944.1	
1	9.879	9.878	0.001	1113112206	1000.5	915.7	
1	10.256	10.256	0.000	1097701432	1000.5	922.5	
1	11.091	11.091	0.000	1230048566	1000.5	861.2	
1	11.401	11.401	0.000	459380801	1000.5	801.7	
2	10.937	10.935	0.002	452832592	1000.5	838.3	M
2	11.192	11.190	0.002	559807478	1000.5	807.4	M
2	11.593	11.592	0.001	707162039	1000.5	803.5	M
2	12.268	12.268	0.000	837250583	1000.5	798.1	M
2	12.633	12.632	0.001	483939225	1000.5	796.9	M
						RPD = 9.45	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.533	12.535	-0.002	483654006	50.0	44.3	
2	13.768	13.768	0.000	284925542	50.0	47.6	
						RPD = 7.23	
S 7 Polychlorinated biphenyls, Total							
1						1772.0	
2						1628.3	
						RPD = 8.45	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

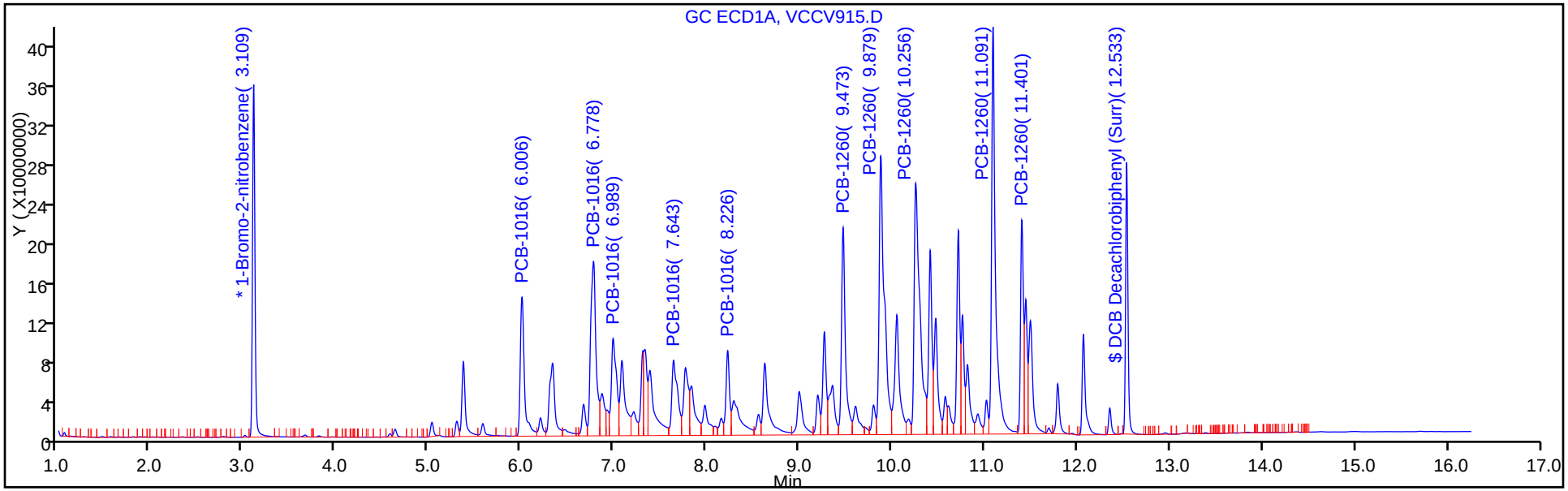
1016/1260CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 06:45:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

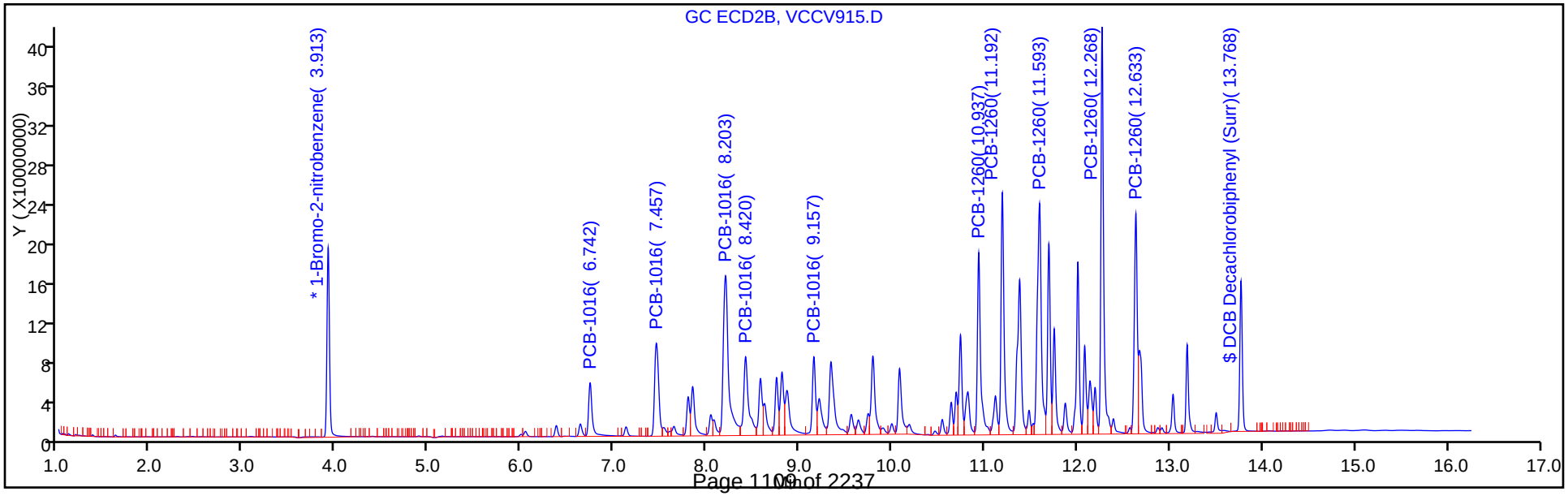
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV915.D				
Injection Date:	17-Aug-2016 15:00:39	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	15
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1

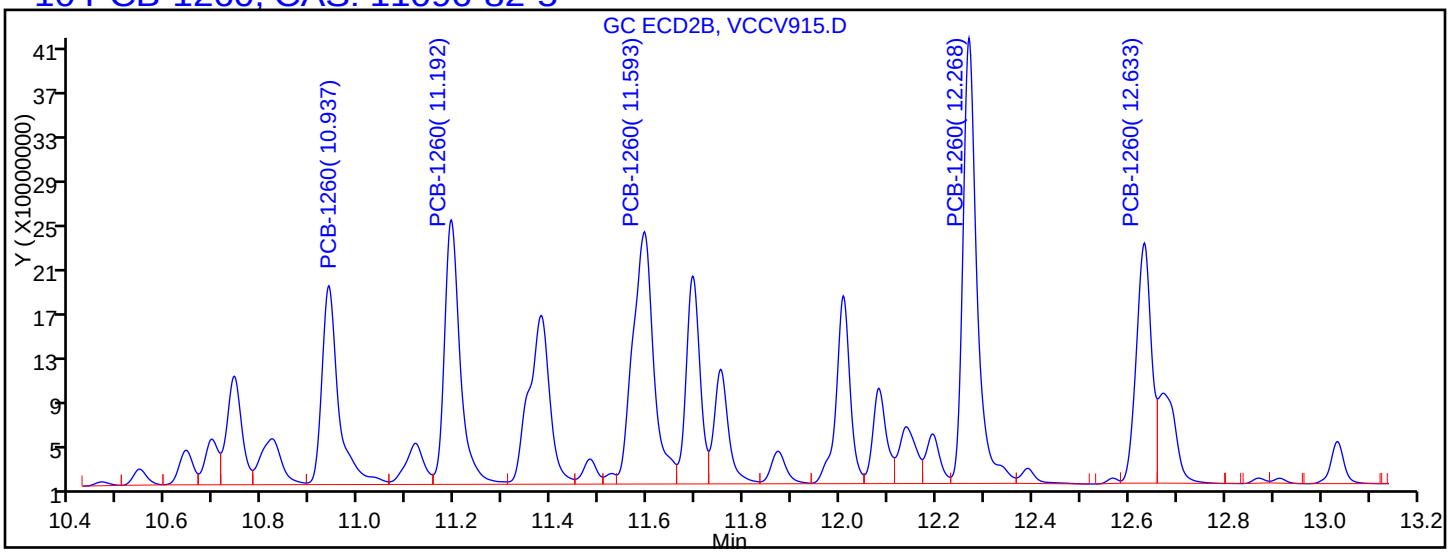


Report Date: 19-Aug-2016 06:45:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

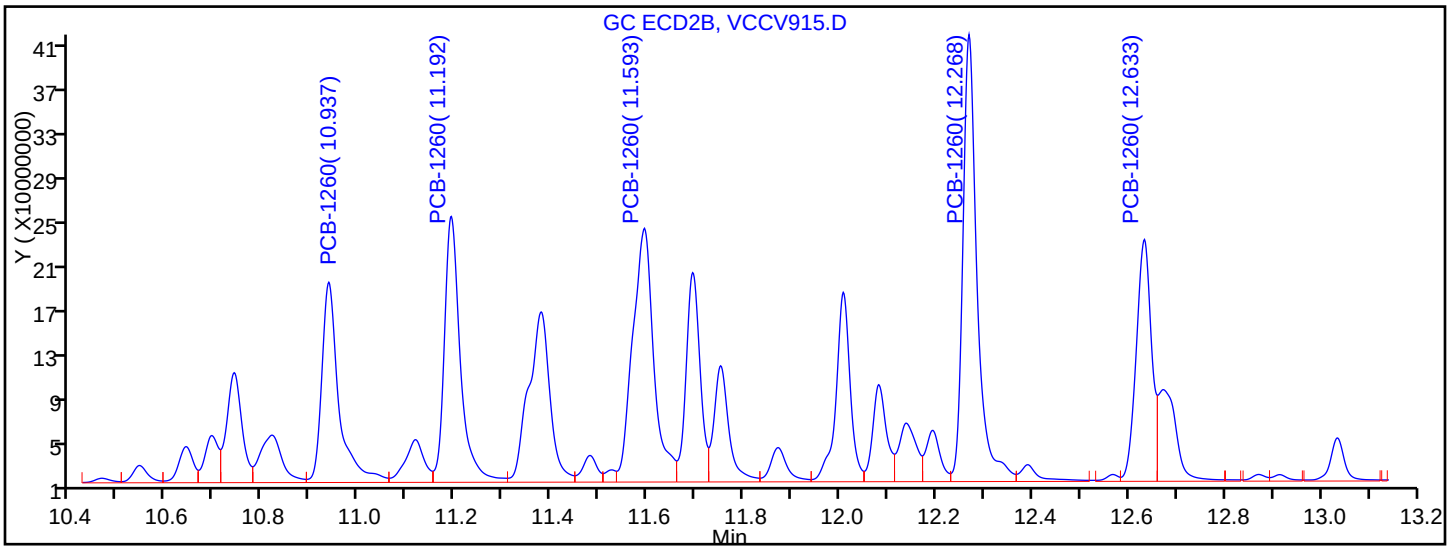
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV915.D				
Injection Date:	17-Aug-2016 15:00:39	Instrument ID:	SGCV		
Lims ID:	ccv				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	3	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

10 PCB-1260, CAS: 11096-82-5



Processing Integration Results

RT = 10.937	Response = 438204048	M
RT = 11.192	Response = 546276573	M
RT = 11.593	Response = 695875930	M
RT = 12.268	Response = 824129337	M
RT = 12.633	Response = 476376197	M



Manual Integration Results

RT = 10.937	Response = 452832592	M
RT = 11.192	Response = 559807478	M
RT = 11.593	Response = 707162039	M
RT = 12.268	Response = 837250583	M
RT = 12.633	Response = 483939225	M

Reviewer: bonkoskig, 19-Aug-2016 06:12:20

Audit Action: Assigned New Baseline Audit Reason: Baseline Smoothing

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/16 Calibration Date: 08/17/2016 15:23

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV916.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Ave	0.0097	0.0099		1030	1010	2.6	20.0
PCB-1221 Peak 2	Ave	0.0056	0.0053		952	1010	-5.6	20.0
PCB-1221 Peak 3	Ave	0.0234	0.0240		1030	1010	2.6	20.0
PCB-1254 Peak 1	Ave	0.0313	0.0306		988	1010	-2.0	20.0
PCB-1254 Peak 2	Ave	0.0403	0.0383		959	1010	-4.8	20.0
PCB-1254 Peak 3	Ave	0.0627	0.0622		1000	1010	-0.8	20.0
PCB-1254 Peak 4	Ave	0.0444	0.0497		1130	1010	11.8	20.0
PCB-1254 Peak 5	Ave	0.0629	0.0673		1080	1010	7.0	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/16 Calibration Date: 08/17/2016 15:23

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV916.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1221 Peak 1	5.03	5.02	5.04
PCB-1221 Peak 2	5.30	5.29	5.31
PCB-1221 Peak 3	5.37	5.36	5.38
PCB-1254 Peak 1	8.23	8.22	8.24
PCB-1254 Peak 2	8.63	8.62	8.64
PCB-1254 Peak 3	9.20	9.19	9.21
PCB-1254 Peak 4	9.88	9.87	9.89
PCB-1254 Peak 5	10.26	10.25	10.27

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV916.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 15:23:12 ALS Bottle#: 4 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-016
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:45:11 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 06:13:22

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.109	3.109	0.000	520618765	50.4	50.4	
2	3.913	3.913	0.000	286719974	50.4	50.4	
2 PCB-1221							
1	5.032	5.032	0.000	103218736	1008.0	1034.3	
1	5.302	5.302	0.000	54647852	1008.0	951.5	
1	5.372	5.372	0.000	250150661	1008.0	1034.5	
2	6.378	6.378	0.000	72239408	1008.0	903.8	
2	6.636	6.636	0.000	43577182	1008.0	954.7	
2	6.741	6.741	0.000	176777115	1008.0	1010.8	
						RPD = 5.13	
8 PCB-1254							M
1	8.226	8.226	0.000	318918359	1008.0	987.8	M
1	8.626	8.626	0.000	399155308	1008.0	959.4	M
1	9.199	9.199	0.000	647287605	1008.0	1000.1	M
1	9.877	9.877	0.000	517181619	1008.0	1126.5	M
1	10.259	10.259	0.000	700679860	1008.0	1078.6	M
2	9.793	9.793	0.000	324447038	1008.0	978.6	
2	10.081	10.081	0.000	316571618	1008.0	976.6	
2	10.694	10.694	0.000	488406405	1008.0	993.8	
2	11.381	11.381	0.000	346183388	1008.0	1354.9	
2	11.594	11.594	0.000	443898606	1008.0	1024.8	
						RPD = 3.36	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.534	0.000	453271914	50.0	52.3	
2	13.768	13.768	0.000	263108763	50.0	56.8	
						RPD = 8.24	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 06:45:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV916.D

Injection Date: 17-Aug-2016 15:23:12 Instrument ID: SGCV Operator ID: GLB

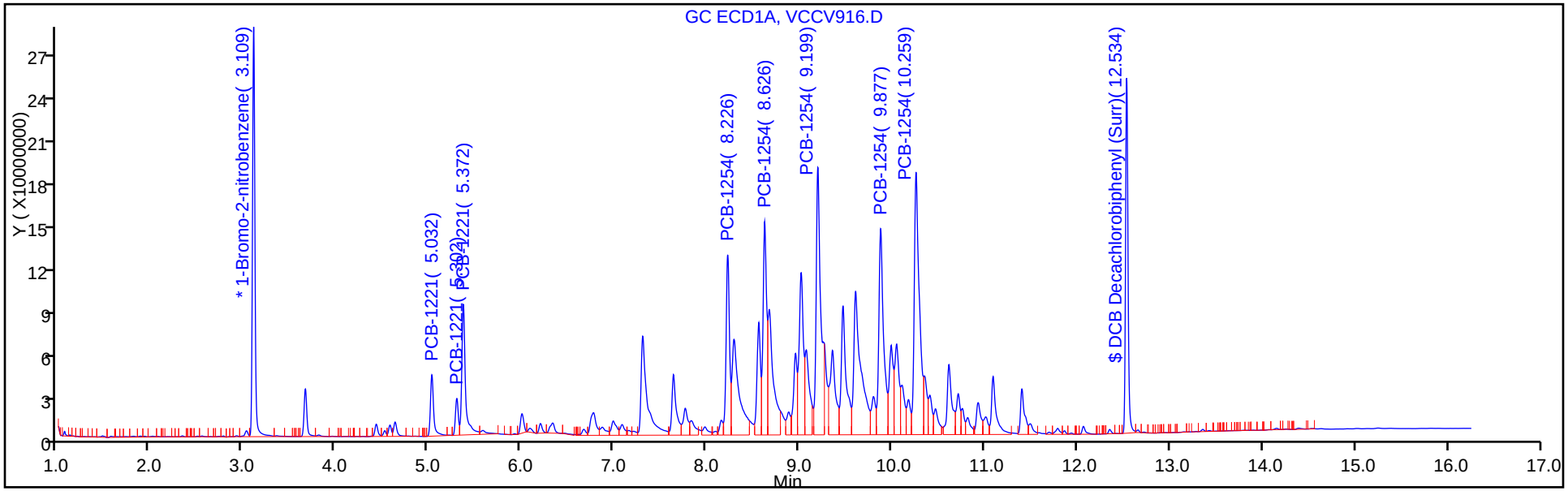
Lims ID: ccv Worklist Smp#: 16

Client ID:

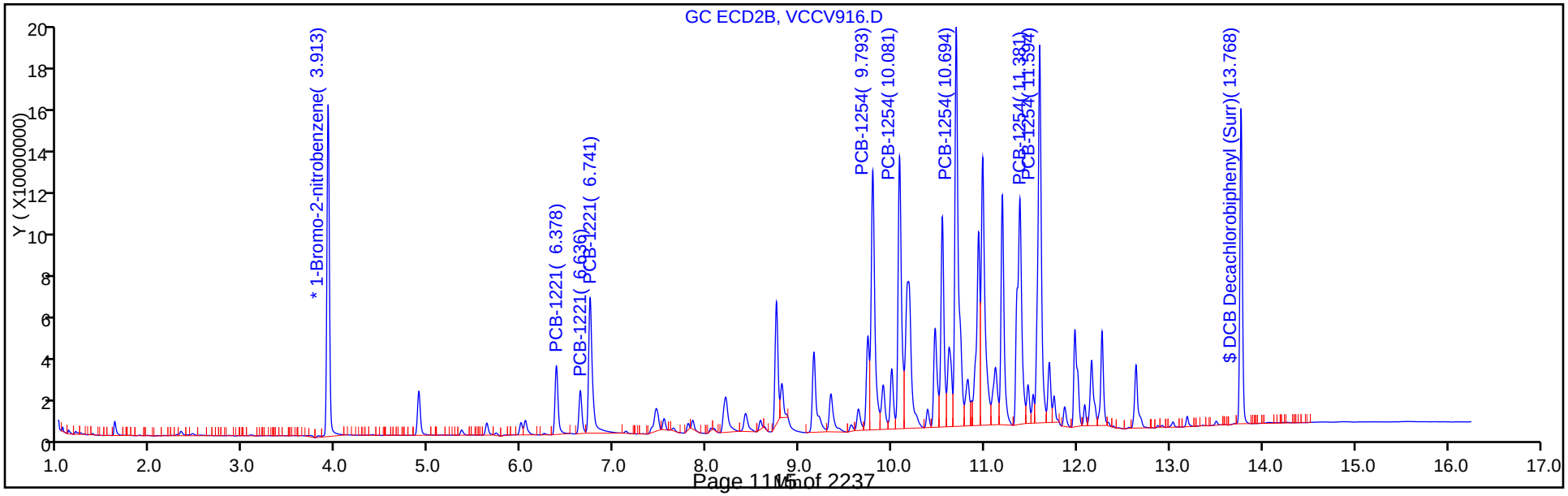
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 4

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1

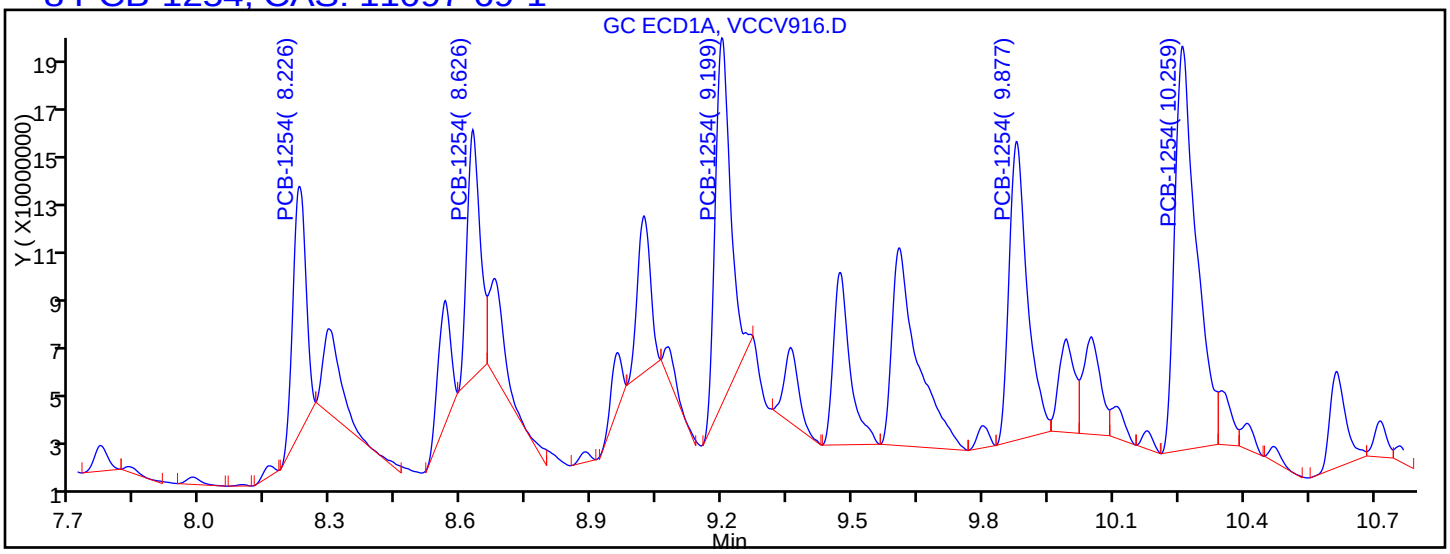


Report Date: 19-Aug-2016 06:45:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

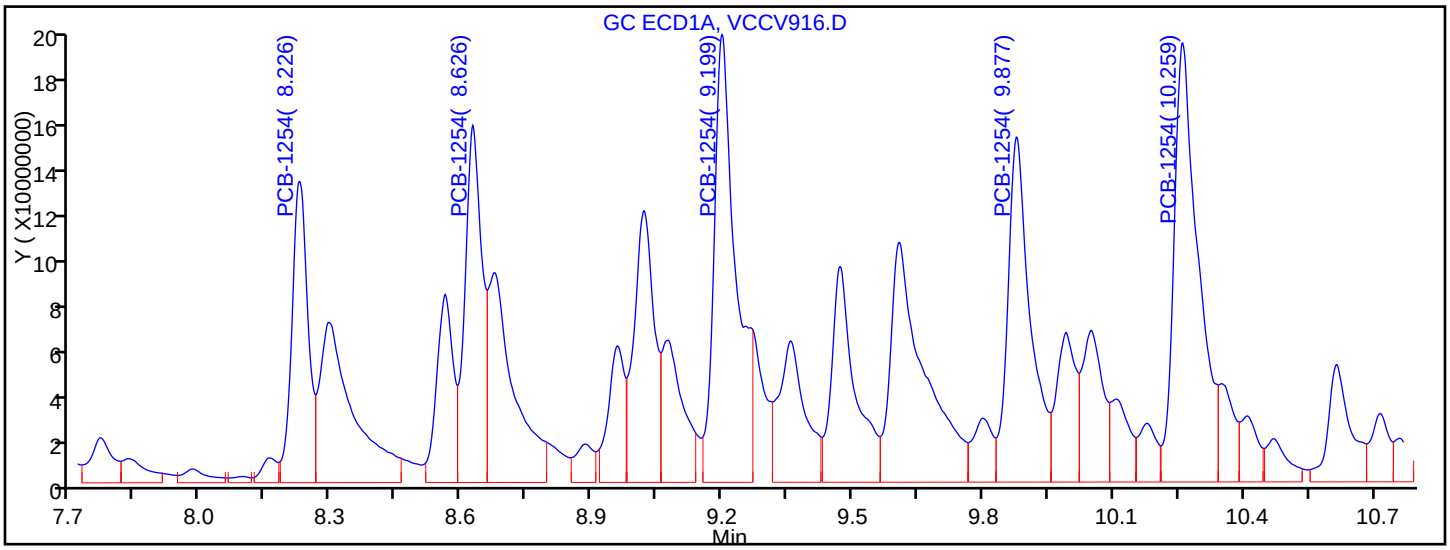
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV916.D				
Injection Date:	17-Aug-2016 15:23:12	Instrument ID:	SGCV		
Lims ID:	ccv				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	4	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

8 PCB-1254, CAS: 11097-69-1



Processing Integration Results

RT = 8.226	Response = 210313463	M
RT = 8.626	Response = 211662583	M
RT = 9.199	Response = 368732666	M
RT = 9.877	Response = 356711643	M
RT = 10.259	Response = 568676658	M



Manual Integration Results

RT = 8.226	Response = 318918359	M
RT = 8.626	Response = 399155308	M
RT = 9.199	Response = 647287605	M
RT = 9.877	Response = 517181619	M
RT = 10.259	Response = 700679860	M

Reviewer: bonkoskig, 19-Aug-2016 06:13:22

Audit Action: Assigned New Baseline Audit Reason: Baseline Smoothing

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/16 Calibration Date: 08/17/2016 15:23

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV916.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
DCB Decachlorobiphenyl (Surr)	Ave	0.8424	0.8776		52.3	50.0	4.2	20.0

FORM VII 8082A

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/16 Calibration Date: 08/17/2016 15:23

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV916.D

Analyte	RT	RT WINDOW	
		FROM	TO
DCB Decachlorobiphenyl (Surr)	12.53	12.52	12.54

Form VII 8082A

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV916.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 15:23:12 ALS Bottle#: 4 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-016
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:45:11 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 06:13:22

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.109	3.109	0.000	520618765	50.4	50.4	
2	3.913	3.913	0.000	286719974	50.4	50.4	
2 PCB-1221							
1	5.032	5.032	0.000	103218736	1008.0	1034.3	
1	5.302	5.302	0.000	54647852	1008.0	951.5	
1	5.372	5.372	0.000	250150661	1008.0	1034.5	
2	6.378	6.378	0.000	72239408	1008.0	903.8	
2	6.636	6.636	0.000	43577182	1008.0	954.7	
2	6.741	6.741	0.000	176777115	1008.0	1010.8	
						RPD = 5.13	
8 PCB-1254							M
1	8.226	8.226	0.000	318918359	1008.0	987.8	M
1	8.626	8.626	0.000	399155308	1008.0	959.4	M
1	9.199	9.199	0.000	647287605	1008.0	1000.1	M
1	9.877	9.877	0.000	517181619	1008.0	1126.5	M
1	10.259	10.259	0.000	700679860	1008.0	1078.6	M
2	9.793	9.793	0.000	324447038	1008.0	978.6	
2	10.081	10.081	0.000	316571618	1008.0	976.6	
2	10.694	10.694	0.000	488406405	1008.0	993.8	
2	11.381	11.381	0.000	346183388	1008.0	1354.9	
2	11.594	11.594	0.000	443898606	1008.0	1024.8	
						RPD = 3.36	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.534	0.000	453271914	50.0	52.3	
2	13.768	13.768	0.000	263108763	50.0	56.8	
						RPD = 8.24	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 06:45:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV916.D

Injection Date: 17-Aug-2016 15:23:12 Instrument ID: SGCV Operator ID: GLB

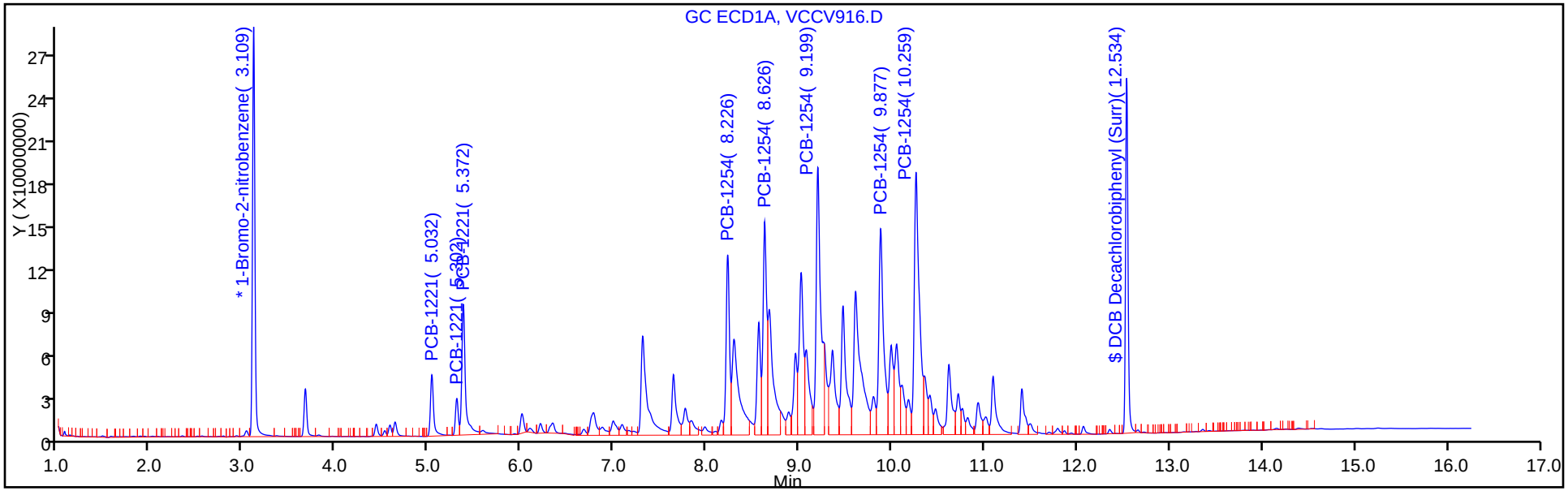
Lims ID: ccv Worklist Smp#: 16

Client ID:

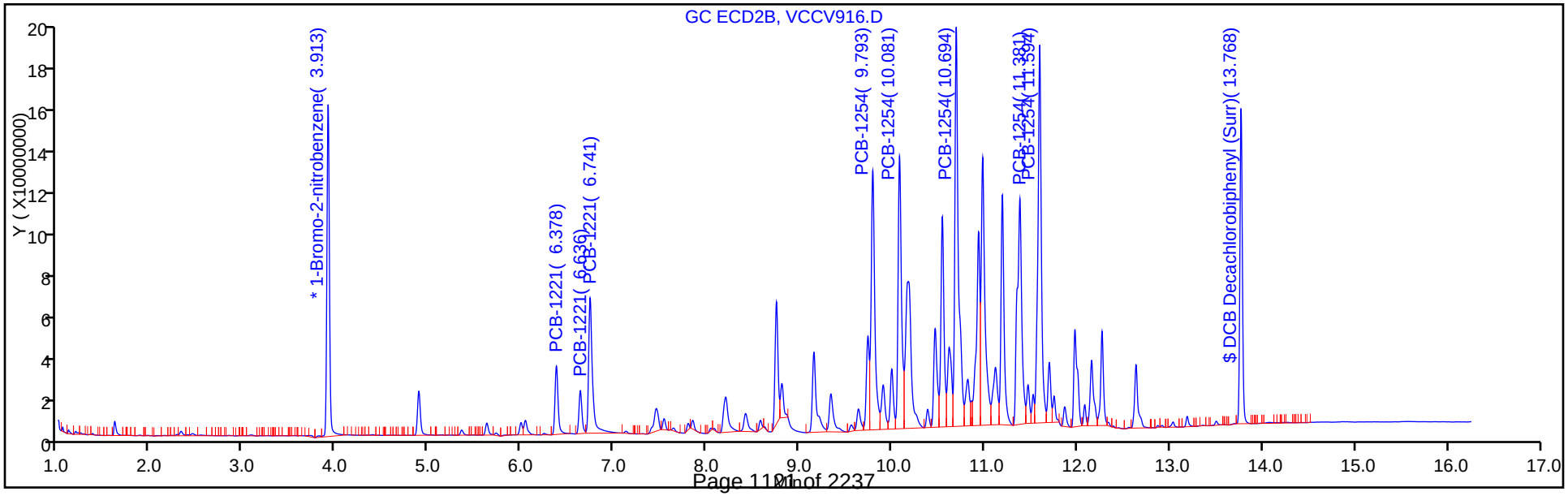
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 4

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/16 Calibration Date: 08/17/2016 15:23

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV916.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Ave	0.0140	0.0126		904	1010	-10.3	20.0
PCB-1221 Peak 2	Ave	0.0080	0.0076		955	1010	-5.3	20.0
PCB-1221 Peak 3	Ave	0.0307	0.0308		1010	1010	0.3	20.0
PCB-1254 Peak 1	Ave	0.0583	0.0566		979	1010	-2.9	20.0
PCB-1254 Peak 2	Ave	0.0570	0.0552		977	1010	-3.1	20.0
PCB-1254 Peak 3	Ave	0.0864	0.0852		994	1010	-1.4	20.0
PCB-1254 Peak 4	Ave	0.0449	0.0604		1350	1010	34.4*	20.0
PCB-1254 Peak 5	Ave	0.0761	0.0774		1020	1010	1.7	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/16 Calibration Date: 08/17/2016 15:23

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV916.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1221 Peak 1	6.38	6.37	6.39
PCB-1221 Peak 2	6.64	6.63	6.65
PCB-1221 Peak 3	6.74	6.73	6.75
PCB-1254 Peak 1	9.79	9.78	9.80
PCB-1254 Peak 2	10.08	10.07	10.09
PCB-1254 Peak 3	10.69	10.68	10.70
PCB-1254 Peak 4	11.38	11.37	11.39
PCB-1254 Peak 5	11.59	11.58	11.60

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV916.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 15:23:12 ALS Bottle#: 4 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-016
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:45:11 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 06:13:22

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.109	3.109	0.000	520618765	50.4	50.4	
2	3.913	3.913	0.000	286719974	50.4	50.4	
2 PCB-1221							
1	5.032	5.032	0.000	103218736	1008.0	1034.3	
1	5.302	5.302	0.000	54647852	1008.0	951.5	
1	5.372	5.372	0.000	250150661	1008.0	1034.5	
2	6.378	6.378	0.000	72239408	1008.0	903.8	
2	6.636	6.636	0.000	43577182	1008.0	954.7	
2	6.741	6.741	0.000	176777115	1008.0	1010.8	
						RPD = 5.13	
8 PCB-1254							M
1	8.226	8.226	0.000	318918359	1008.0	987.8	M
1	8.626	8.626	0.000	399155308	1008.0	959.4	M
1	9.199	9.199	0.000	647287605	1008.0	1000.1	M
1	9.877	9.877	0.000	517181619	1008.0	1126.5	M
1	10.259	10.259	0.000	700679860	1008.0	1078.6	M
2	9.793	9.793	0.000	324447038	1008.0	978.6	
2	10.081	10.081	0.000	316571618	1008.0	976.6	
2	10.694	10.694	0.000	488406405	1008.0	993.8	
2	11.381	11.381	0.000	346183388	1008.0	1354.9	
2	11.594	11.594	0.000	443898606	1008.0	1024.8	
						RPD = 3.36	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.534	0.000	453271914	50.0	52.3	
2	13.768	13.768	0.000	263108763	50.0	56.8	
						RPD = 8.24	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 19-Aug-2016 06:45:13 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV916.D

Injection Date: 17-Aug-2016 15:23:12 Instrument ID: SGCV Operator ID: GLB

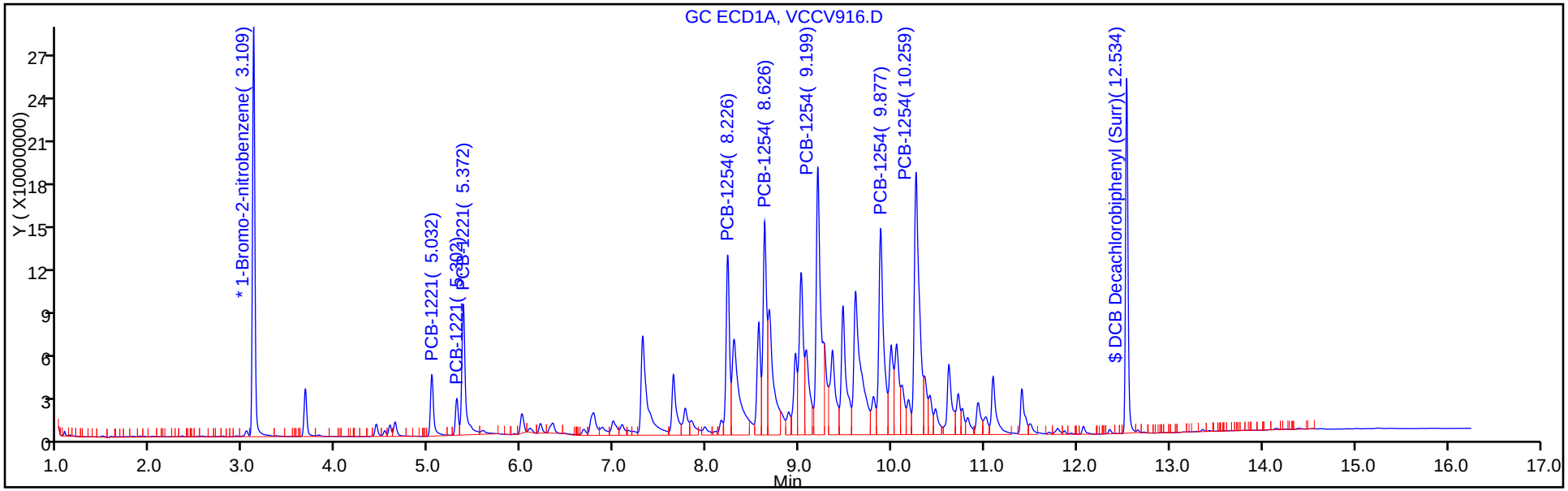
Lims ID: ccv Worklist Smp#: 16

Client ID:

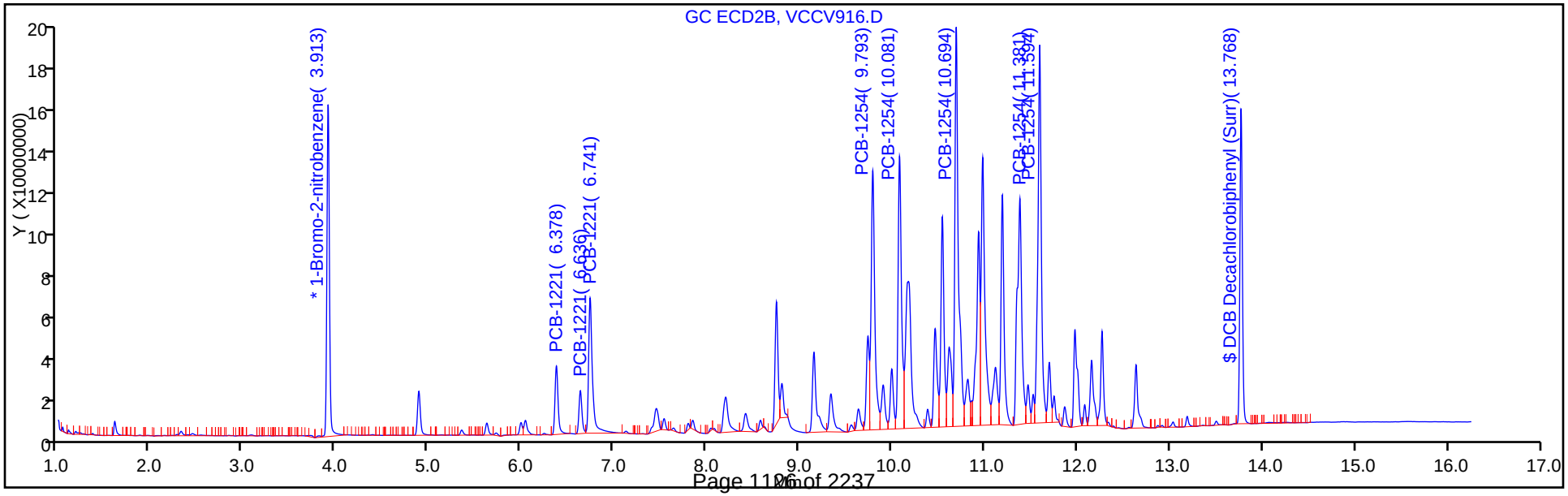
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 4

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/16 Calibration Date: 08/17/2016 15:23

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV916.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
DCB Decachlorobiphenyl (Surr)	Ave	0.8582	0.9250		56.8	50.0	7.8	20.0

FORM VII 8082A

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265137/16 Calibration Date: 08/17/2016 15:23

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV916.D

Analyte	RT	RT WINDOW	
		FROM	TO
DCB Decachlorobiphenyl (Surr)	13.77	13.76	13.78

Form VII 8082A

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV916.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 17-Aug-2016 15:23:12 ALS Bottle#: 4 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008226-016
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:45:11 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 19-Aug-2016 06:13:22

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.109	3.109	0.000	520618765	50.4	50.4	
2	3.913	3.913	0.000	286719974	50.4	50.4	
2 PCB-1221							
1	5.032	5.032	0.000	103218736	1008.0	1034.3	
1	5.302	5.302	0.000	54647852	1008.0	951.5	
1	5.372	5.372	0.000	250150661	1008.0	1034.5	
2	6.378	6.378	0.000	72239408	1008.0	903.8	
2	6.636	6.636	0.000	43577182	1008.0	954.7	
2	6.741	6.741	0.000	176777115	1008.0	1010.8	
						RPD = 5.13	
8 PCB-1254							M
1	8.226	8.226	0.000	318918359	1008.0	987.8	M
1	8.626	8.626	0.000	399155308	1008.0	959.4	M
1	9.199	9.199	0.000	647287605	1008.0	1000.1	M
1	9.877	9.877	0.000	517181619	1008.0	1126.5	M
1	10.259	10.259	0.000	700679860	1008.0	1078.6	M
2	9.793	9.793	0.000	324447038	1008.0	978.6	
2	10.081	10.081	0.000	316571618	1008.0	976.6	
2	10.694	10.694	0.000	488406405	1008.0	993.8	
2	11.381	11.381	0.000	346183388	1008.0	1354.9	
2	11.594	11.594	0.000	443898606	1008.0	1024.8	
						RPD = 3.36	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.534	0.000	453271914	50.0	52.3	
2	13.768	13.768	0.000	263108763	50.0	56.8	
						RPD = 8.24	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

1221/1254CCV_00004 Amount Added: 20.00 Units: uL

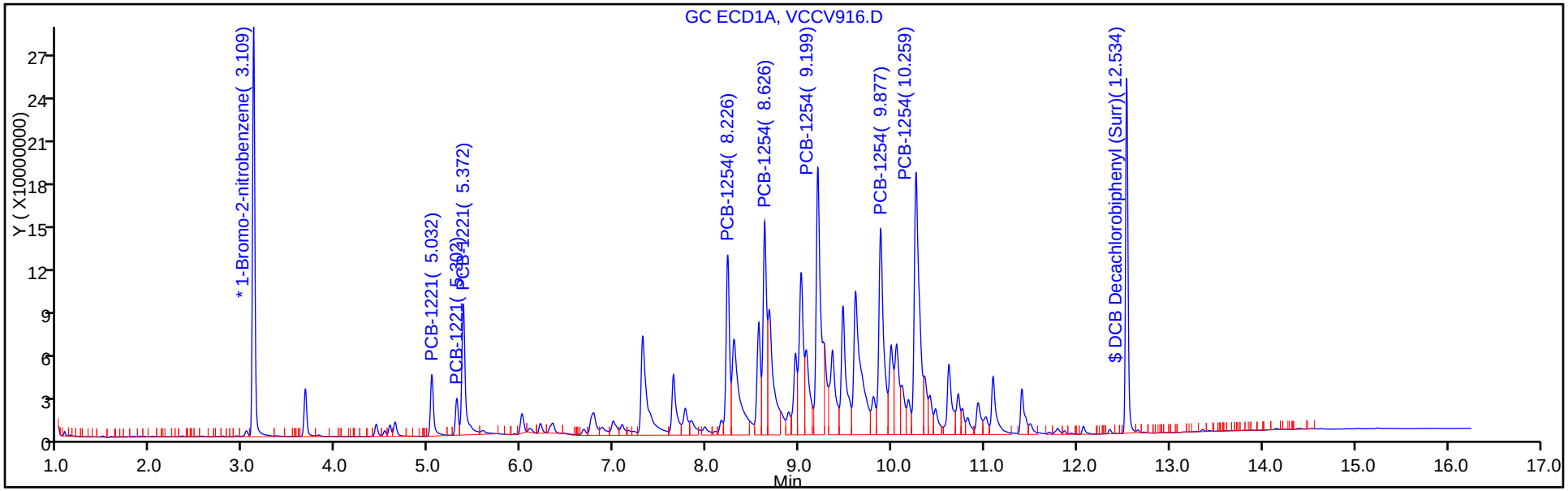
Report Date: 19-Aug-2016 06:45:13 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

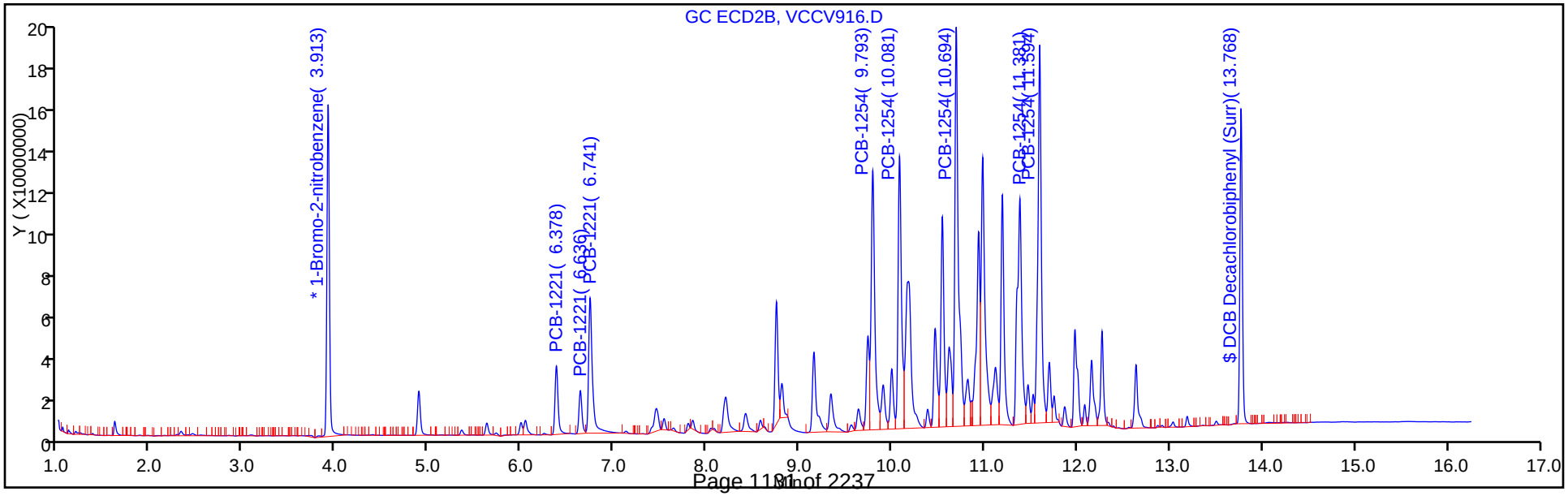
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VCCV916.D

Injection Date:	17-Aug-2016 15:23:12	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	16
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-265549/3 Calibration Date: 08/19/2016 09:20

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV943.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Lin1		0.0337		1030	1000	2.7	20.0
PCB-1016 Peak 2	Lin1		0.0591		807	1000	-19.3	20.0
PCB-1016 Peak 3	Lin1		0.0298		958	1000	-4.2	20.0
PCB-1016 Peak 4	Lin1		0.0283		866	1000	-13.4	20.0
PCB-1016 Peak 5	Lin1		0.0193		1010	1000	1.1	20.0
PCB-1260 Peak 1	Lin1		0.0503		995	1000	-0.6	20.0
PCB-1260 Peak 2	Lin1		0.0888		955	1000	-4.5	20.0
PCB-1260 Peak 3	Lin1		0.0828		910	1000	-9.0	20.0
PCB-1260 Peak 4	Lin1		0.0964		882	1000	-11.8	20.0
PCB-1260 Peak 5	Lin1		0.0368		840	1000	-16.1	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8424	0.7459		44.7	50.0	-11.5	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-265549/3 Calibration Date: 08/19/2016 09:20

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV943.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1016 Peak 1	6.00	5.99	6.01
PCB-1016 Peak 2	6.78	6.77	6.79
PCB-1016 Peak 3	6.99	6.98	7.00
PCB-1016 Peak 4	7.64	7.63	7.65
PCB-1016 Peak 5	8.22	8.21	8.23
PCB-1260 Peak 1	9.47	9.46	9.48
PCB-1260 Peak 2	9.88	9.87	9.89
PCB-1260 Peak 3	10.25	10.24	10.26
PCB-1260 Peak 4	11.09	11.08	11.10
PCB-1260 Peak 5	11.40	11.39	11.41
DCB Decachlorobiphenyl (Surr)	12.53	12.52	12.54

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV943.D
Lims ID: ccvis
Client ID:
Sample Type: CCVIS
Inject. Date: 19-Aug-2016 09:20:37 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ccvis
Misc. Info.: 160-0008246-003
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub9

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:16 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 19-Aug-2016 09:54:26

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.105	3.105	0.000	533601040	50.4	50.4	
2	3.911	3.911	0.000	290385215	50.4	50.4	
1 PCB-1016							
1	6.004	6.004	0.000	357253847	1000.0	1027.3	
1	6.777	6.777	0.000	625474776	1000.0	807.5	
1	6.987	6.987	0.000	315333688	1000.0	958.0	
1	7.640	7.640	0.000	299969653	1000.0	865.7	
1	8.224	8.224	0.000	204520082	1000.0	1011.5	
2	6.737	6.737	0.000	122397337	1000.0	873.6	
2	7.452	7.452	0.000	254770860	1000.0	892.9	
2	8.201	8.201	0.000	540810599	1000.0	876.8	
2	8.416	8.416	0.000	251105737	1000.0	931.1	
2	9.152	9.152	0.000	167792052	1000.0	872.6	
						RPD = 4.89	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.470	9.470	0.000	533182940	1000.5	994.8	
1	9.877	9.877	0.000	940874904	1000.5	955.4	
1	10.254	10.254	0.000	876782170	1000.5	910.3	
1	11.090	11.090	0.000	1021095366	1000.5	882.3	
1	11.402	11.402	0.000	390088505	1000.5	839.8	
2	10.934	10.934	0.000	382976055	1000.5	905.2	
2	11.189	11.189	0.000	462585126	1000.5	851.9	
2	11.591	11.591	0.000	612354174	1000.5	888.3	
2	12.266	12.266	0.000	703212580	1000.5	855.9	
2	12.631	12.631	0.000	408164446	1000.5	858.1	
						RPD = 4.99	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.534	0.000	394874173	50.0	44.7	
2	13.769	13.769	0.000	228890396	50.0	48.9	
						RPD = 8.92	

Reagents:

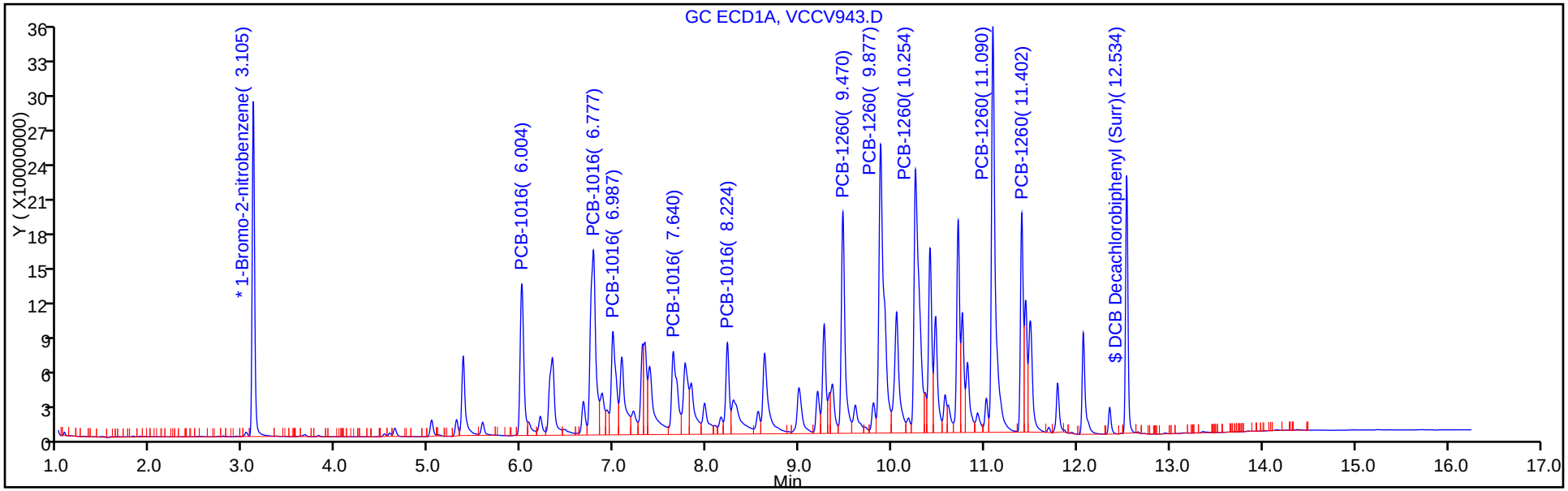
1016/1260CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 22-Aug-2016 06:46:17 Chrom Revision: 2.2 20-Apr-2016 13:59:46

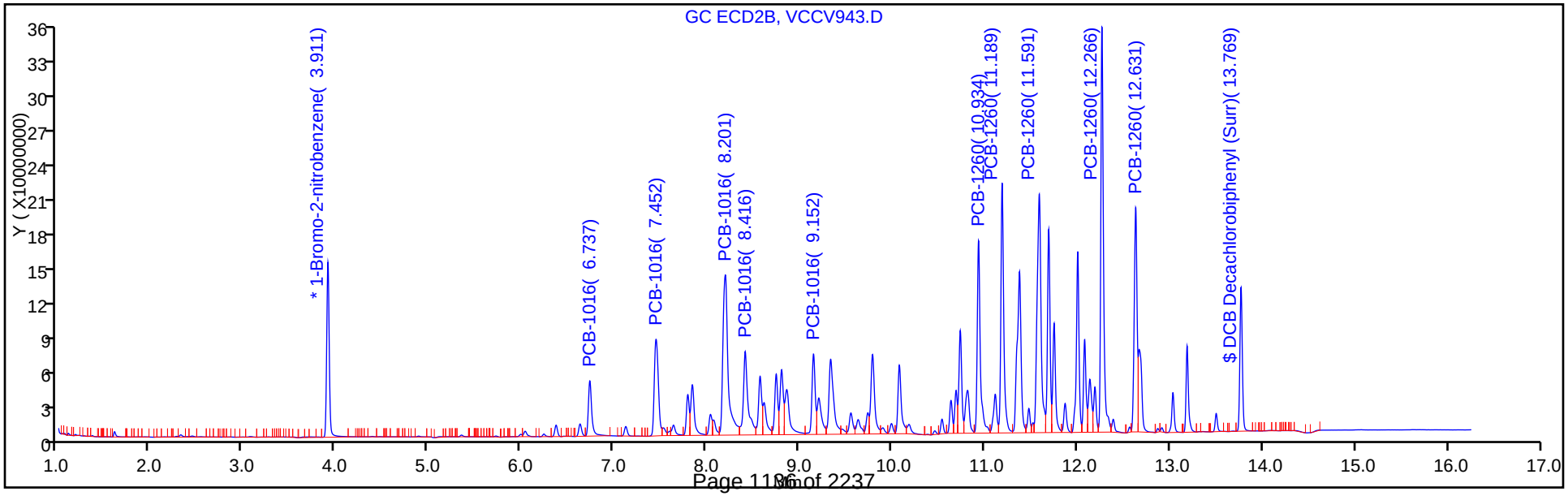
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV943.D				
Injection Date:	19-Aug-2016 09:20:37	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccvis			Worklist Smp#:	3
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-265549/3 Calibration Date: 08/19/2016 09:20

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV943.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Ave	0.0243	0.0212		874	1000	-12.6	20.0
PCB-1016 Peak 2	Ave	0.0495	0.0442		893	1000	-10.7	20.0
PCB-1016 Peak 3	Ave	0.1071	0.0939		877	1000	-12.3	20.0
PCB-1016 Peak 4	Ave	0.0468	0.0436		931	1000	-6.9	20.0
PCB-1016 Peak 5	Ave	0.0334	0.0291		873	1000	-12.7	20.0
PCB-1260 Peak 1	Ave	0.0734	0.0664		905	1000	-9.5	20.0
PCB-1260 Peak 2	Ave	0.0943	0.0803		852	1000	-14.9	20.0
PCB-1260 Peak 3	Ave	0.1196	0.1062		888	1000	-11.2	20.0
PCB-1260 Peak 4	Ave	0.1426	0.1220		856	1000	-14.5	20.0
PCB-1260 Peak 5	Ave	0.0826	0.0708		858	1000	-14.2	20.0
DCB Decachlorobiphenyl (Surr)	Ave	0.8582	0.7945		48.9	50.0	-7.4	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCVIS 160-265549/3 Calibration Date: 08/19/2016 09:20

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV943.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1016 Peak 1	6.74	6.73	6.75
PCB-1016 Peak 2	7.45	7.44	7.46
PCB-1016 Peak 3	8.20	8.19	8.21
PCB-1016 Peak 4	8.42	8.41	8.43
PCB-1016 Peak 5	9.15	9.14	9.16
PCB-1260 Peak 1	10.93	10.92	10.94
PCB-1260 Peak 2	11.19	11.18	11.20
PCB-1260 Peak 3	11.59	11.58	11.60
PCB-1260 Peak 4	12.27	12.26	12.28
PCB-1260 Peak 5	12.63	12.62	12.64
DCB Decachlorobiphenyl (Surr)	13.77	13.76	13.78

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV943.D
Lims ID: ccvis
Client ID:
Sample Type: CCVIS
Inject. Date: 19-Aug-2016 09:20:37 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ccvis
Misc. Info.: 160-0008246-003
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub9

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:16 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 19-Aug-2016 09:54:26

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.105	3.105	0.000	533601040	50.4	50.4	
2	3.911	3.911	0.000	290385215	50.4	50.4	
1 PCB-1016							
1	6.004	6.004	0.000	357253847	1000.0	1027.3	
1	6.777	6.777	0.000	625474776	1000.0	807.5	
1	6.987	6.987	0.000	315333688	1000.0	958.0	
1	7.640	7.640	0.000	299969653	1000.0	865.7	
1	8.224	8.224	0.000	204520082	1000.0	1011.5	
2	6.737	6.737	0.000	122397337	1000.0	873.6	
2	7.452	7.452	0.000	254770860	1000.0	892.9	
2	8.201	8.201	0.000	540810599	1000.0	876.8	
2	8.416	8.416	0.000	251105737	1000.0	931.1	
2	9.152	9.152	0.000	167792052	1000.0	872.6	
						RPD = 4.89	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 PCB-1260							
1	9.470	9.470	0.000	533182940	1000.5	994.8	
1	9.877	9.877	0.000	940874904	1000.5	955.4	
1	10.254	10.254	0.000	876782170	1000.5	910.3	
1	11.090	11.090	0.000	1021095366	1000.5	882.3	
1	11.402	11.402	0.000	390088505	1000.5	839.8	
2	10.934	10.934	0.000	382976055	1000.5	905.2	
2	11.189	11.189	0.000	462585126	1000.5	851.9	
2	11.591	11.591	0.000	612354174	1000.5	888.3	
2	12.266	12.266	0.000	703212580	1000.5	855.9	
2	12.631	12.631	0.000	408164446	1000.5	858.1	
						RPD = 4.99	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.534	0.000	394874173	50.0	44.7	
2	13.769	13.769	0.000	228890396	50.0	48.9	
						RPD = 8.92	

Reagents:

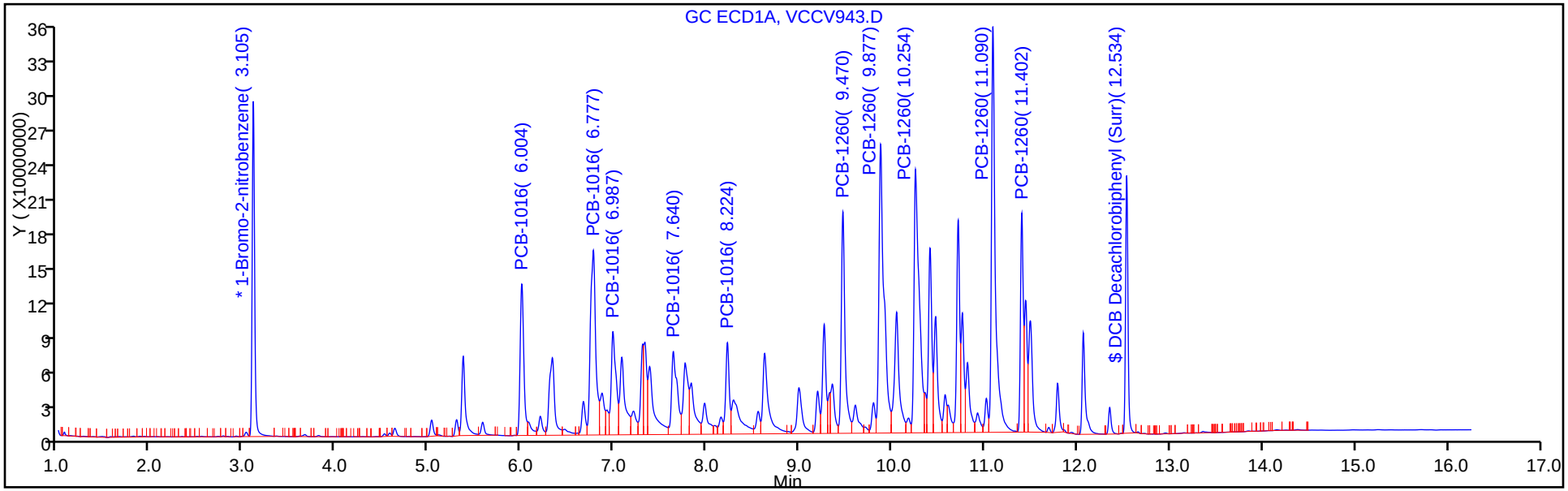
1016/1260CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 22-Aug-2016 06:46:22 Chrom Revision: 2.2 20-Apr-2016 13:59:46

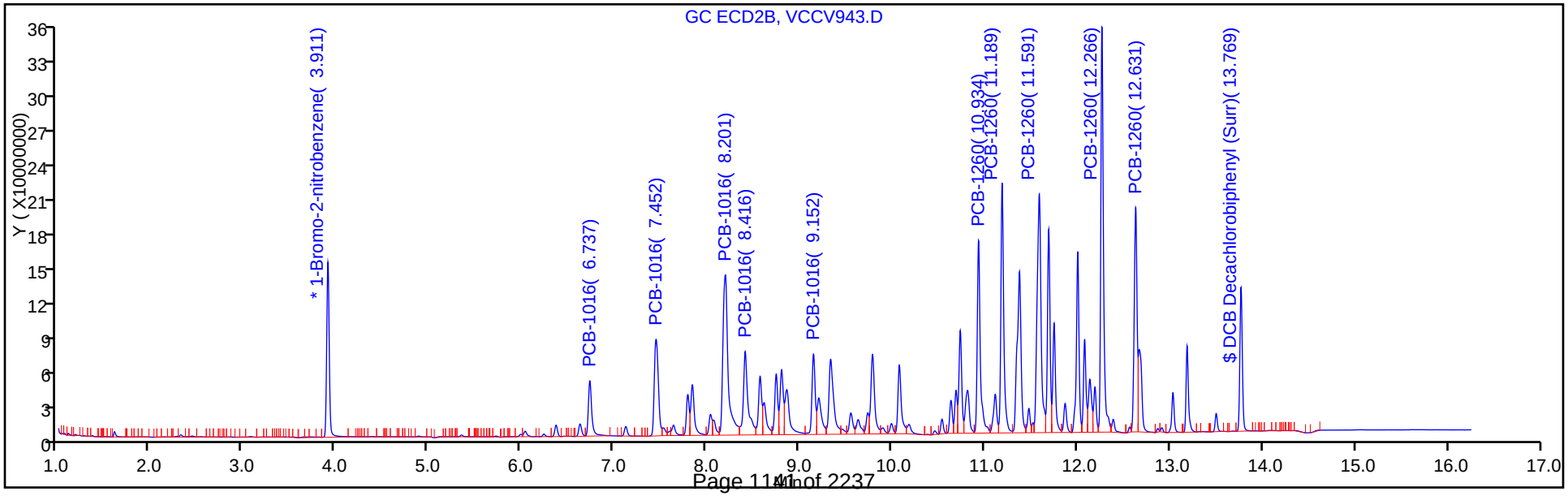
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV943.D				
Injection Date:	19-Aug-2016 09:20:37	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccvis			Worklist Smp#:	3
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265549/4 Calibration Date: 08/19/2016 09:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV944.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Ave	0.0097	0.0107		1120	1010	10.8	20.0
PCB-1221 Peak 2	Ave	0.0056	0.0058		1060	1010	4.7	20.0
PCB-1221 Peak 3	Ave	0.0234	0.0260		1120	1010	10.9	20.0
PCB-1254 Peak 1	Ave	0.0313	0.0340		1100	1010	8.7	20.0
PCB-1254 Peak 2	Ave	0.0403	0.0427		1070	1010	6.0	20.0
PCB-1254 Peak 3	Ave	0.0627	0.0579		932	1010	-7.6	20.0
PCB-1254 Peak 4	Ave	0.0444	0.0549		1240	1010	23.5*	20.0
PCB-1254 Peak 5	Ave	0.0629	0.0752		1210	1010	19.6	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265549/4 Calibration Date: 08/19/2016 09:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV944.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1221 Peak 1	5.03	5.02	5.04
PCB-1221 Peak 2	5.30	5.29	5.31
PCB-1221 Peak 3	5.37	5.36	5.38
PCB-1254 Peak 1	8.22	8.22	8.24
PCB-1254 Peak 2	8.63	8.62	8.64
PCB-1254 Peak 3	9.20	9.19	9.21
PCB-1254 Peak 4	9.88	9.87	9.89
PCB-1254 Peak 5	10.26	10.25	10.27

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV944.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 19-Aug-2016 09:43:07 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008246-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 19-Aug-2016 10:48:08

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.107	3.105	0.002	501915157	50.4	50.4	
2	3.913	3.911	0.002	281793225	50.4	50.4	
2 PCB-1221							
1	5.032	5.034	-0.002	107455680	1008.0	1116.9	
1	5.300	5.304	-0.004	58447229	1008.0	1055.6	
1	5.372	5.374	-0.002	260681360	1008.0	1118.2	
2	6.376	6.380	-0.004	78527346	1008.0	999.6	
2	6.634	6.638	-0.004	46379571	1008.0	1033.9	
2	6.739	6.743	-0.004	182036164	1008.0	1059.1	
						RPD = 6.21	
8 PCB-1254							M
1	8.224	8.228	-0.004	340933300	1008.0	1095.3	
1	8.625	8.628	-0.003	428435510	1008.0	1068.2	
1	9.199	9.201	-0.002	581463167	1008.0	931.8	
1	9.877	9.879	-0.002	550978098	1008.0	1244.8	
1	10.257	10.259	-0.002	754916349	1008.0	1205.4	
2	9.791	9.795	-0.004	328081935	1008.0	1006.9	M
2	10.083	10.085	-0.002	329405803	1008.0	1034.0	M
2	10.694	10.695	-0.001	507837449	1008.0	1051.4	M
2	11.381	11.383	-0.002	288102170	1008.0	1147.3	M
2	11.596	11.597	-0.001	515718463	1008.0	1211.4	M
						RPD = 1.72	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.535	12.534	0.001	463189125	50.0	55.3	
2	13.771	13.769	0.002	266341864	50.0	58.5	
						RPD = 5.51	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags

S 7 Polychlorinated biphenyls, Total

1	2206.0
2	2121.1
	RPD = 3.93

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

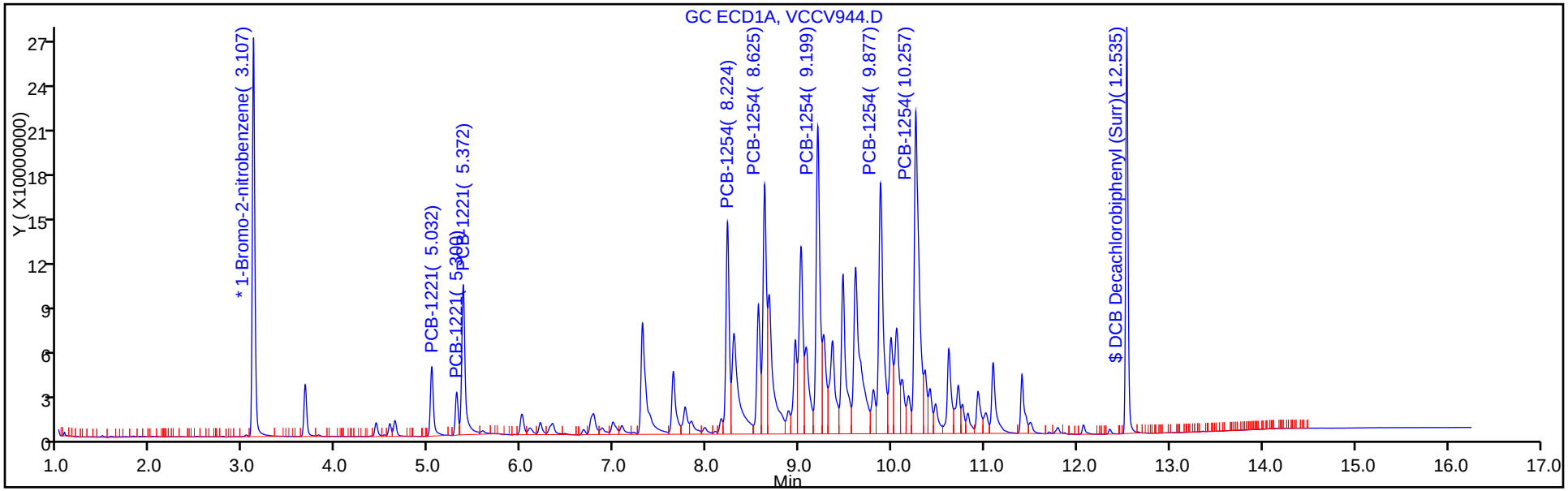
1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 22-Aug-2016 06:46:29 Chrom Revision: 2.2 20-Apr-2016 13:59:46

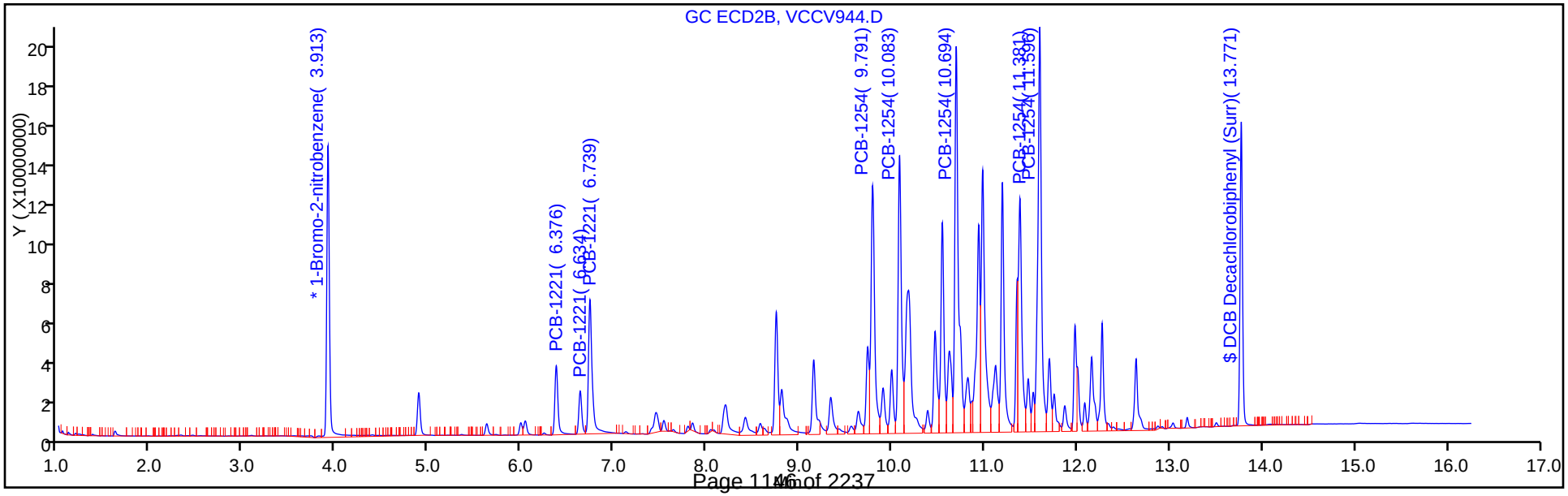
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV944.D				
Injection Date:	19-Aug-2016 09:43:07	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	4
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265549/4 Calibration Date: 08/19/2016 09:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV944.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
DCB Decachlorobiphenyl (Surr)	Ave	0.8424	0.9302		55.3	50.0	10.4	20.0

FORM VII 8082A

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265549/4 Calibration Date: 08/19/2016 09:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV944.D

Analyte	RT	RT WINDOW	
		FROM	TO
DCB Decachlorobiphenyl (Surr)	12.54	12.52	12.54

Form VII 8082A

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV944.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 19-Aug-2016 09:43:07 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008246-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 19-Aug-2016 10:48:08

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.107	3.105	0.002	501915157	50.4	50.4	
2	3.913	3.911	0.002	281793225	50.4	50.4	
2 PCB-1221							
1	5.032	5.034	-0.002	107455680	1008.0	1116.9	
1	5.300	5.304	-0.004	58447229	1008.0	1055.6	
1	5.372	5.374	-0.002	260681360	1008.0	1118.2	
2	6.376	6.380	-0.004	78527346	1008.0	999.6	
2	6.634	6.638	-0.004	46379571	1008.0	1033.9	
2	6.739	6.743	-0.004	182036164	1008.0	1059.1	
						RPD = 6.21	
8 PCB-1254							M
1	8.224	8.228	-0.004	340933300	1008.0	1095.3	
1	8.625	8.628	-0.003	428435510	1008.0	1068.2	
1	9.199	9.201	-0.002	581463167	1008.0	931.8	
1	9.877	9.879	-0.002	550978098	1008.0	1244.8	
1	10.257	10.259	-0.002	754916349	1008.0	1205.4	
2	9.791	9.795	-0.004	328081935	1008.0	1006.9	M
2	10.083	10.085	-0.002	329405803	1008.0	1034.0	M
2	10.694	10.695	-0.001	507837449	1008.0	1051.4	M
2	11.381	11.383	-0.002	288102170	1008.0	1147.3	M
2	11.596	11.597	-0.001	515718463	1008.0	1211.4	M
						RPD = 1.72	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.535	12.534	0.001	463189125	50.0	55.3	
2	13.771	13.769	0.002	266341864	50.0	58.5	
						RPD = 5.51	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
S 7 Polychlorinated biphenyls, Total							
1						2206.0	
2						2121.1	
						RPD = 3.93	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 22-Aug-2016 06:46:29 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV944.D

Injection Date: 19-Aug-2016 09:43:07 Instrument ID: SGCV Operator ID: GLB

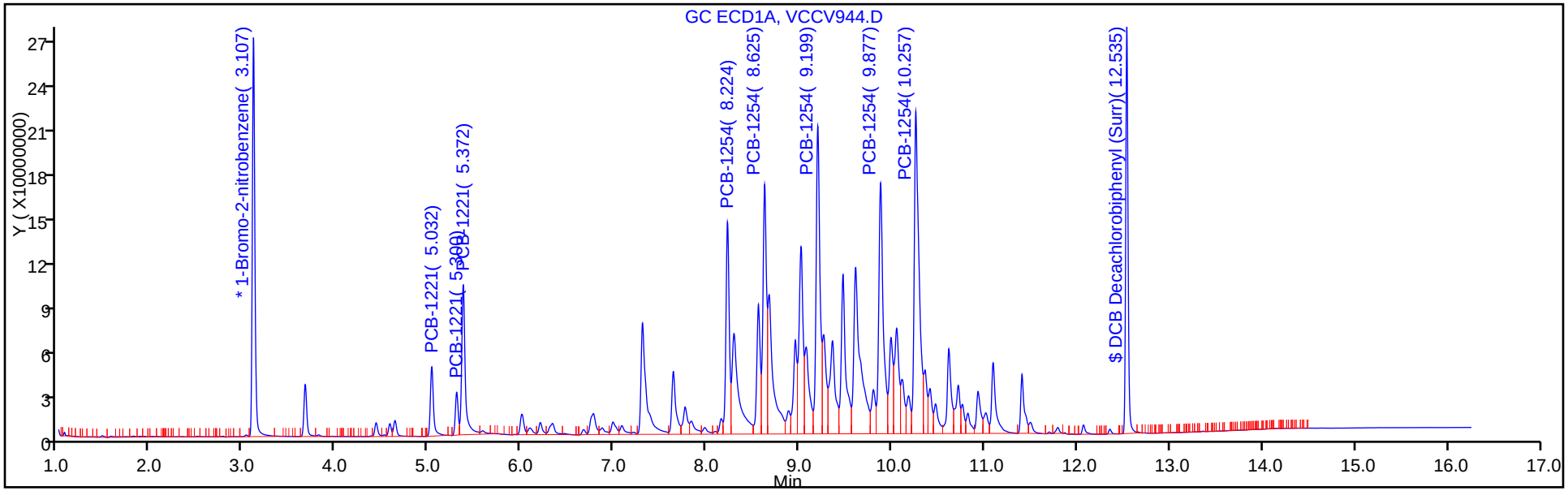
Lims ID: ccv Worklist Smp#: 4

Client ID:

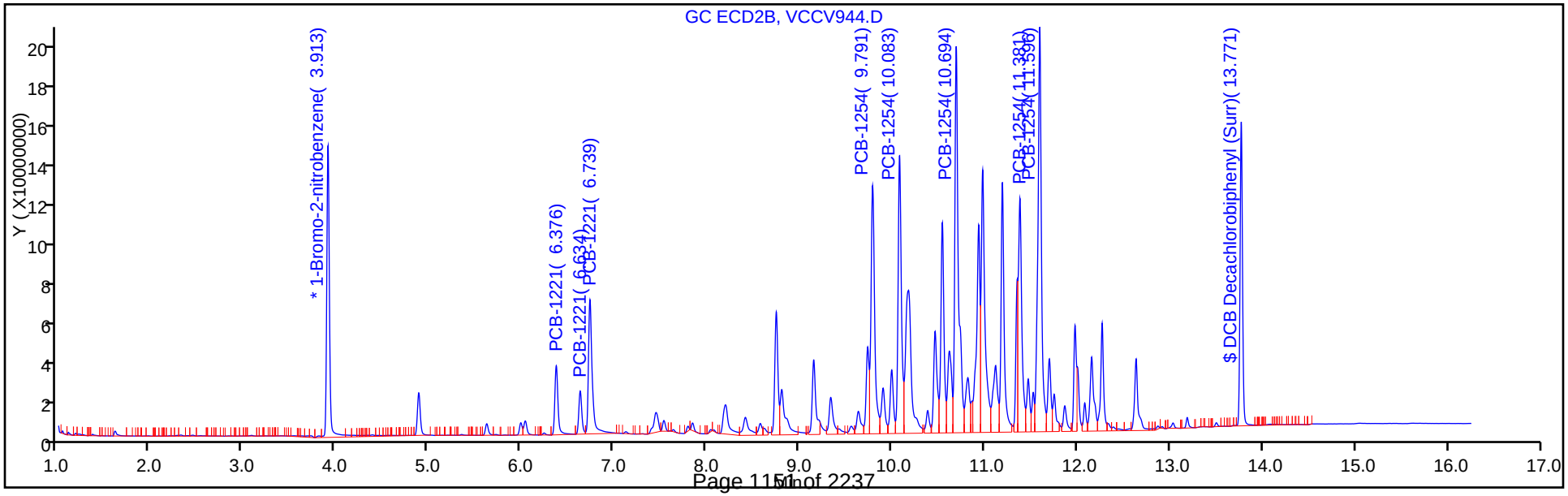
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 4

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265549/4 Calibration Date: 08/19/2016 09:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV944.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Ave	0.0140	0.0139		1000	1010	-0.8	20.0
PCB-1221 Peak 2	Ave	0.0080	0.0082		1030	1010	2.6	20.0
PCB-1221 Peak 3	Ave	0.0307	0.0323		1060	1010	5.1	20.0
PCB-1254 Peak 1	Ave	0.0583	0.0582		1010	1010	-0.1	20.0
PCB-1254 Peak 2	Ave	0.0570	0.0585		1030	1010	2.6	20.0
PCB-1254 Peak 3	Ave	0.0864	0.0901		1050	1010	4.3	20.0
PCB-1254 Peak 4	Ave	0.0449	0.0511		1150	1010	13.8	20.0
PCB-1254 Peak 5	Ave	0.0761	0.0915		1210	1010	20.2*	20.0

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265549/4 Calibration Date: 08/19/2016 09:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 12:58

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 14:51

Lab File ID: VCCV944.D

Analyte	RT	RT WINDOW	
		FROM	TO
PCB-1221 Peak 1	6.38	6.37	6.39
PCB-1221 Peak 2	6.63	6.63	6.65
PCB-1221 Peak 3	6.74	6.73	6.75
PCB-1254 Peak 1	9.79	9.79	9.81
PCB-1254 Peak 2	10.08	10.08	10.10
PCB-1254 Peak 3	10.69	10.69	10.71
PCB-1254 Peak 4	11.38	11.37	11.39
PCB-1254 Peak 5	11.60	11.59	11.61

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV944.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 19-Aug-2016 09:43:07 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008246-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 19-Aug-2016 10:48:08

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.107	3.105	0.002	501915157	50.4	50.4	
2	3.913	3.911	0.002	281793225	50.4	50.4	
2 PCB-1221							
1	5.032	5.034	-0.002	107455680	1008.0	1116.9	
1	5.300	5.304	-0.004	58447229	1008.0	1055.6	
1	5.372	5.374	-0.002	260681360	1008.0	1118.2	
2	6.376	6.380	-0.004	78527346	1008.0	999.6	
2	6.634	6.638	-0.004	46379571	1008.0	1033.9	
2	6.739	6.743	-0.004	182036164	1008.0	1059.1	
						RPD = 6.21	
8 PCB-1254							M
1	8.224	8.228	-0.004	340933300	1008.0	1095.3	
1	8.625	8.628	-0.003	428435510	1008.0	1068.2	
1	9.199	9.201	-0.002	581463167	1008.0	931.8	
1	9.877	9.879	-0.002	550978098	1008.0	1244.8	
1	10.257	10.259	-0.002	754916349	1008.0	1205.4	
2	9.791	9.795	-0.004	328081935	1008.0	1006.9	M
2	10.083	10.085	-0.002	329405803	1008.0	1034.0	M
2	10.694	10.695	-0.001	507837449	1008.0	1051.4	M
2	11.381	11.383	-0.002	288102170	1008.0	1147.3	M
2	11.596	11.597	-0.001	515718463	1008.0	1211.4	M
						RPD = 1.72	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.535	12.534	0.001	463189125	50.0	55.3	
2	13.771	13.769	0.002	266341864	50.0	58.5	
						RPD = 5.51	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags

S 7 Polychlorinated biphenyls, Total

1	2206.0
2	2121.1
	RPD = 3.93

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

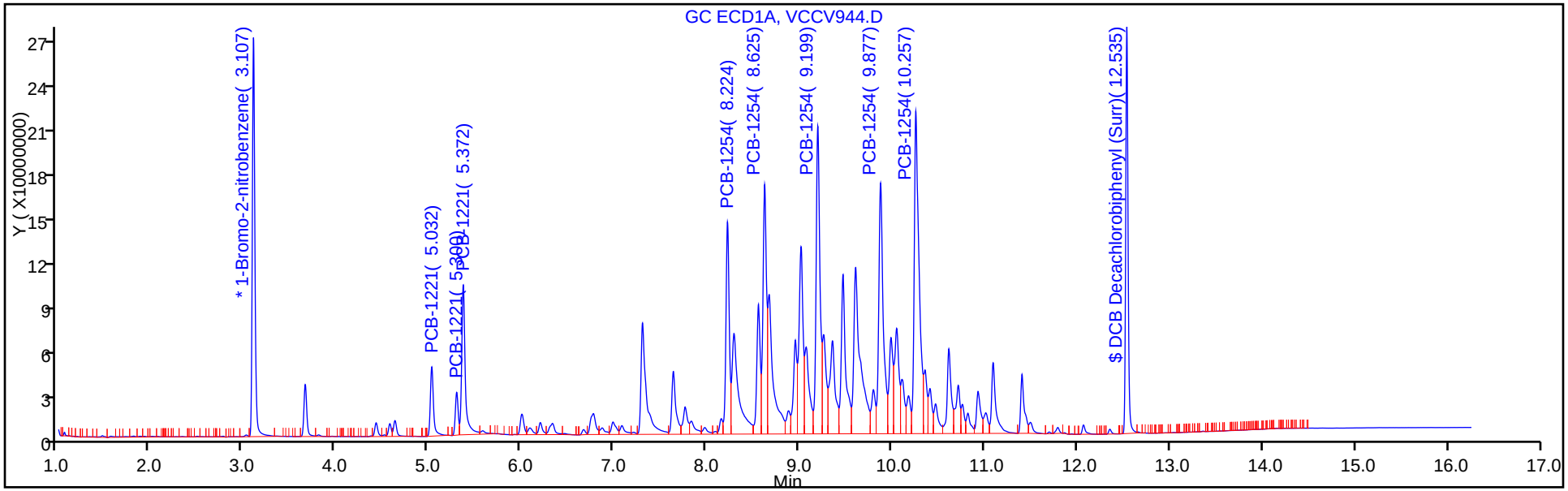
1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 22-Aug-2016 06:46:32 Chrom Revision: 2.2 20-Apr-2016 13:59:46

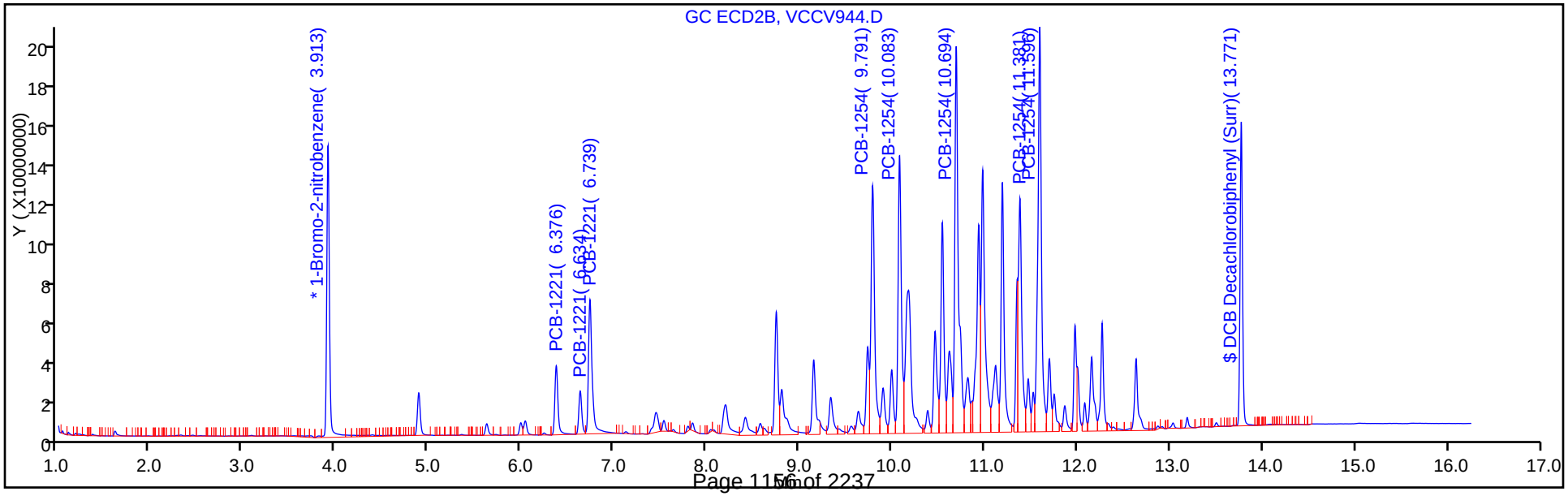
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV944.D				
Injection Date:	19-Aug-2016 09:43:07	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	4
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1

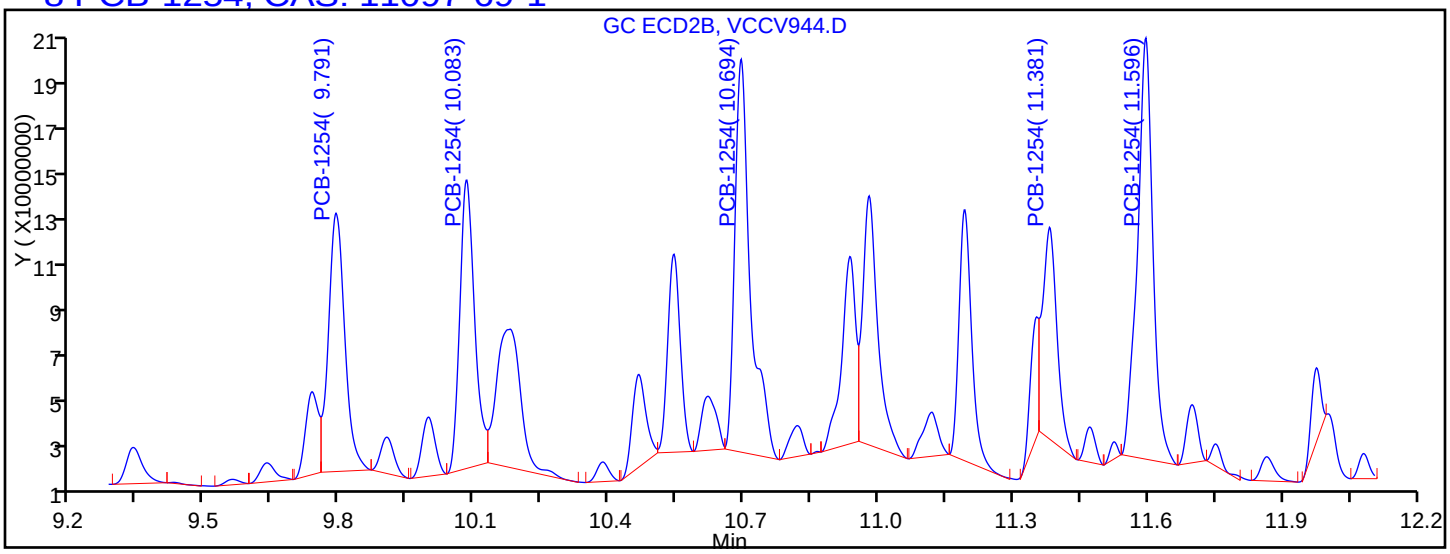


Report Date: 22-Aug-2016 06:46:33 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

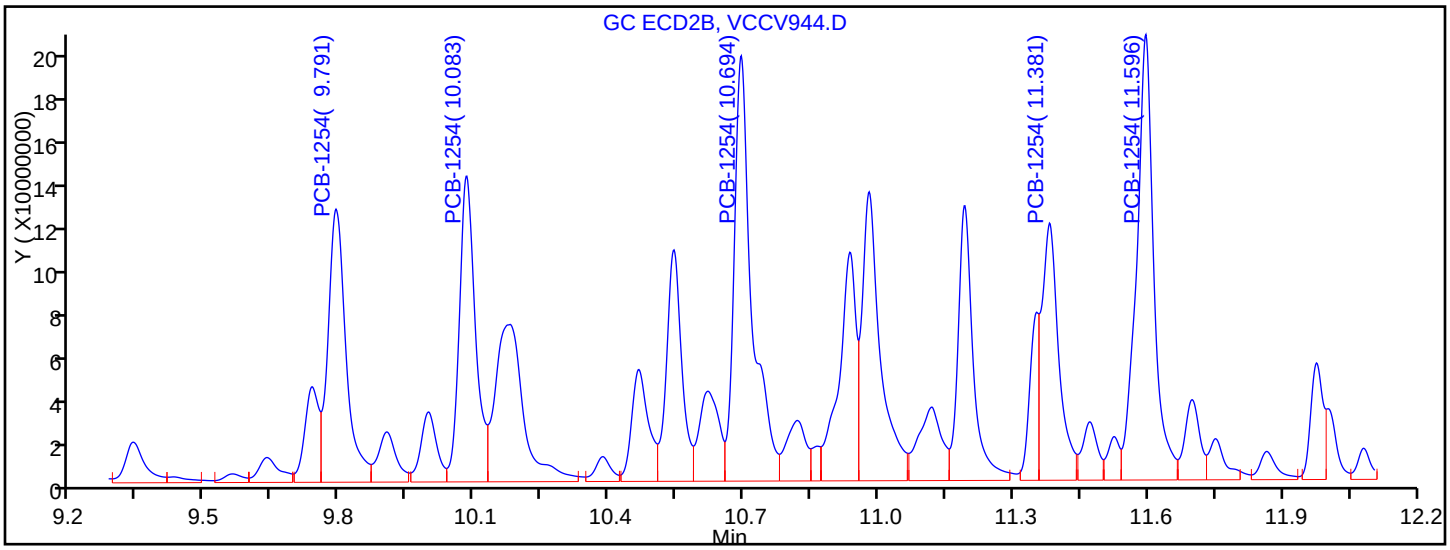
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV944.D
Injection Date: 19-Aug-2016 09:43:07 Instrument ID: SGCV
Lims ID: ccv
Client ID:
Operator ID: GLB ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS
Column: RTX-CLP Pesticides2 (0.53 mm) Detector GC ECD2B

8 PCB-1254, CAS: 11097-69-1



Processing Integration Results

RT = 9.791	Response = 280438901	M
RT = 10.083	Response = 284528339	M
RT = 10.694	Response = 407238711	M
RT = 11.381	Response = 201837497	M
RT = 11.596	Response = 433504712	M



Manual Integration Results

RT = 9.791	Response = 328081935	M
RT = 10.083	Response = 329405803	M
RT = 10.694	Response = 507837449	M
RT = 11.381	Response = 288102170	M
RT = 11.596	Response = 515718463	M

Reviewer: bonkoskig, 19-Aug-2016 10:48:08
Audit Action: Assigned New Baseline Audit Reason: Baseline Smoothing

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265549/4 Calibration Date: 08/19/2016 09:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV944.D Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
DCB Decachlorobiphenyl (Surr)	Ave	0.8582	0.9527		58.5	50.0	11.0	20.0

FORM VII 8082A

FORM VII
PCBS CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265549/4 Calibration Date: 08/19/2016 09:43

Instrument ID: SGCV Calib Start Date: 08/03/2016 15:59

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/03/2016 17:51

Lab File ID: VCCV944.D

Analyte	RT	RT WINDOW	
		FROM	TO
DCB Decachlorobiphenyl (Surr)	13.77	13.76	13.78

Form VII 8082A

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV944.D
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 19-Aug-2016 09:43:07 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008246-004
Operator ID: GLB Instrument ID: SGCV
Sublist: chrom-8082_IS_SGCV*sub13

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 19-Aug-2016 10:48:08

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.107	3.105	0.002	501915157	50.4	50.4	
2	3.913	3.911	0.002	281793225	50.4	50.4	
2 PCB-1221							
1	5.032	5.034	-0.002	107455680	1008.0	1116.9	
1	5.300	5.304	-0.004	58447229	1008.0	1055.6	
1	5.372	5.374	-0.002	260681360	1008.0	1118.2	
2	6.376	6.380	-0.004	78527346	1008.0	999.6	
2	6.634	6.638	-0.004	46379571	1008.0	1033.9	
2	6.739	6.743	-0.004	182036164	1008.0	1059.1	
						RPD = 6.21	
8 PCB-1254							M
1	8.224	8.228	-0.004	340933300	1008.0	1095.3	
1	8.625	8.628	-0.003	428435510	1008.0	1068.2	
1	9.199	9.201	-0.002	581463167	1008.0	931.8	
1	9.877	9.879	-0.002	550978098	1008.0	1244.8	
1	10.257	10.259	-0.002	754916349	1008.0	1205.4	
2	9.791	9.795	-0.004	328081935	1008.0	1006.9	M
2	10.083	10.085	-0.002	329405803	1008.0	1034.0	M
2	10.694	10.695	-0.001	507837449	1008.0	1051.4	M
2	11.381	11.383	-0.002	288102170	1008.0	1147.3	M
2	11.596	11.597	-0.001	515718463	1008.0	1211.4	M
						RPD = 1.72	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.535	12.534	0.001	463189125	50.0	55.3	
2	13.771	13.769	0.002	266341864	50.0	58.5	
						RPD = 5.51	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
S 7 Polychlorinated biphenyls, Total							
1						2206.0	
2						2121.1	
						RPD = 3.93	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

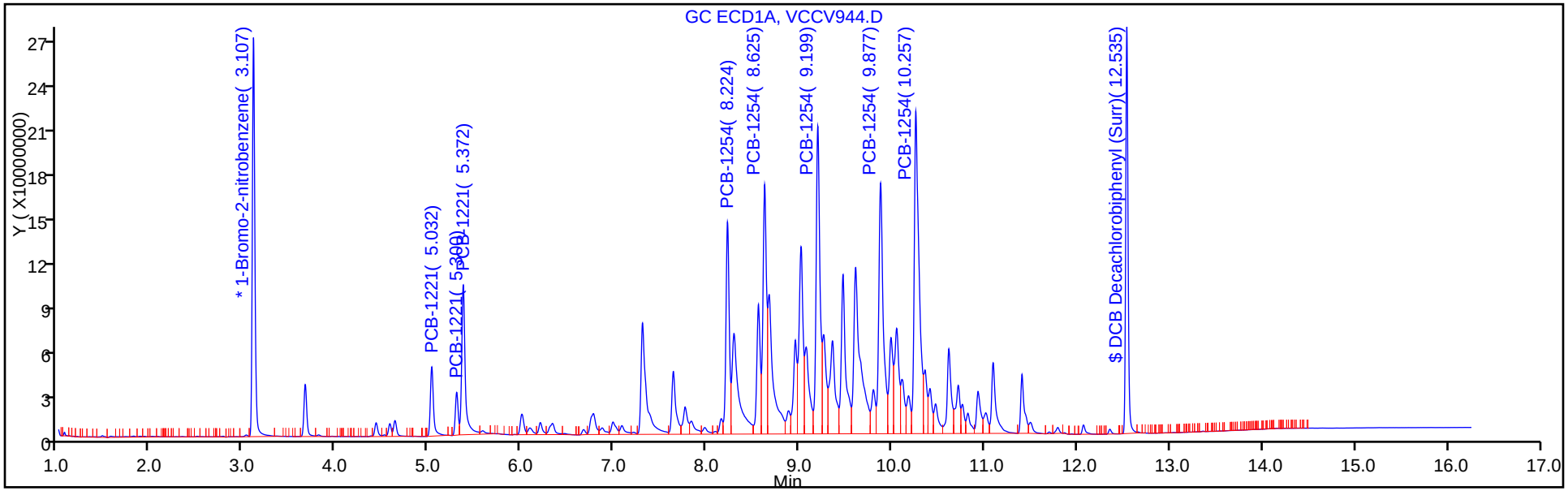
1221/1254CCV_00004 Amount Added: 20.00 Units: uL

Report Date: 22-Aug-2016 06:46:32 Chrom Revision: 2.2 20-Apr-2016 13:59:46

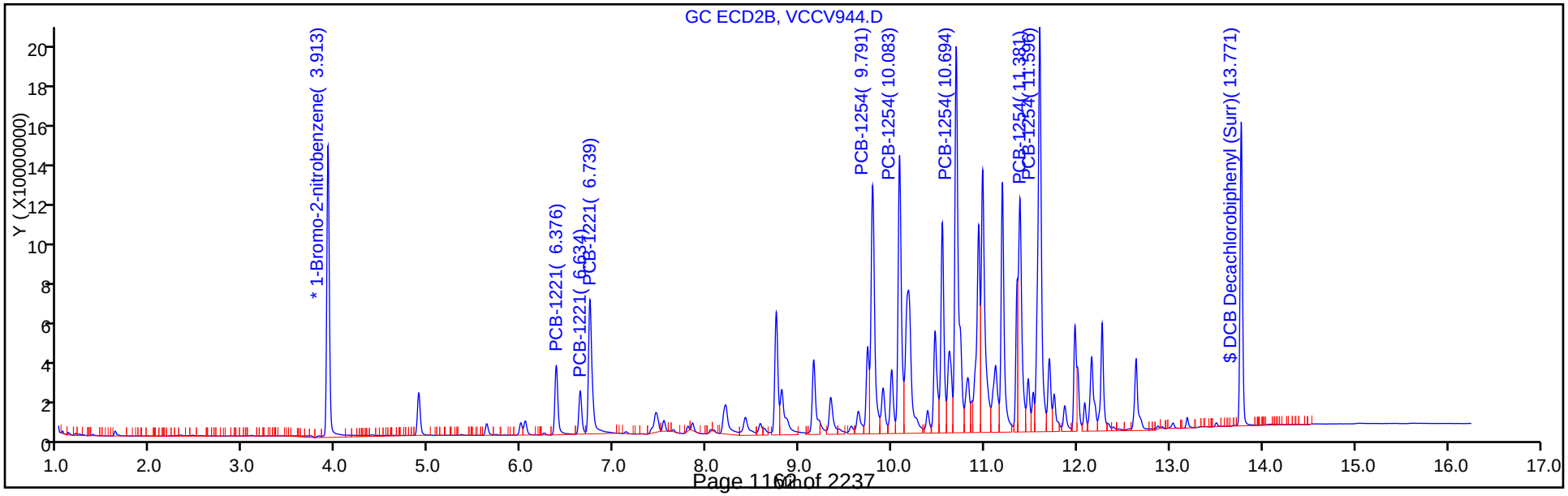
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VCCV944.D				
Injection Date:	19-Aug-2016 09:43:07	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	ccv			Worklist Smp#:	4
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: MB 160-264775/1-A
Matrix: Solid
Lab File ID: VBLK905.D
Analysis Method: 8082A
Date Collected:
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30(g)
Date Analyzed: 08/17/2016 11:06
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP1 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265137
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
12674-11-2	PCB-1016	0.0096	U	0.033	0.0096
11104-28-2	PCB-1221	0.0096	U	0.033	0.0096
11141-16-5	PCB-1232	0.0096	U	0.033	0.0096
53469-21-9	PCB-1242	0.0096	U	0.033	0.0096
12672-29-6	PCB-1248	0.0096	U	0.033	0.0096
11097-69-1	PCB-1254	0.0080	U	0.033	0.0080
11096-82-5	PCB-1260	0.0080	U	0.033	0.0080
37324-23-5	PCB-1262	0.0080	U	0.033	0.0080
1336-36-3	Polychlorinated biphenyls, Total	0.0080	U	0.033	0.0080
11100-14-4	PCB-1268	0.0080	U	0.033	0.0080

CAS NO.	SURROGATE	%REC	Q	LIMITS
2051-24-3	DCB Decachlorobiphenyl (Surr)	101		23-146

TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VBLK905.D				
Lims ID:	MB 160-264775/1-A				
Client ID:					
Sample Type:	MB				
Inject. Date:	17-Aug-2016 11:06:26	ALS Bottle#:	5	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	mb 160-264775/1-a				
Misc. Info.:	160-0008226-005				
Operator ID:	GLB	Instrument ID:	SGCV		

Method:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m		
Limit Group:	GC 8082A_ICAL_IS		
Last Update:	19-Aug-2016 06:44:41	Calib Date:	03-Aug-2016 17:51:52
Integrator:	Falcon		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK053	

First Level Reviewer: bonkoskig Date: 17-Aug-2016 12:35:48

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.110	3.108	0.002	511696617	50.4	50.4	
2	3.913	3.913	0.000	297255846	50.4	50.4	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.535	12.535	0.000	164159126	20.1	20.2	
2	13.768	13.768	0.000	101783356	20.1	21.5	
						RPD = 6.08	

Reagents:

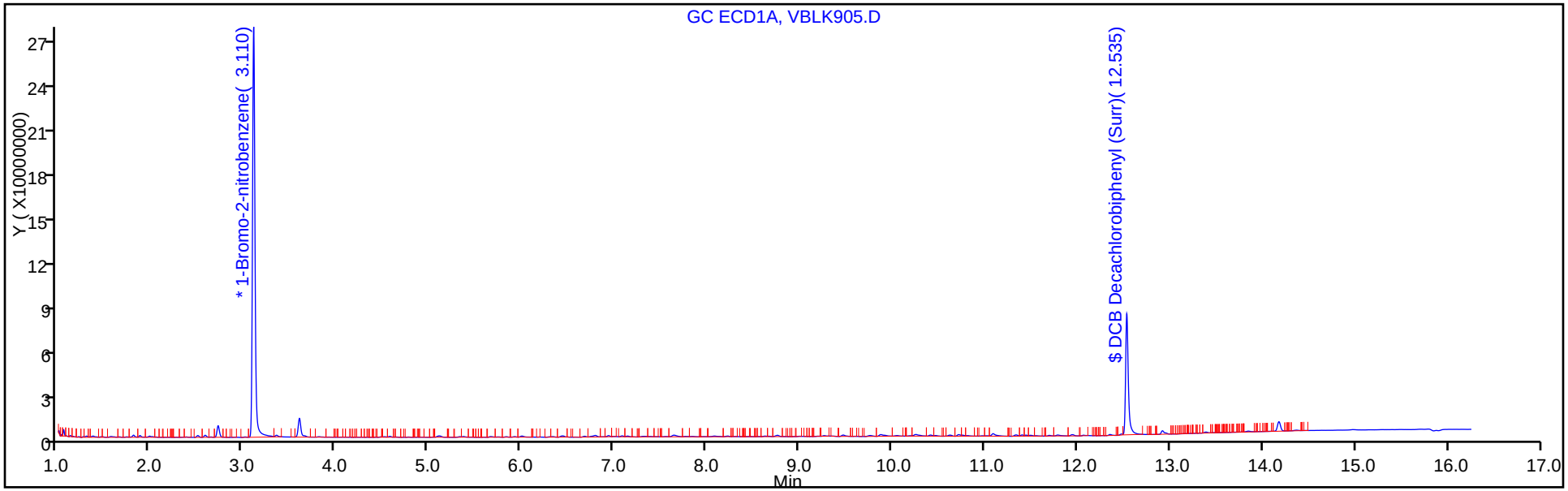
8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 19-Aug-2016 06:44:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

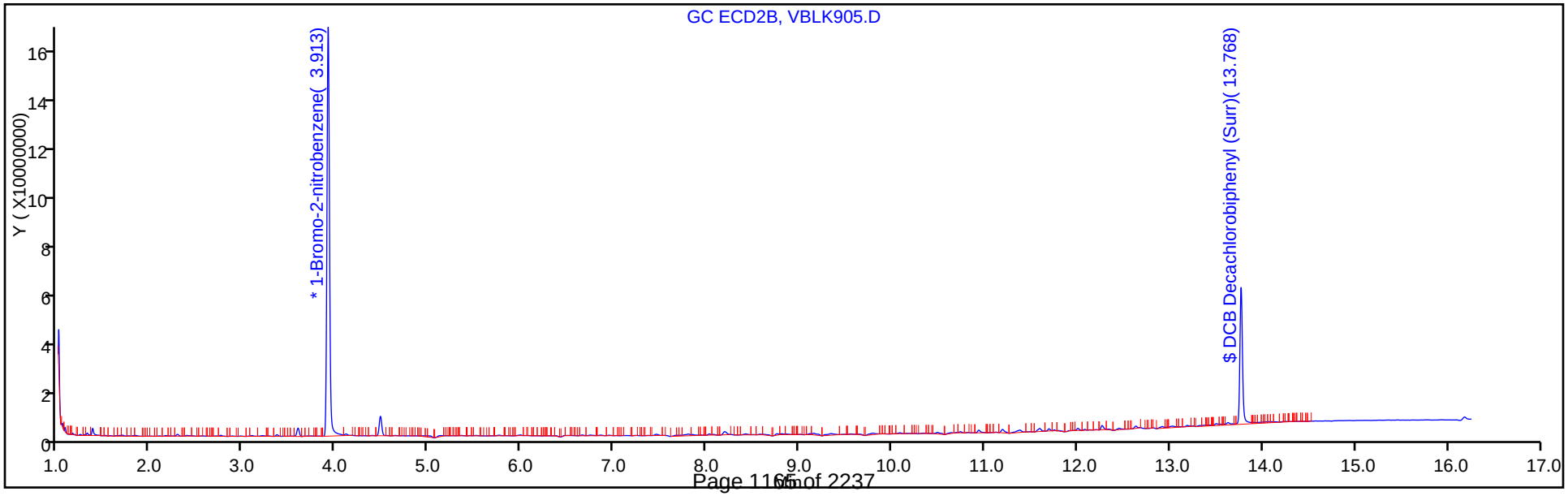
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VBLK905.D				
Injection Date:	17-Aug-2016 11:06:26	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	MB 160-264775/1-A			Worklist Smp#:	5
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VBLK905.D				
Lims ID:	MB 160-264775/1-A				
Client ID:					
Sample Type:	MB				
Inject. Date:	17-Aug-2016 11:06:26	ALS Bottle#:	5	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	mb 160-264775/1-a				
Misc. Info.:	160-0008226-005				
Operator ID:	GLB	Instrument ID:	SGCV		

Method:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m		
Limit Group:	GC 8082A_ICAL_IS		
Last Update:	19-Aug-2016 06:44:41	Calib Date:	03-Aug-2016 17:51:52
Integrator:	Falcon		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK053	

First Level Reviewer: bonkoskig Date: 17-Aug-2016 12:35:48

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	20.2	100.83

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	21.5	107.15

FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: LCS 160-264775/2-A
Matrix: Solid
Lab File ID: VLCS906.D
Analysis Method: 8082A
Date Collected:
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30(g)
Date Analyzed: 08/17/2016 11:28
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP1 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265137
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
11096-82-5	PCB-1260	0.158		0.033	0.0080

CAS NO.	SURROGATE	%REC	Q	LIMITS
2051-24-3	DCB Decachlorobiphenyl (Surr)	106		23-146

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D
Lims ID: LCS 160-264775/2-A
Client ID:
Sample Type: LCS
Inject. Date: 17-Aug-2016 11:28:55 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 160-264775/2-a
Misc. Info.: 160-0008226-006
Operator ID: GLB Instrument ID: SGCV

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:44:41 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 17-Aug-2016 12:36:23

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.109	3.108	0.001	511062593	50.4	50.4	
2	3.913	3.913	-0.001	287648455	50.4	50.4	
1 PCB-1016							
1	6.007	6.003	0.004	189492857	500.0	559.5	
1	6.779	6.778	0.001	266457985	500.0	384.1	
1	6.990	6.988	0.002	142442114	500.0	481.2	
1	7.640	7.640	0.000	137984637	500.0	425.0	
1	8.225	8.225	0.000	93011187	500.0	489.5	
2	6.741	6.740	0.001	59109441	500.0	425.9	
2	7.456	7.455	0.001	134218559	500.0	474.9	
2	8.204	8.202	0.002	277429343	500.0	454.1	
2	8.419	8.417	0.002	131646915	500.0	492.8	
2	9.156	9.155	0.001	85010062	500.0	446.3	
						RPD = 1.96	
10 PCB-1260							
1	9.472	9.471	0.001	243885978	500.0	482.7	
1	9.882	9.878	0.004	450848097	500.0	485.8	
1	10.257	10.256	0.001	455736204	500.0	499.9	
1	11.090	11.091	-0.001	509128793	500.0	473.7	
1	11.402	11.401	0.001	182380389	500.0	421.7	
2	10.936	10.935	0.001	207152138	500.0	494.3	
2	11.193	11.190	0.003	250827565	500.0	466.3	
2	11.593	11.592	0.001	336712932	500.0	493.1	
2	12.268	12.268	0.000	376311938	500.0	462.4	
2	12.631	12.632	-0.001	217527544	500.0	461.7	
						RPD = 0.59	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.535	-0.001	173720407	20.1	21.4	
2	13.768	13.768	0.000	105627952	20.1	23.0	
						RPD = 7.55	

Reagents:

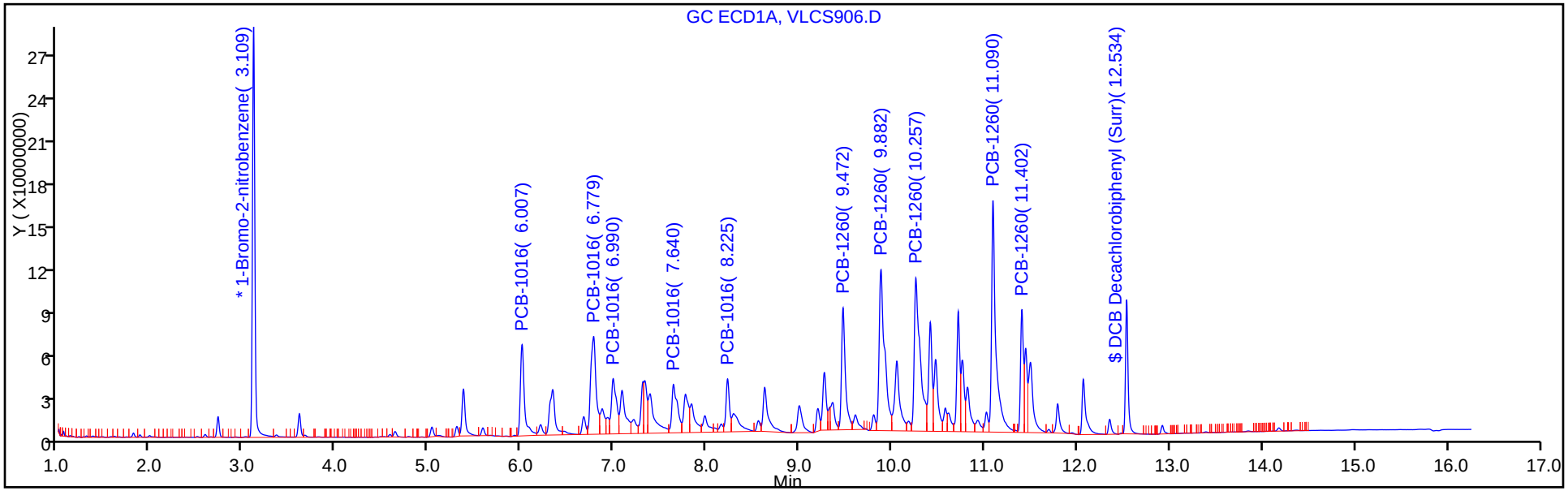
8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 19-Aug-2016 06:44:45 Chrom Revision: 2.2 20-Apr-2016 13:59:46

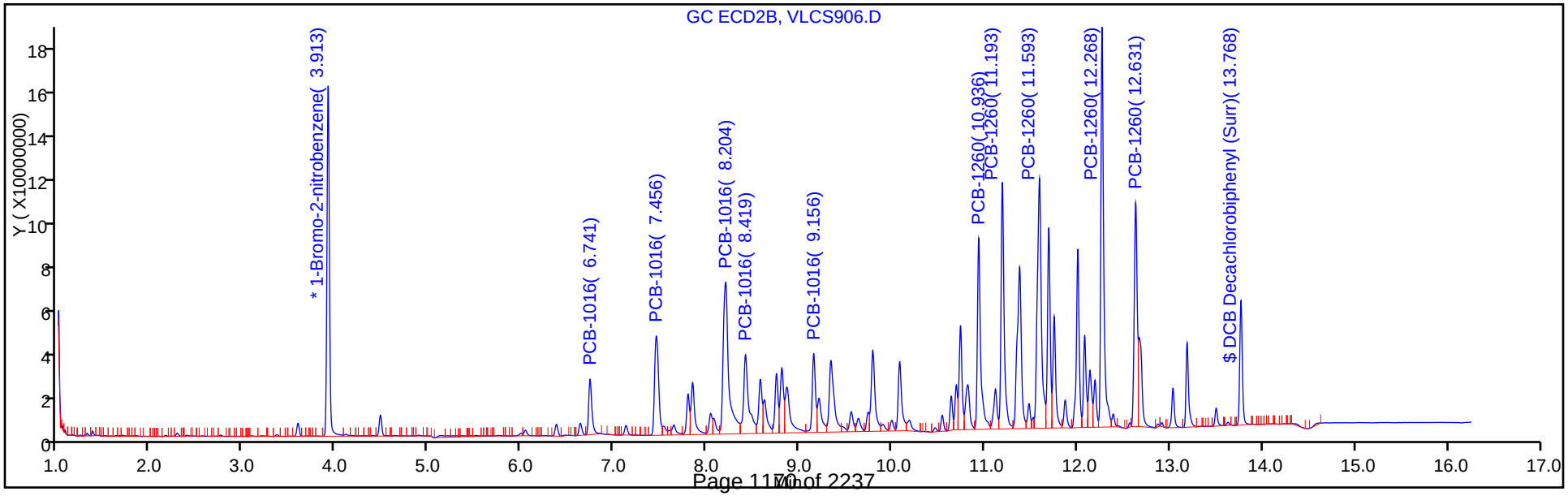
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D				
Injection Date:	17-Aug-2016 11:28:55	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	LCS 160-264775/2-A			Worklist Smp#:	6
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D				
Lims ID:	LCS 160-264775/2-A				
Client ID:					
Sample Type:	LCS				
Inject. Date:	17-Aug-2016 11:28:55	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	lcs 160-264775/2-a				
Misc. Info.:	160-0008226-006				
Operator ID:	GLB	Instrument ID:	SGCV		

Method:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m		
Limit Group:	GC 8082A_ICAL_IS		
Last Update:	19-Aug-2016 06:44:41	Calib Date:	03-Aug-2016 17:51:52
Integrator:	Falcon		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK053	

First Level Reviewer: bonkoskig Date: 17-Aug-2016 12:36:23

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	21.4	106.38

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	23.0	114.72

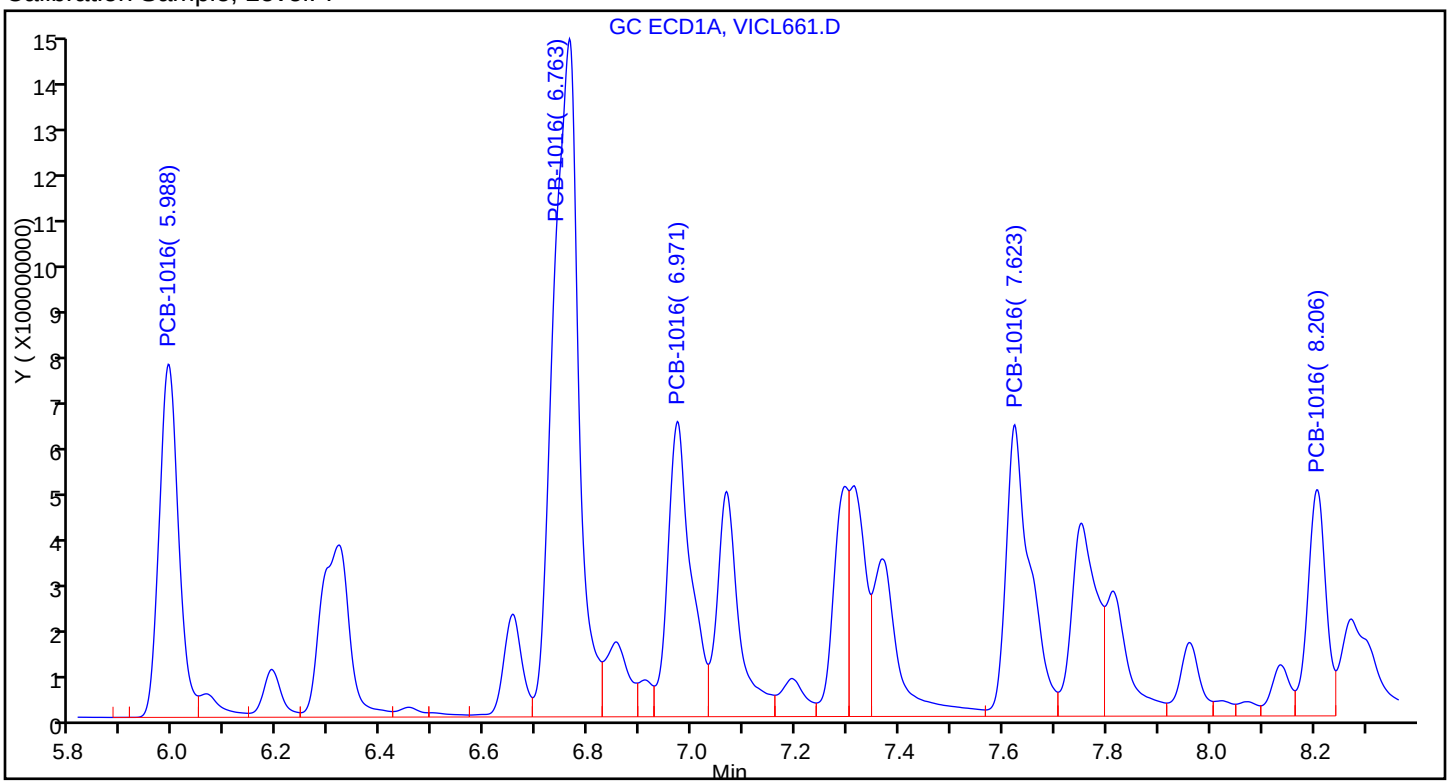
Report Date: 19-Aug-2016 06:44:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

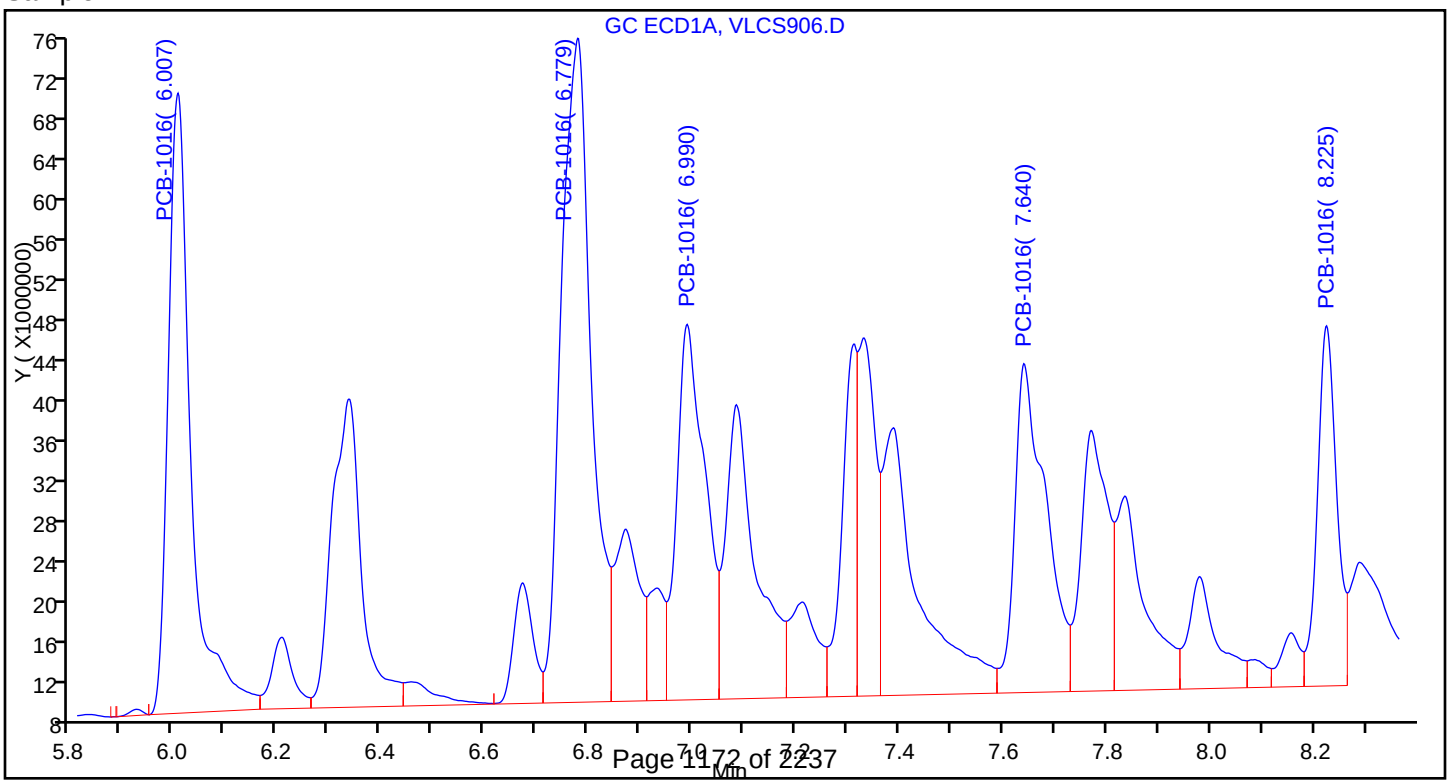
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D				
Injection Date:	17-Aug-2016 11:28:55	Instrument ID:	SGCV		
Lims ID:	LCS 160-264775/2-A				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

1 PCB-1016, CAS: 12674-11-2

Calibration Sample, Level: 7



Sample



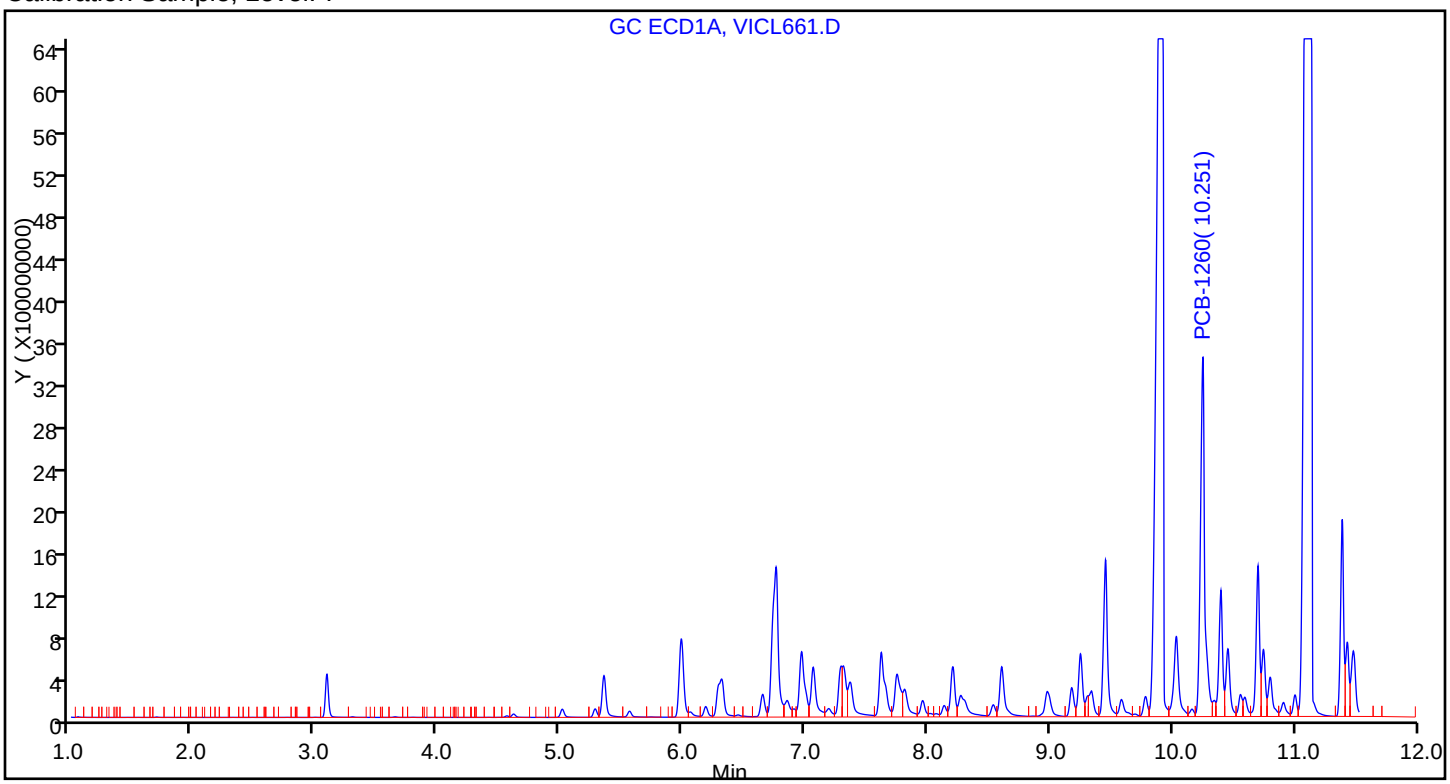
Report Date: 19-Aug-2016 06:44:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

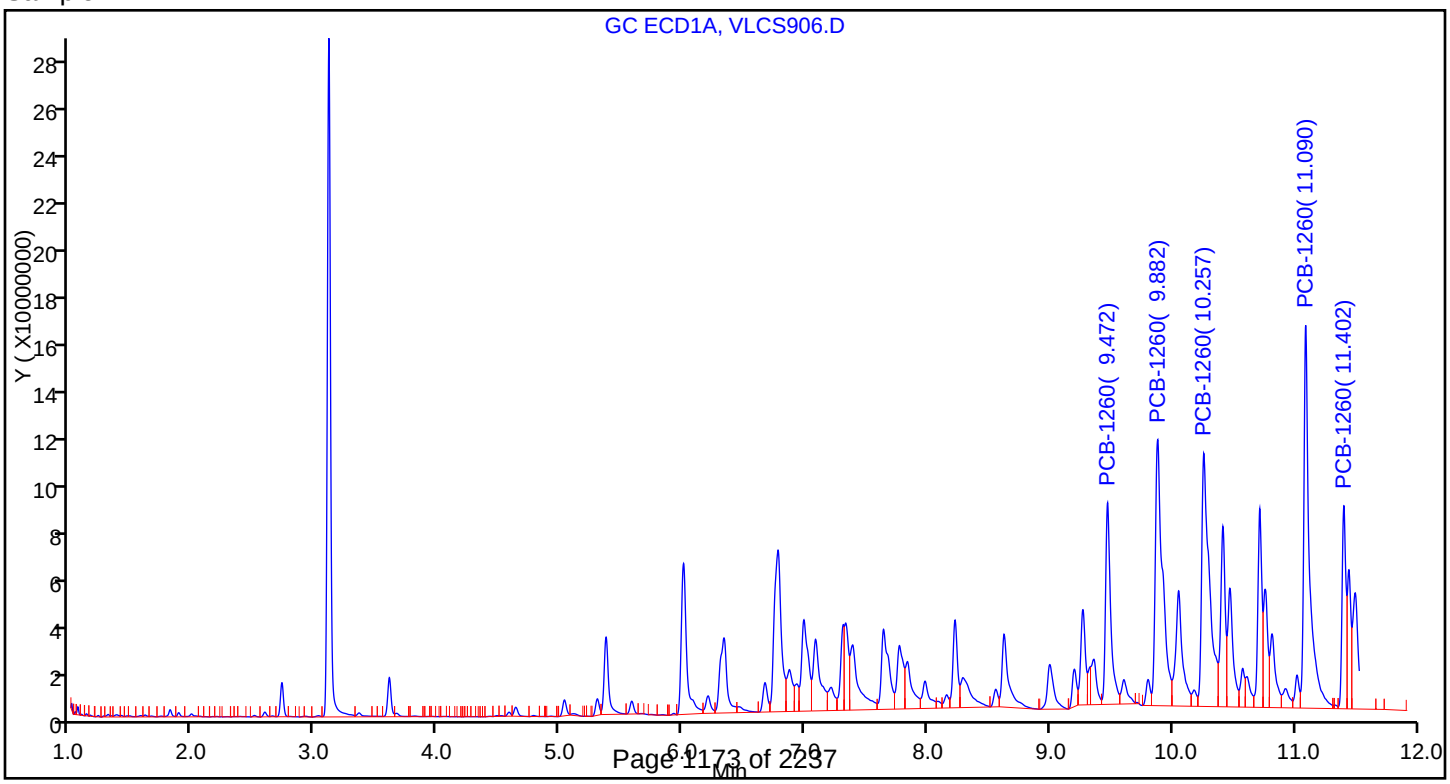
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D				
Injection Date:	17-Aug-2016 11:28:55	Instrument ID:	SGCV		
Lims ID:	LCS 160-264775/2-A				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

10 PCB-1260, CAS: 11096-82-5

Calibration Sample, Level: 7



Sample



FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: LCS 160-264775/2-A
Matrix: Solid
Lab File ID: VLCS906.D
Analysis Method: 8082A
Date Collected:
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30(g)
Date Analyzed: 08/17/2016 11:28
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265137
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
12674-11-2	PCB-1016	0.153		0.033	0.0096
1336-36-3	Polychlorinated biphenyls, Total	0.312		0.033	0.0080

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D
Lims ID: LCS 160-264775/2-A
Client ID:
Sample Type: LCS
Inject. Date: 17-Aug-2016 11:28:55 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 160-264775/2-a
Misc. Info.: 160-0008226-006
Operator ID: GLB Instrument ID: SGCV

Method: \\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 19-Aug-2016 06:44:41 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK053

First Level Reviewer: bonkoskig Date: 17-Aug-2016 12:36:23

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.109	3.108	0.001	511062593	50.4	50.4	
2	3.913	3.913	-0.001	287648455	50.4	50.4	
1 PCB-1016							
1	6.007	6.003	0.004	189492857	500.0	559.5	
1	6.779	6.778	0.001	266457985	500.0	384.1	
1	6.990	6.988	0.002	142442114	500.0	481.2	
1	7.640	7.640	0.000	137984637	500.0	425.0	
1	8.225	8.225	0.000	93011187	500.0	489.5	
2	6.741	6.740	0.001	59109441	500.0	425.9	
2	7.456	7.455	0.001	134218559	500.0	474.9	
2	8.204	8.202	0.002	277429343	500.0	454.1	
2	8.419	8.417	0.002	131646915	500.0	492.8	
2	9.156	9.155	0.001	85010062	500.0	446.3	
						RPD = 1.96	
10 PCB-1260							
1	9.472	9.471	0.001	243885978	500.0	482.7	
1	9.882	9.878	0.004	450848097	500.0	485.8	
1	10.257	10.256	0.001	455736204	500.0	499.9	
1	11.090	11.091	-0.001	509128793	500.0	473.7	
1	11.402	11.401	0.001	182380389	500.0	421.7	
2	10.936	10.935	0.001	207152138	500.0	494.3	
2	11.193	11.190	0.003	250827565	500.0	466.3	
2	11.593	11.592	0.001	336712932	500.0	493.1	
2	12.268	12.268	0.000	376311938	500.0	462.4	
2	12.631	12.632	-0.001	217527544	500.0	461.7	
						RPD = 0.59	
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.535	-0.001	173720407	20.1	21.4	
2	13.768	13.768	0.000	105627952	20.1	23.0	
						RPD = 7.55	

Reagents:

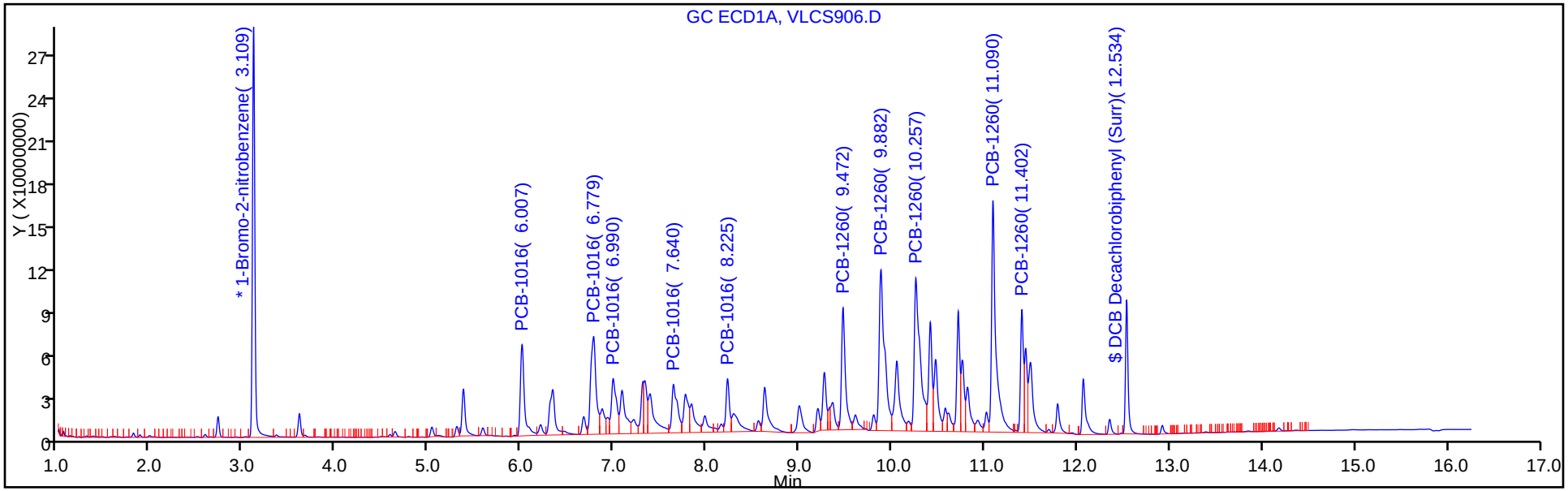
8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 19-Aug-2016 06:44:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46

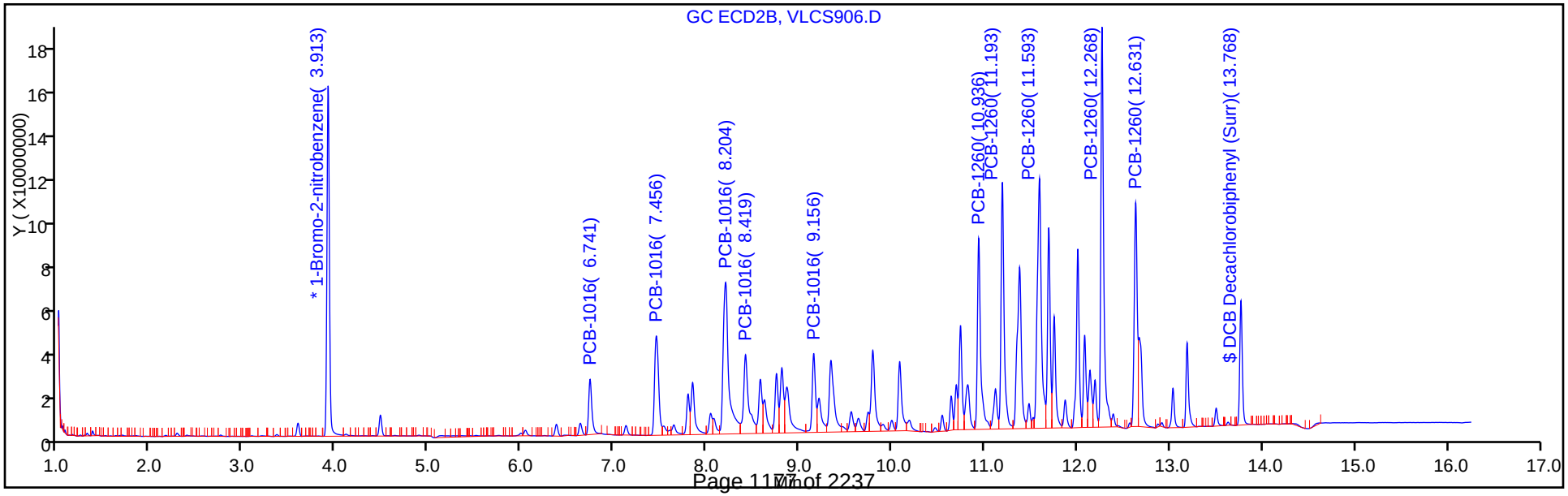
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D				
Injection Date:	17-Aug-2016 11:28:55	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	LCS 160-264775/2-A			Worklist Smp#:	6
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D				
Lims ID:	LCS 160-264775/2-A				
Client ID:					
Sample Type:	LCS				
Inject. Date:	17-Aug-2016 11:28:55	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	lcs 160-264775/2-a				
Misc. Info.:	160-0008226-006				
Operator ID:	GLB	Instrument ID:	SGCV		

Method:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\8082_IS_SGCV.m		
Limit Group:	GC 8082A_ICAL_IS		
Last Update:	19-Aug-2016 06:44:41	Calib Date:	03-Aug-2016 17:51:52
Integrator:	Falcon		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK053	

First Level Reviewer: bonkoskig Date: 17-Aug-2016 12:36:23

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	21.4	106.38

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	23.0	114.72

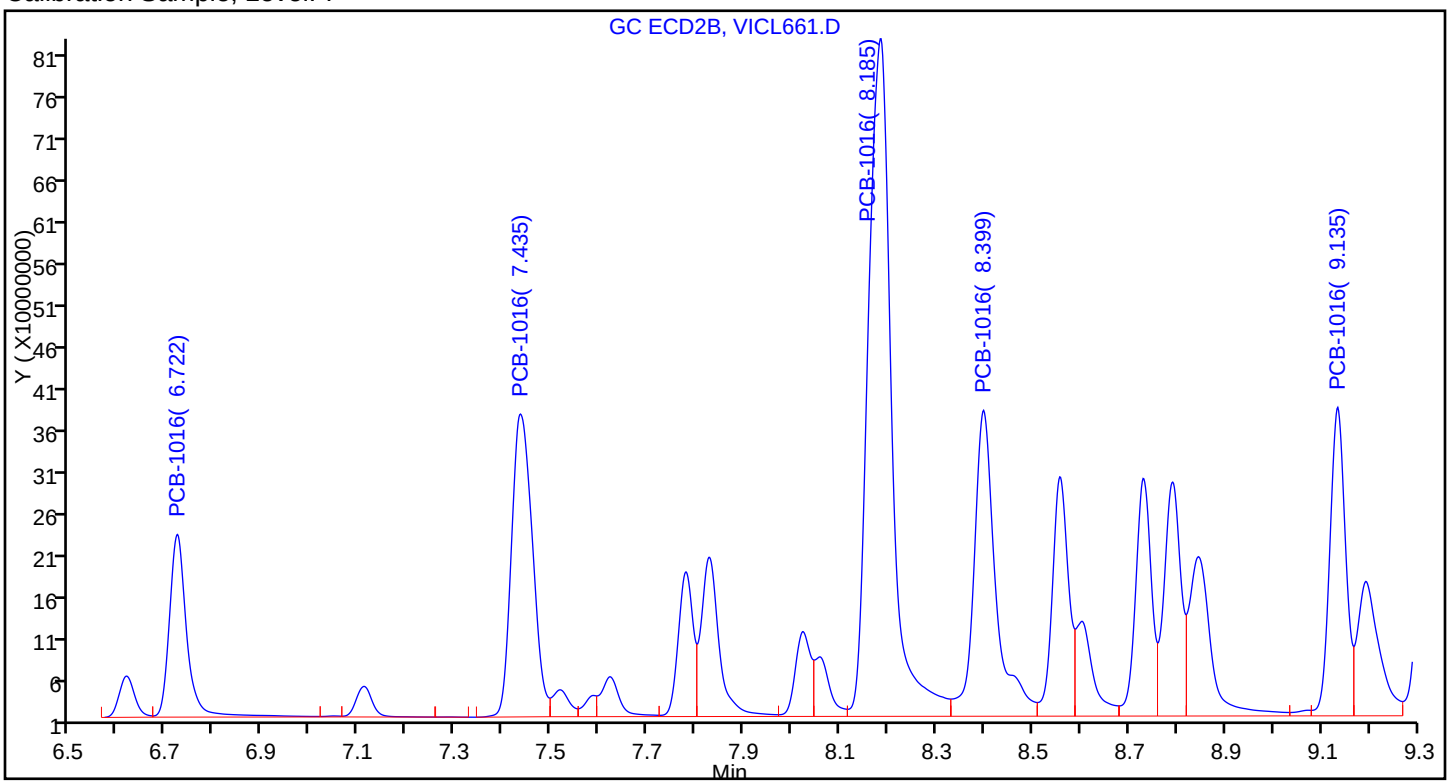
Report Date: 19-Aug-2016 06:44:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

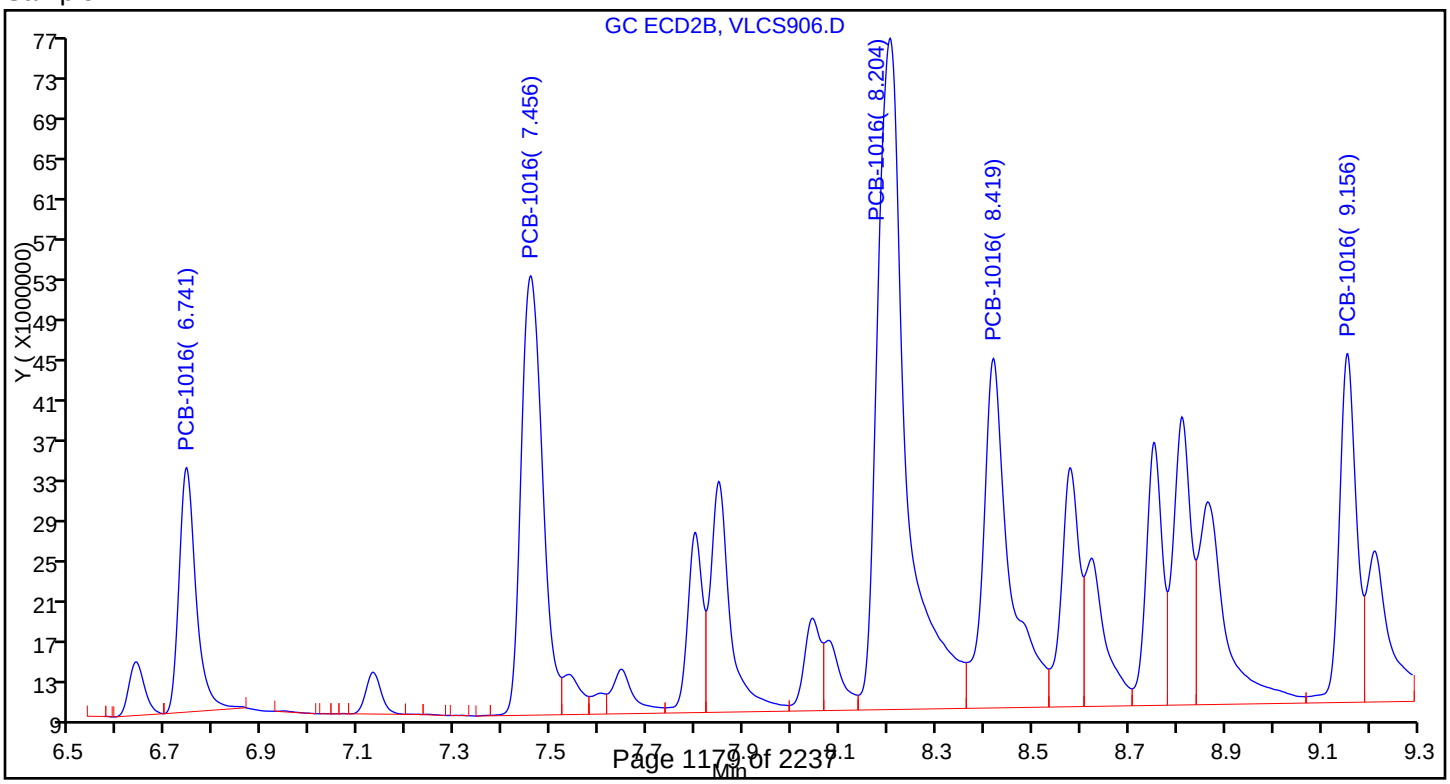
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D				
Injection Date:	17-Aug-2016 11:28:55	Instrument ID:	SGCV		
Lims ID:	LCS 160-264775/2-A				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

1 PCB-1016, CAS: 12674-11-2

Calibration Sample, Level: 7



Sample



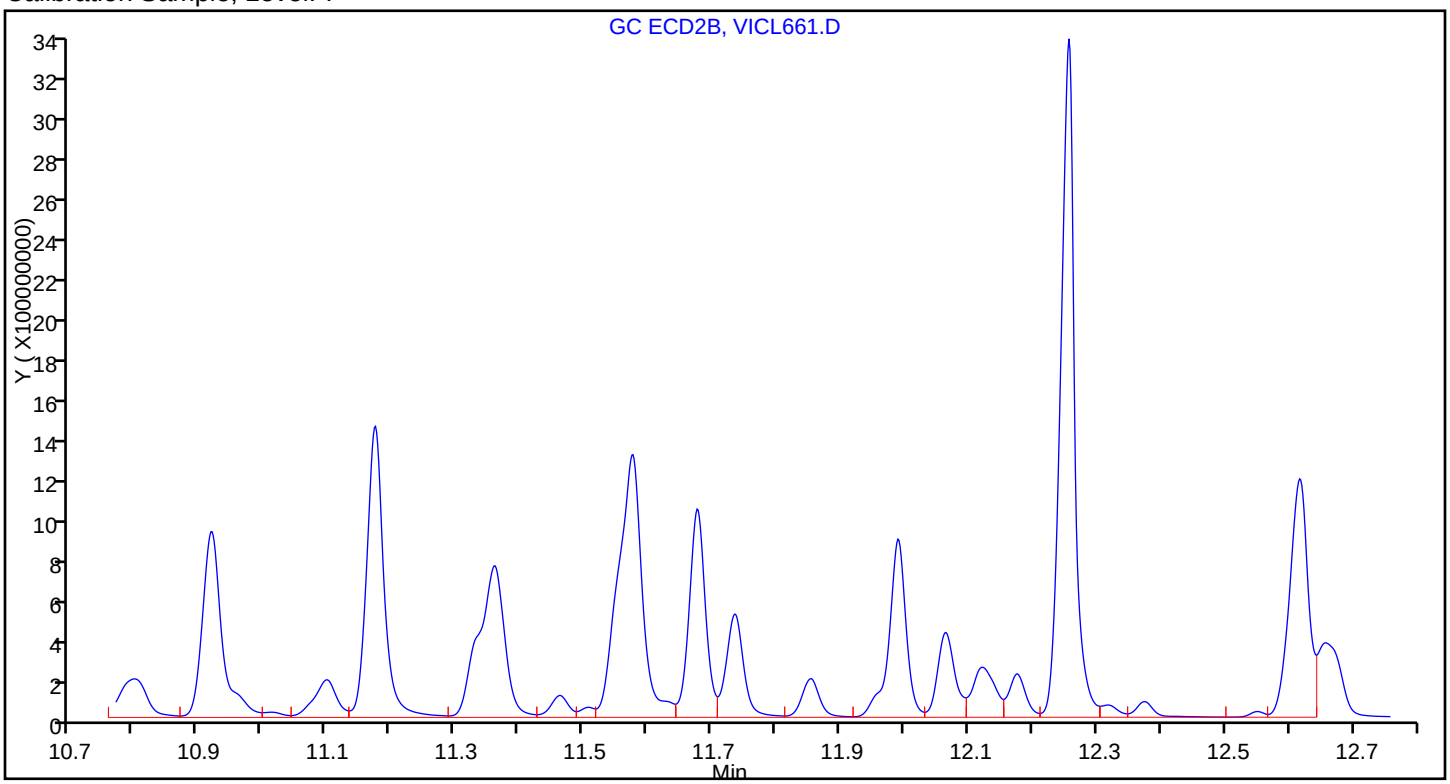
Report Date: 19-Aug-2016 06:44:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

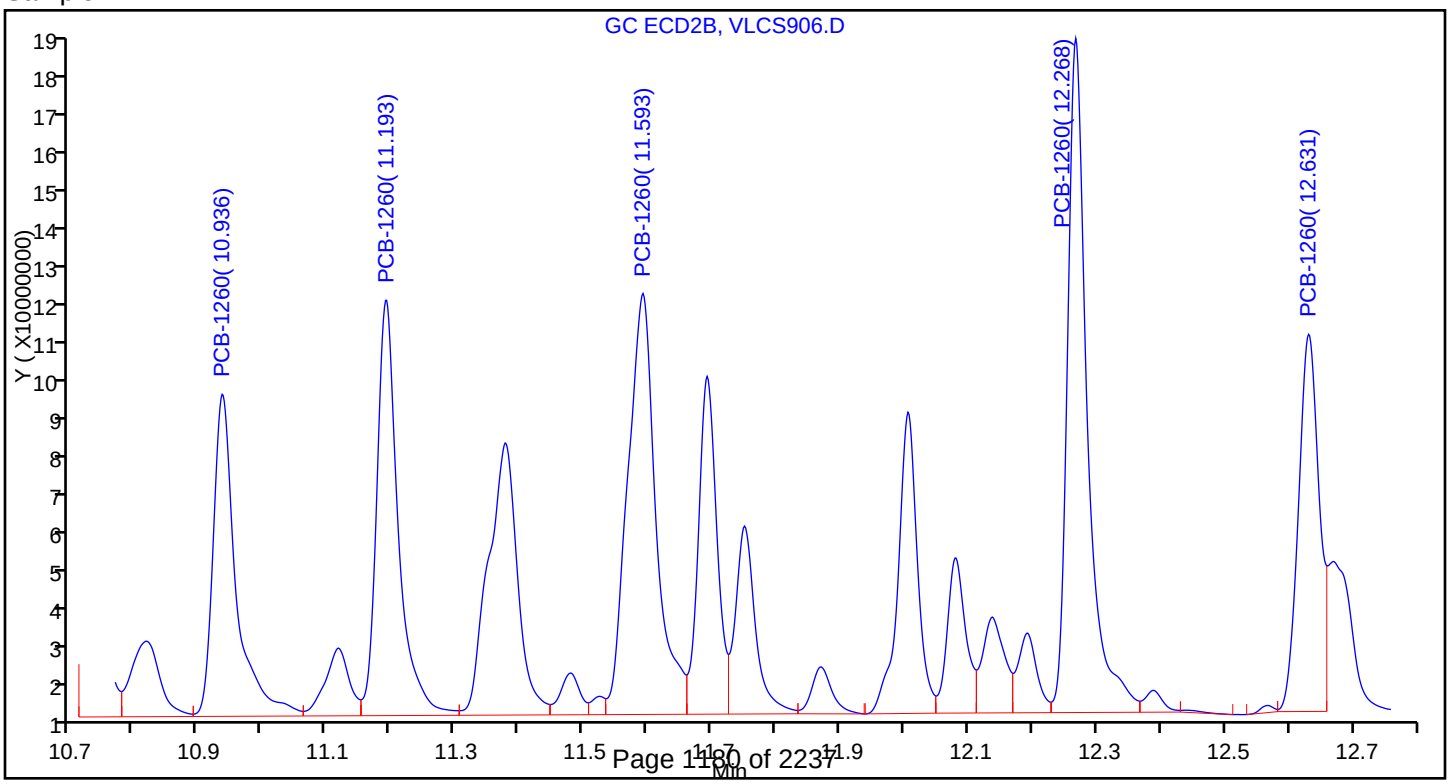
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160817-8226.b\VLCS906.D				
Injection Date:	17-Aug-2016 11:28:55	Instrument ID:	SGCV		
Lims ID:	LCS 160-264775/2-A				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

10 PCB-1260, CAS: 11096-82-5

Calibration Sample, Level: 7



Sample



FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: 160-18504-E-1-B MS
Matrix: Solid
Lab File ID: VSMP958.D
Analysis Method: 8082A
Date Collected: 08/04/2016 09:00
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30.02(g)
Date Analyzed: 08/19/2016 14:58
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP1 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265549
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
11104-28-2	PCB-1221	0.0096	U	0.033	0.0096
11141-16-5	PCB-1232	0.0096	U	0.033	0.0096
53469-21-9	PCB-1242	0.0096	U	0.033	0.0096
12672-29-6	PCB-1248	0.0096	U	0.033	0.0096
11097-69-1	PCB-1254	0.0080	U	0.033	0.0080
11096-82-5	PCB-1260	0.234		0.033	0.0080
37324-23-5	PCB-1262	0.0080	U	0.033	0.0080
11100-14-4	PCB-1268	0.0080	U	0.033	0.0080

CAS NO.	SURROGATE	%REC	Q	LIMITS
2051-24-3	DCB Decachlorobiphenyl (Surr)	76	J	23-146

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D
Lims ID: 160-18504-E-1-B MS
Client ID:
Sample Type: MS
Inject. Date: 19-Aug-2016 14:58:05 ALS Bottle#: 18 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 160-18504-e-1-b ms
Misc. Info.: 160-0008246-018
Operator ID: GLB Instrument ID: SGCV

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:37:33

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.107	3.105	0.002	912578913	50.4	50.4	
2	3.913	3.911	0.002	355646590	50.4	50.4	
1 PCB-1016							
1	6.004	6.004	0.000	193352688	500.0	310.7	
1	6.775	6.777	-0.002	462924849	500.0	375.0	
1	0.000	6.987	-6.987	0	500.0	0	
1	7.639	7.640	-0.001	327231530	500.0	558.6	
1	8.224	8.224	0.000	552553611	500.0	1587.6	
2	6.739	6.737	0.002	66217323	500.0	385.9	
2	7.454	7.452	0.002	149632952	500.0	428.2	
2	8.204	8.201	0.003	323923544	500.0	428.8	
2	8.418	8.416	0.002	124902993	500.0	378.2	
2	9.156	9.152	0.004	168669879	500.0	716.2	
						RPD = 40.93	
10 PCB-1260							
1	9.469	9.470	-0.001	783334622	500.0	856.6	
1	0.000	9.877	-9.877	0	500.0	0	
1	0.000	10.254	-10.254	0	500.0	0	
1	11.089	11.090	-0.001	920604494	500.0	479.3	
1	11.400	11.402	-0.002	612228118	500.0	772.6	
2	10.936	10.934	0.002	511830037	500.0	987.8	
2	11.191	11.189	0.002	698018265	500.0	1049.5	
2	0.000	11.591	-11.591	0	500.0	0	
2	12.268	12.266	0.002	751769404	500.0	747.1	
2	12.633	12.631	0.002	499034466	500.0	856.6	
						RPD = 25.72	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.535	12.534	0.001	214510109	20.1	15.2	
2	13.769	13.769	0.000	146587628	20.1	25.8	
						RPD = 51.40	
S 7 Polychlorinated biphenyls, Total							
1						1410.8	
2						1377.7	
						RPD = 2.37	

Reagents:

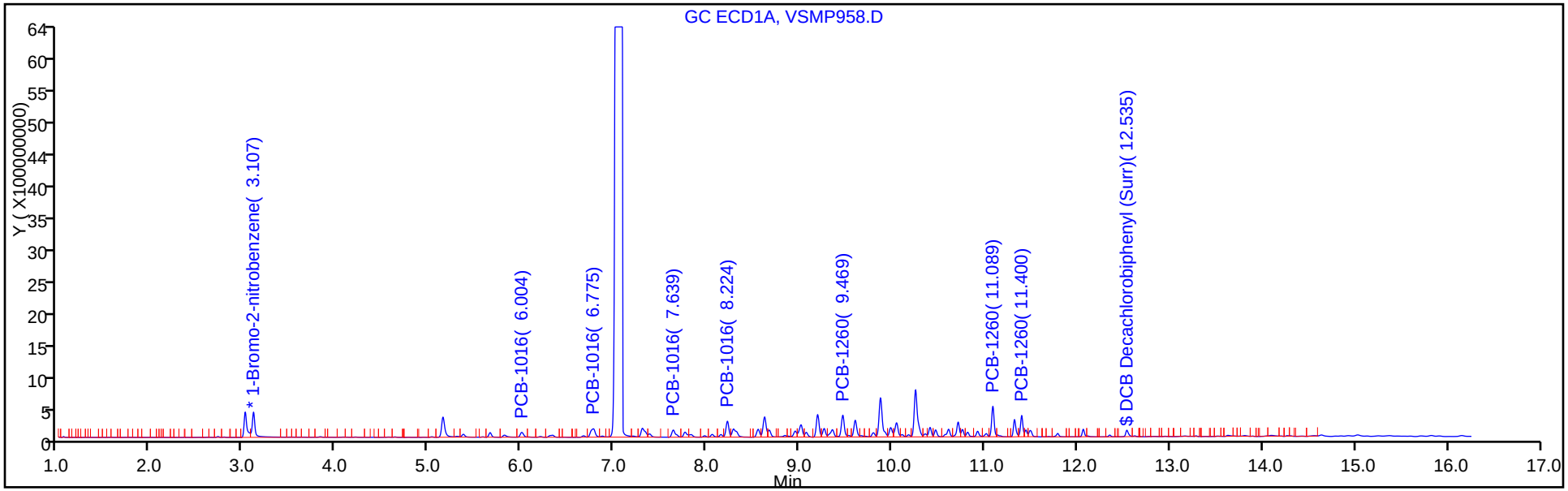
8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 22-Aug-2016 06:47:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

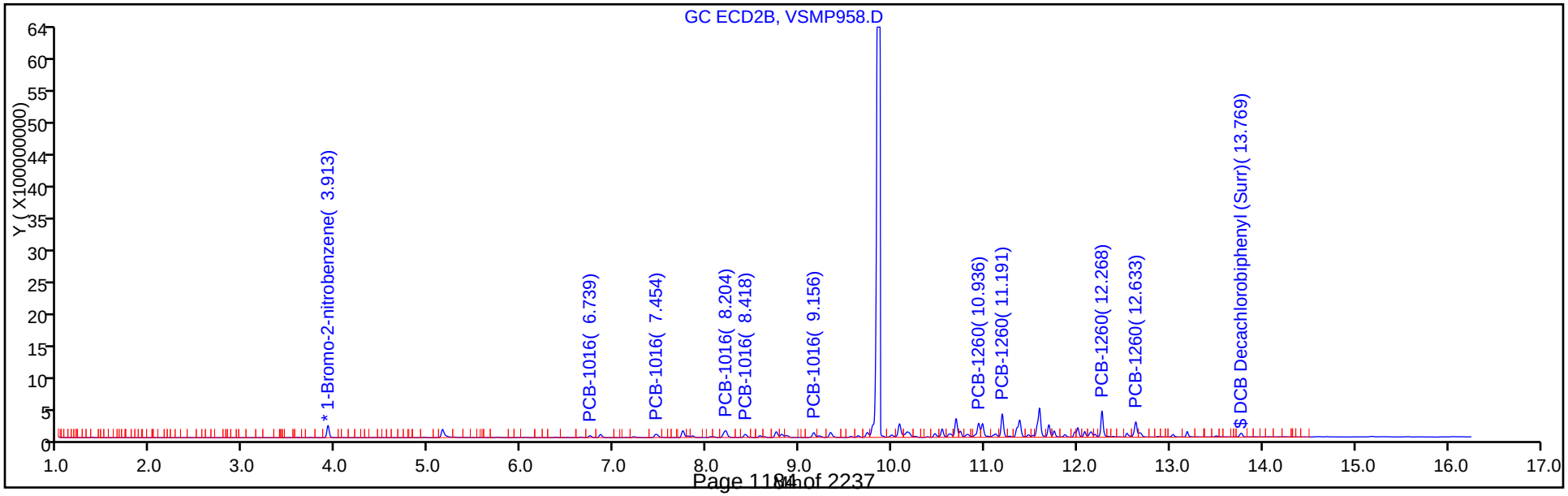
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D				
Injection Date:	19-Aug-2016 14:58:05	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	160-18504-E-1-B MS			Worklist Smp#:	18
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	18
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D				
Lims ID:	160-18504-E-1-B MS				
Client ID:					
Sample Type:	MS				
Inject. Date:	19-Aug-2016 14:58:05	ALS Bottle#:	18	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18504-e-1-b ms				
Misc. Info.:	160-0008246-018				
Operator ID:	GLB	Instrument ID:	SGCV		

Method:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m		
Limit Group:	GC 8082A_ICAL_IS		
Last Update:	22-Aug-2016 06:46:28	Calib Date:	03-Aug-2016 17:51:52
Integrator:	Falcon		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK001	

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:37:33

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	15.2	75.93

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	25.8	128.46

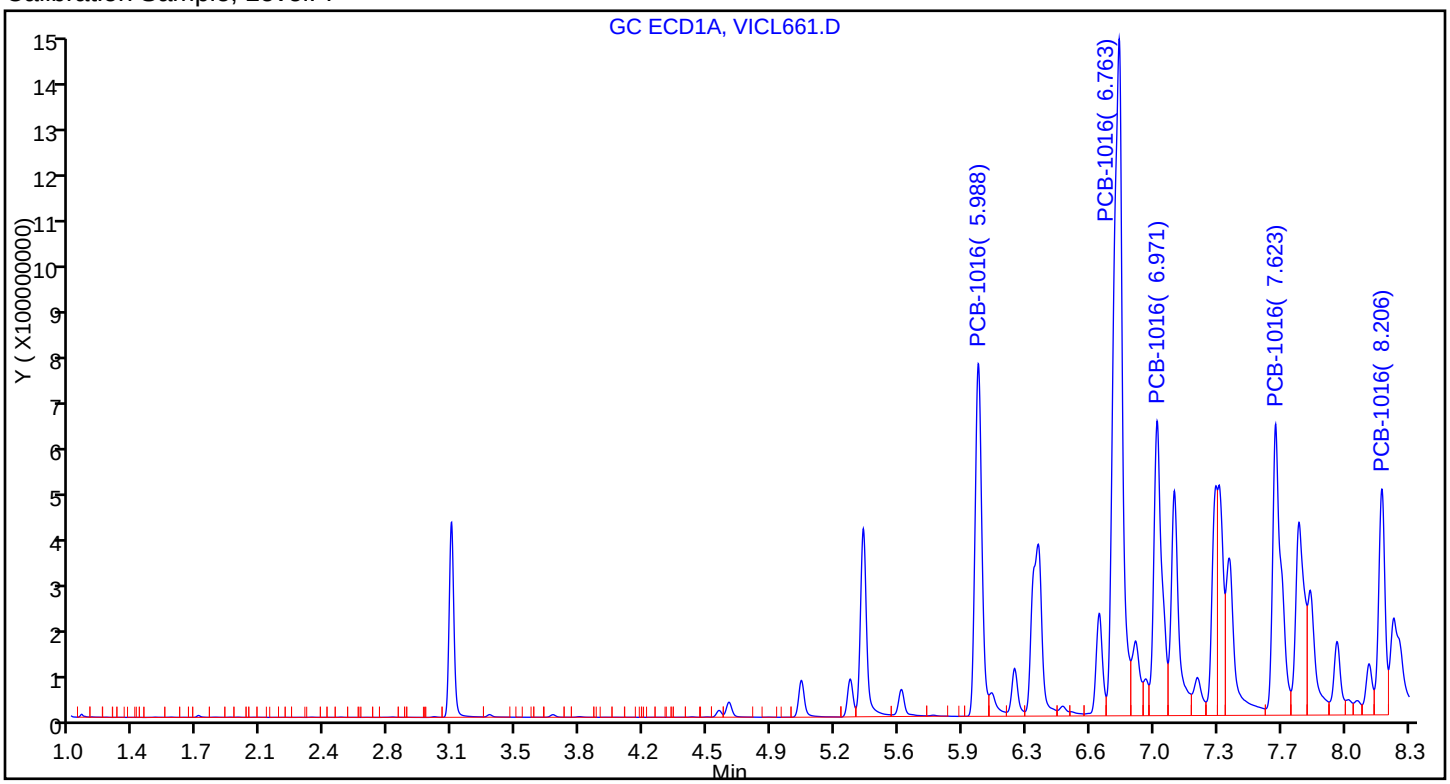
Report Date: 22-Aug-2016 06:47:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

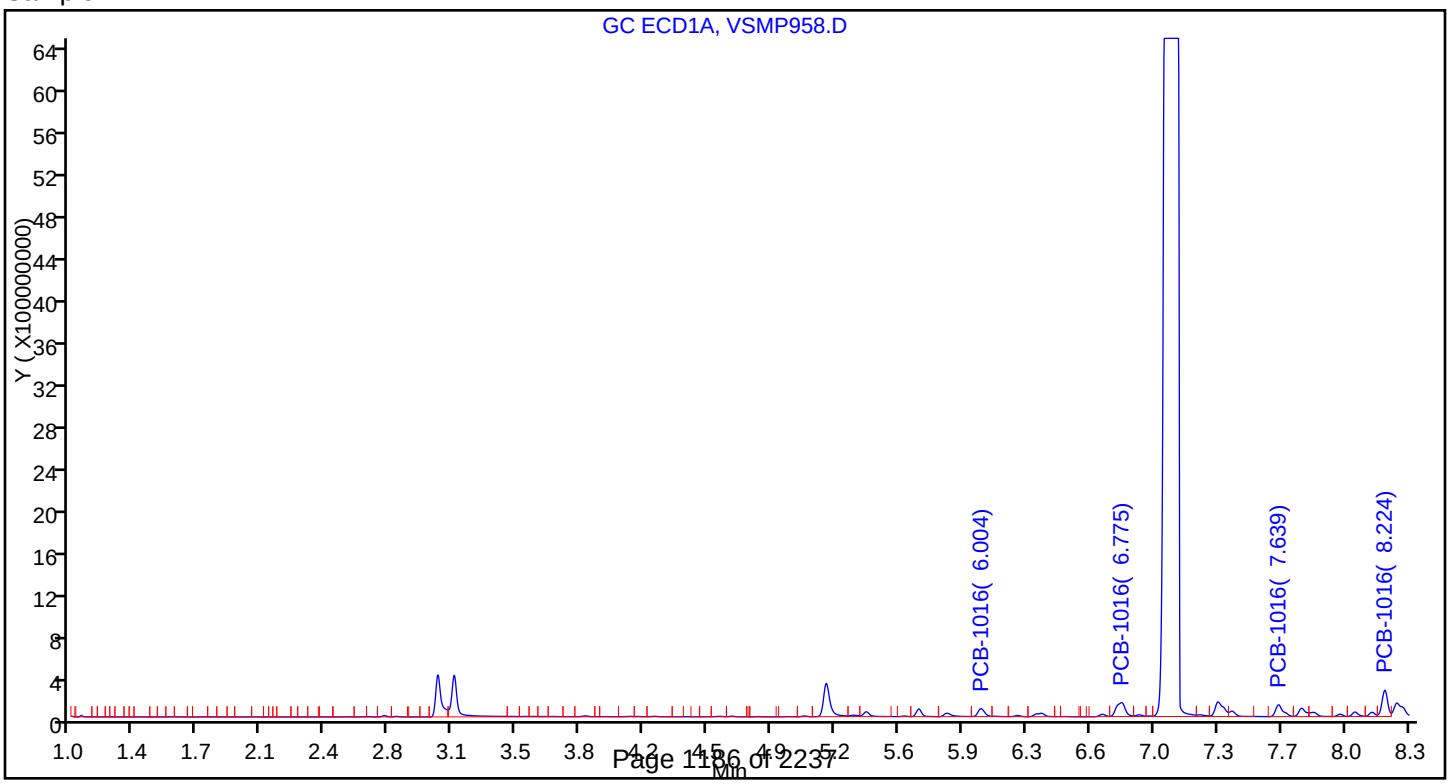
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D				
Injection Date:	19-Aug-2016 14:58:05	Instrument ID:	SGCV		
Lims ID:	160-18504-E-1-B MS				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	18	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

1 PCB-1016, CAS: 12674-11-2

Calibration Sample, Level: 7



Sample



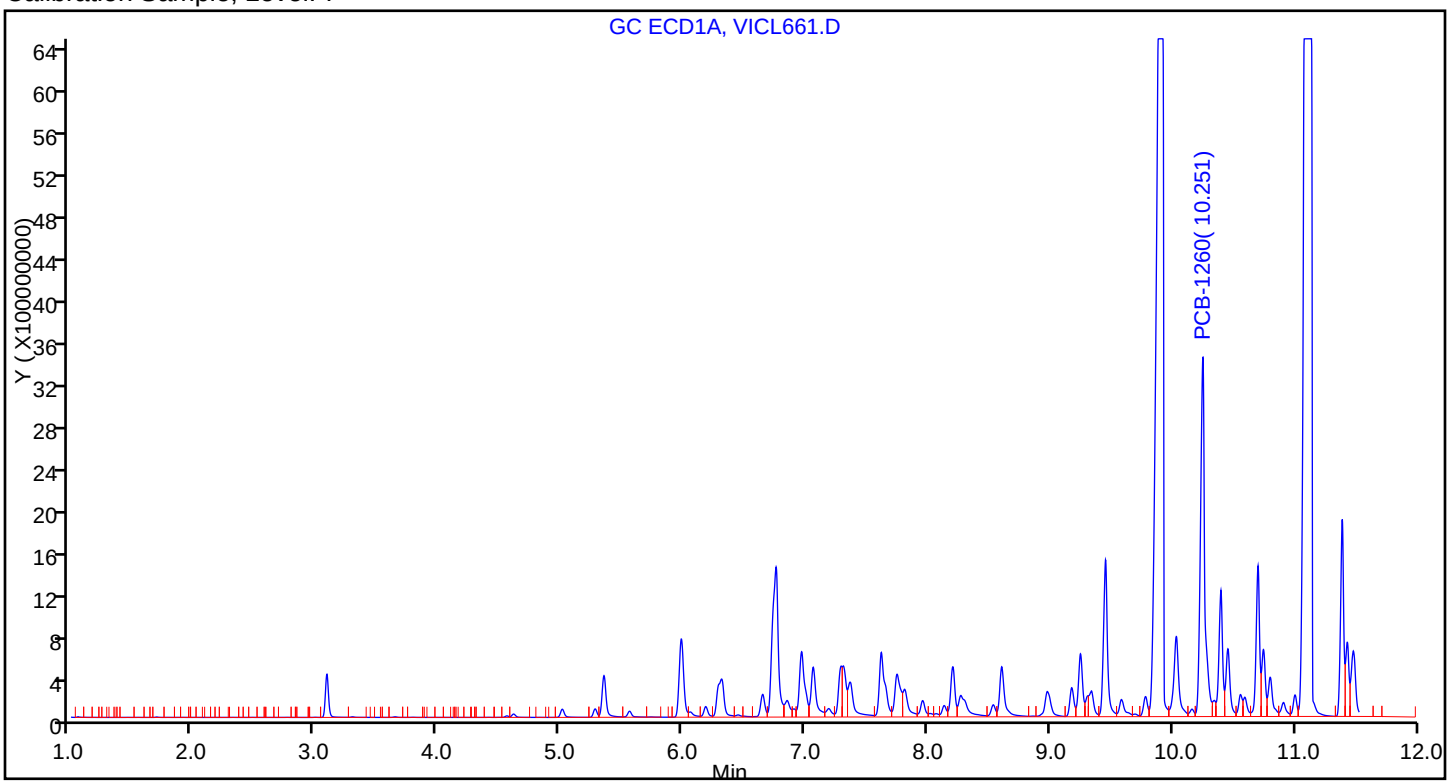
Report Date: 22-Aug-2016 06:47:55 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

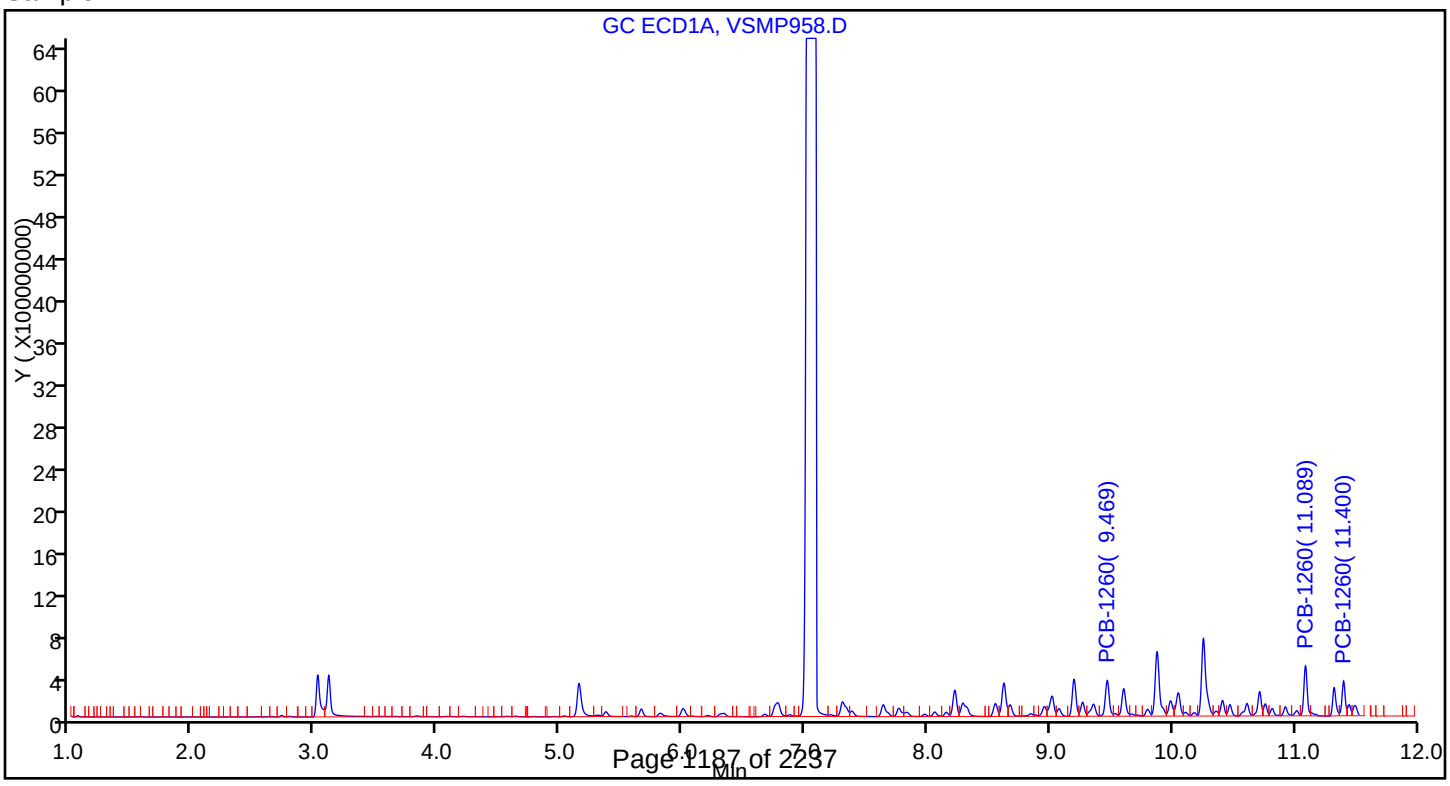
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D				
Injection Date:	19-Aug-2016 14:58:05	Instrument ID:	SGCV		
Lims ID:	160-18504-E-1-B MS				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	18	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

10 PCB-1260, CAS: 11096-82-5

Calibration Sample, Level: 7



Sample



FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: 160-18504-E-1-B MS
Matrix: Solid
Lab File ID: VSMP958.D
Analysis Method: 8082A
Date Collected: 08/04/2016 09:00
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30.02(g)
Date Analyzed: 08/19/2016 14:58
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265549
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
12674-11-2	PCB-1016	0.156		0.033	0.0096
1336-36-3	Polychlorinated biphenyls, Total	0.459		0.033	0.0080

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D
Lims ID: 160-18504-E-1-B MS
Client ID:
Sample Type: MS
Inject. Date: 19-Aug-2016 14:58:05 ALS Bottle#: 18 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 160-18504-e-1-b ms
Misc. Info.: 160-0008246-018
Operator ID: GLB Instrument ID: SGCV

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:37:33

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.107	3.105	0.002	912578913	50.4	50.4	
2	3.913	3.911	0.002	355646590	50.4	50.4	
1 PCB-1016							
1	6.004	6.004	0.000	193352688	500.0	310.7	
1	6.775	6.777	-0.002	462924849	500.0	375.0	
1	0.000	6.987	-6.987	0	500.0	0	
1	7.639	7.640	-0.001	327231530	500.0	558.6	
1	8.224	8.224	0.000	552553611	500.0	1587.6	
2	6.739	6.737	0.002	66217323	500.0	385.9	
2	7.454	7.452	0.002	149632952	500.0	428.2	
2	8.204	8.201	0.003	323923544	500.0	428.8	
2	8.418	8.416	0.002	124902993	500.0	378.2	
2	9.156	9.152	0.004	168669879	500.0	716.2	
						RPD = 40.93	
10 PCB-1260							
1	9.469	9.470	-0.001	783334622	500.0	856.6	
1	0.000	9.877	-9.877	0	500.0	0	
1	0.000	10.254	-10.254	0	500.0	0	
1	11.089	11.090	-0.001	920604494	500.0	479.3	
1	11.400	11.402	-0.002	612228118	500.0	772.6	
2	10.936	10.934	0.002	511830037	500.0	987.8	
2	11.191	11.189	0.002	698018265	500.0	1049.5	
2	0.000	11.591	-11.591	0	500.0	0	
2	12.268	12.266	0.002	751769404	500.0	747.1	
2	12.633	12.631	0.002	499034466	500.0	856.6	
						RPD = 25.72	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.535	12.534	0.001	214510109	20.1	15.2	
2	13.769	13.769	0.000	146587628	20.1	25.8	
						RPD = 51.40	
S 7 Polychlorinated biphenyls, Total							
1						1410.8	
2						1377.7	
						RPD = 2.37	

Reagents:

8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 22-Aug-2016 06:47:56 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D

Injection Date: 19-Aug-2016 14:58:05 Instrument ID: SGCV Operator ID: GLB

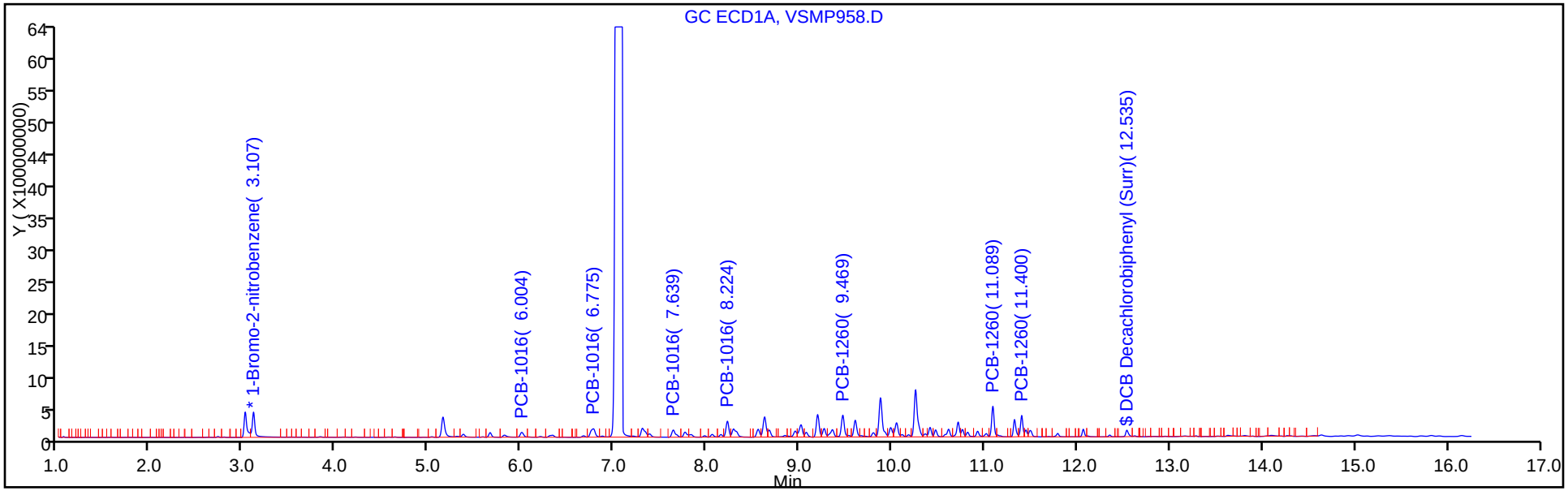
Lims ID: 160-18504-E-1-B MS Worklist Smp#: 18

Client ID:

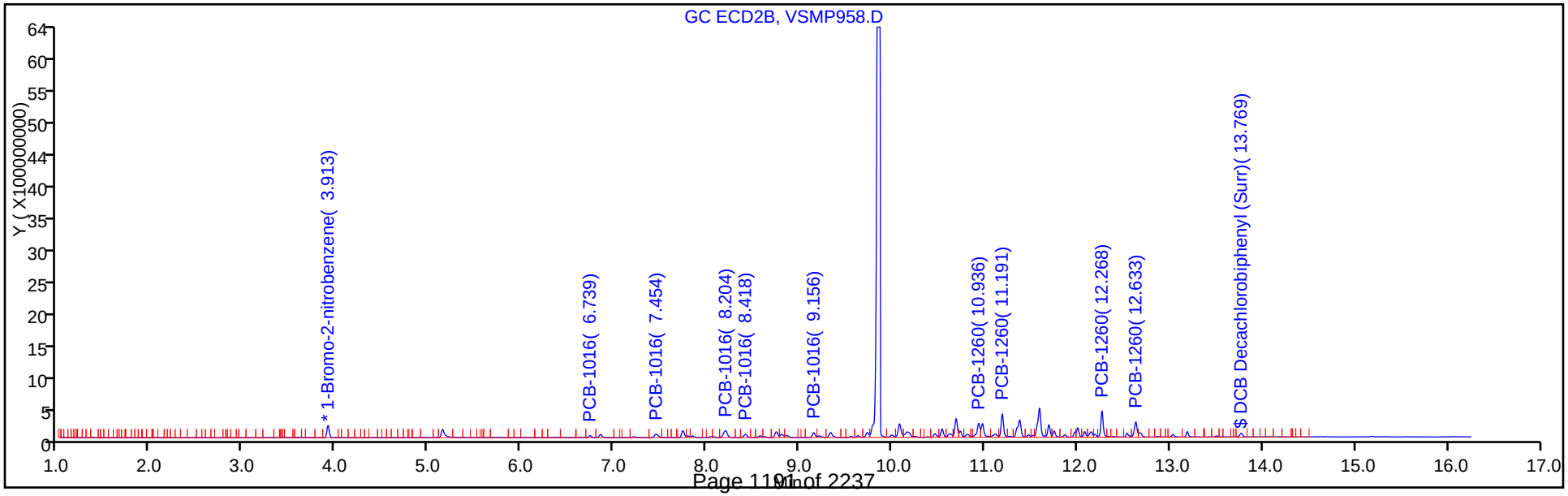
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 18

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D				
Lims ID:	160-18504-E-1-B MS				
Client ID:					
Sample Type:	MS				
Inject. Date:	19-Aug-2016 14:58:05	ALS Bottle#:	18	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18504-e-1-b ms				
Misc. Info.:	160-0008246-018				
Operator ID:	GLB	Instrument ID:	SGCV		

Method:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m		
Limit Group:	GC 8082A_ICAL_IS		
Last Update:	22-Aug-2016 06:46:28	Calib Date:	03-Aug-2016 17:51:52
Integrator:	Falcon		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK001	

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:37:33

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	15.2	75.93

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	25.8	128.46

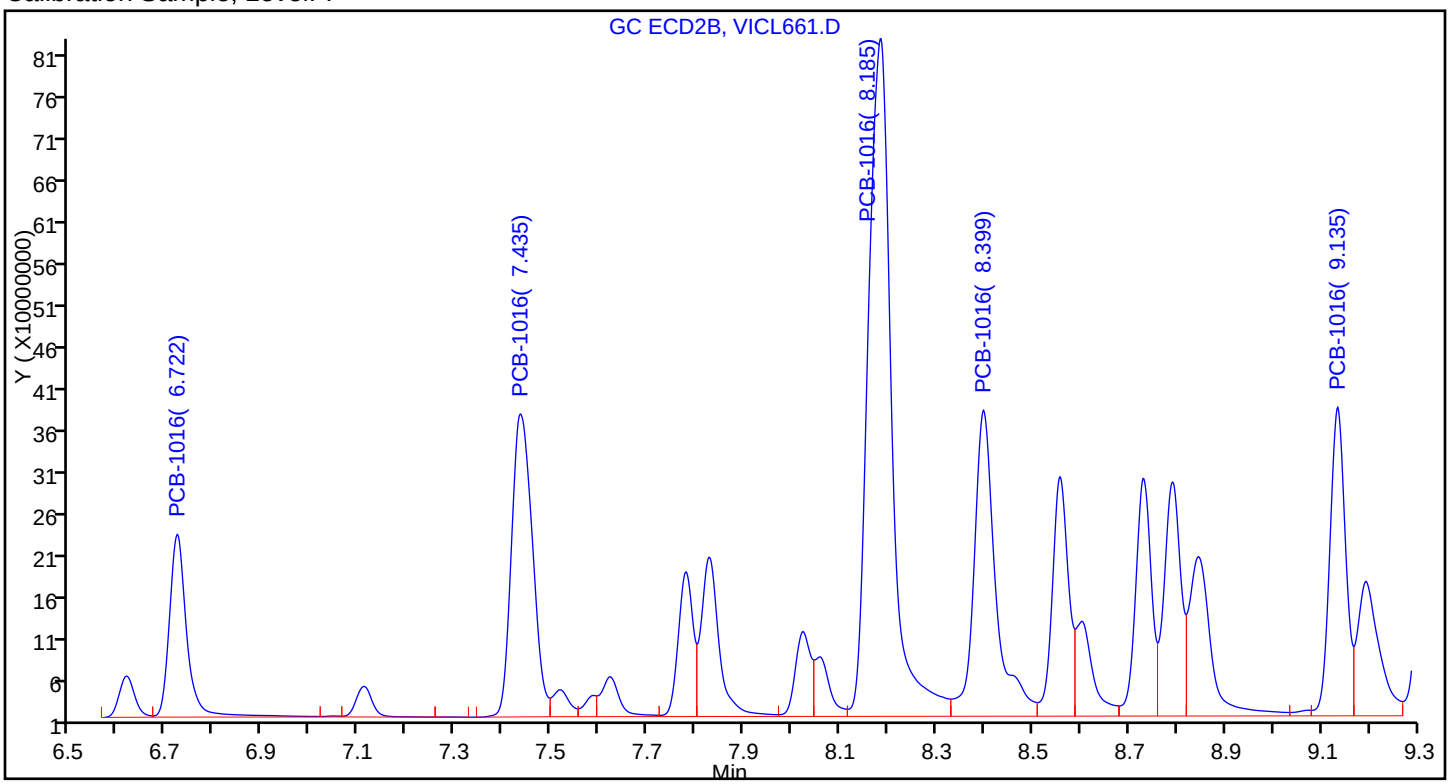
Report Date: 22-Aug-2016 06:47:56 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

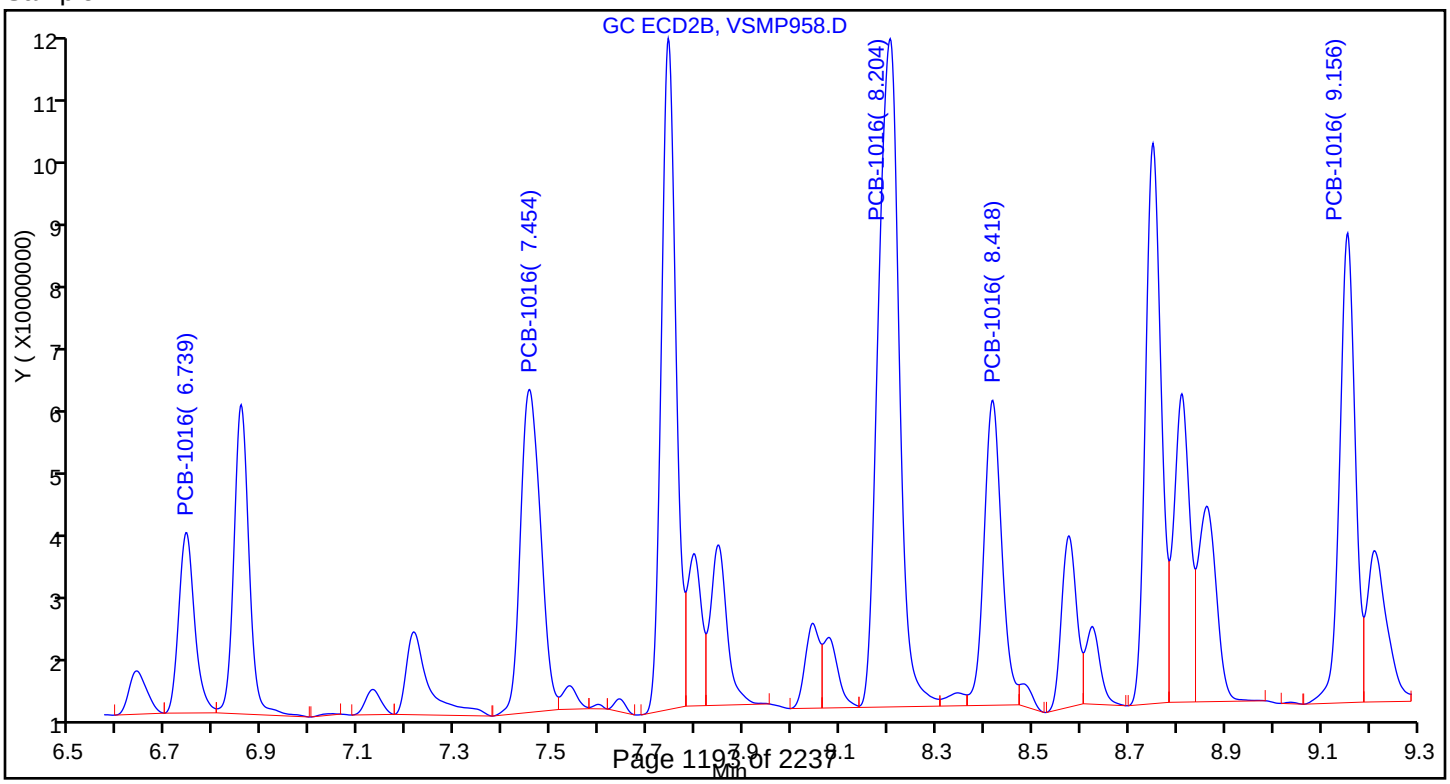
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D				
Injection Date:	19-Aug-2016 14:58:05	Instrument ID:	SGCV		
Lims ID:	160-18504-E-1-B MS				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	18	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

1 PCB-1016, CAS: 12674-11-2

Calibration Sample, Level: 7



Sample



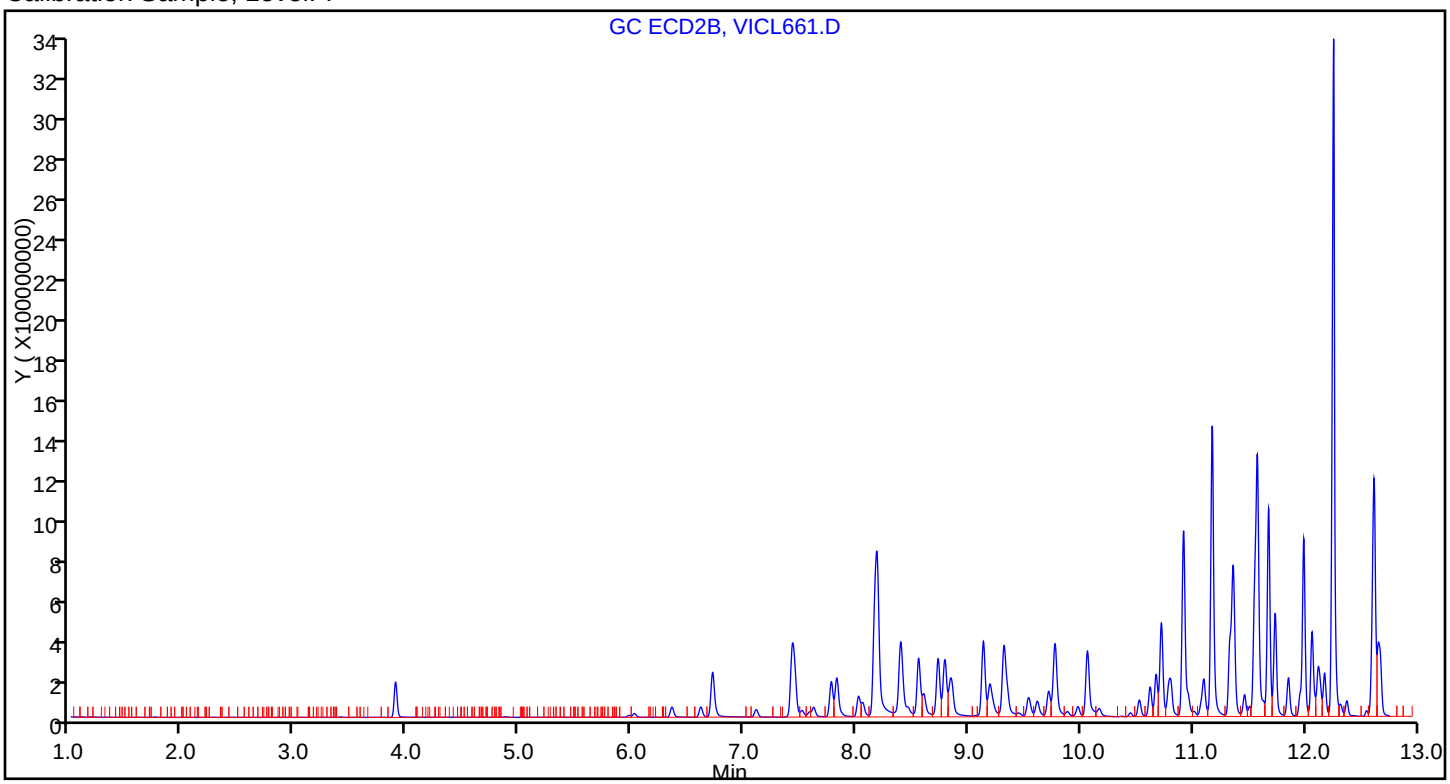
Report Date: 22-Aug-2016 06:47:56 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

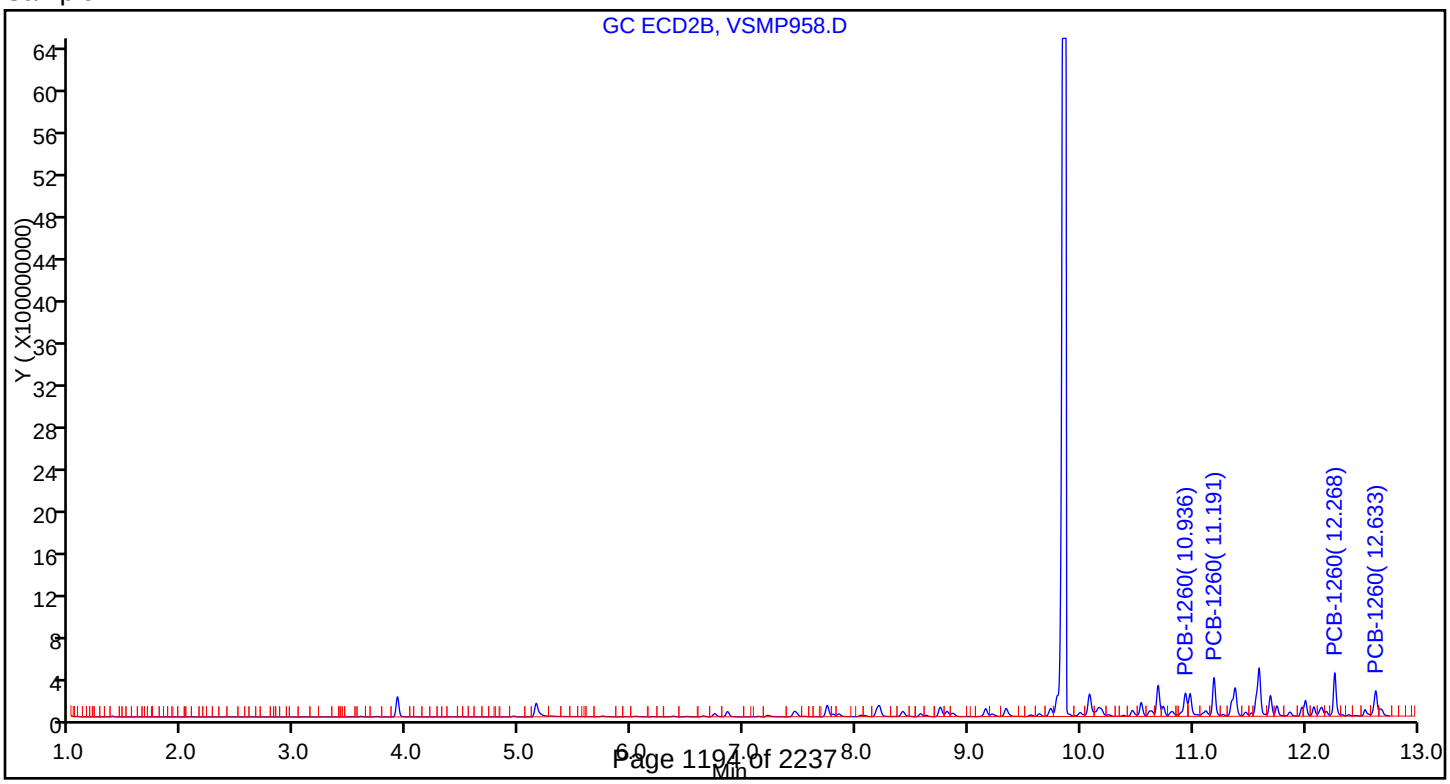
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP958.D				
Injection Date:	19-Aug-2016 14:58:05	Instrument ID:	SGCV		
Lims ID:	160-18504-E-1-B MS				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	18	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

10 PCB-1260, CAS: 11096-82-5

Calibration Sample, Level: 7



Sample



FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: 160-18504-E-1-C MSD
Matrix: Solid
Lab File ID: VSMP959.D
Analysis Method: 8082A
Date Collected: 08/04/2016 09:00
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30.04(g)
Date Analyzed: 08/19/2016 15:20
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP1 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265549
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
11104-28-2	PCB-1221	0.0096	U	0.033	0.0096
11141-16-5	PCB-1232	0.0096	U	0.033	0.0096
53469-21-9	PCB-1242	0.0096	U	0.033	0.0096
12672-29-6	PCB-1248	0.0096	U	0.033	0.0096
11097-69-1	PCB-1254	0.0080	U	0.033	0.0080
37324-23-5	PCB-1262	0.0080	U	0.033	0.0080
11100-14-4	PCB-1268	0.0080	U	0.033	0.0080

CAS NO.	SURROGATE	%REC	Q	LIMITS
2051-24-3	DCB Decachlorobiphenyl (Surr)	101		23-146

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D
Lims ID: 160-18504-E-1-C MSD
Client ID:
Sample Type: MSD
Inject. Date: 19-Aug-2016 15:20:33 ALS Bottle#: 19 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 160-18504-e-1-c msd
Misc. Info.: 160-0008246-019
Operator ID: GLB Instrument ID: SGCV

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:38:46

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.107	3.105	0.002	706218236	50.4	50.4	
2	3.911	3.911	0.000	392465738	50.4	50.4	
1 PCB-1016							
1	6.000	6.004	-0.004	243257430	500.0	518.3	
1	6.774	6.777	-0.003	627048343	500.0	622.6	
1	0.000	6.987	-6.987	0	500.0	0	
1	7.637	7.640	-0.003	345274307	500.0	755.2	
1	8.222	8.224	-0.002	367863998	500.0	1368.3	
2	6.738	6.737	0.001	89331171	500.0	471.8	
2	7.451	7.452	-0.001	182916789	500.0	474.3	
2	8.203	8.201	0.002	414944394	500.0	497.7	
2	8.414	8.416	-0.002	139141689	500.0	381.8	
2	9.153	9.152	0.001	180739109	500.0	695.5	
						RPD = 47.24	
10 PCB-1260							
1	9.467	9.470	-0.003	705696062	500.0	994.8	
1	0.000	9.877	-9.877	0	500.0	0	
1	0.000	10.254	-10.254	0	500.0	0	
1	11.087	11.090	-0.003	901280455	500.0	598.4	
1	11.399	11.402	-0.003	593502579	500.0	962.0	
2	10.934	10.934	0.000	449124895	500.0	785.5	
2	11.189	11.189	0.000	623618777	500.0	849.7	
2	0.000	11.591	-11.591	0	500.0	0	
2	12.266	12.266	0.000	727628441	500.0	655.3	
2	12.629	12.631	-0.002	459747003	500.0	715.2	
						RPD = 12.52	

Report Date: 22-Aug-2016 06:47:59 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.534	0.000	227192167	20.1	20.3	
2	13.768	13.769	-0.001	151255708	20.1	24.2	
						RPD = 17.34	
S 7 Polychlorinated biphenyls, Total							
1						1667.8	
2						1255.6	
						RPD = 28.20	

Reagents:

8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 22-Aug-2016 06:48:00 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D

Injection Date: 19-Aug-2016 15:20:33 Instrument ID: SGCV Operator ID: GLB

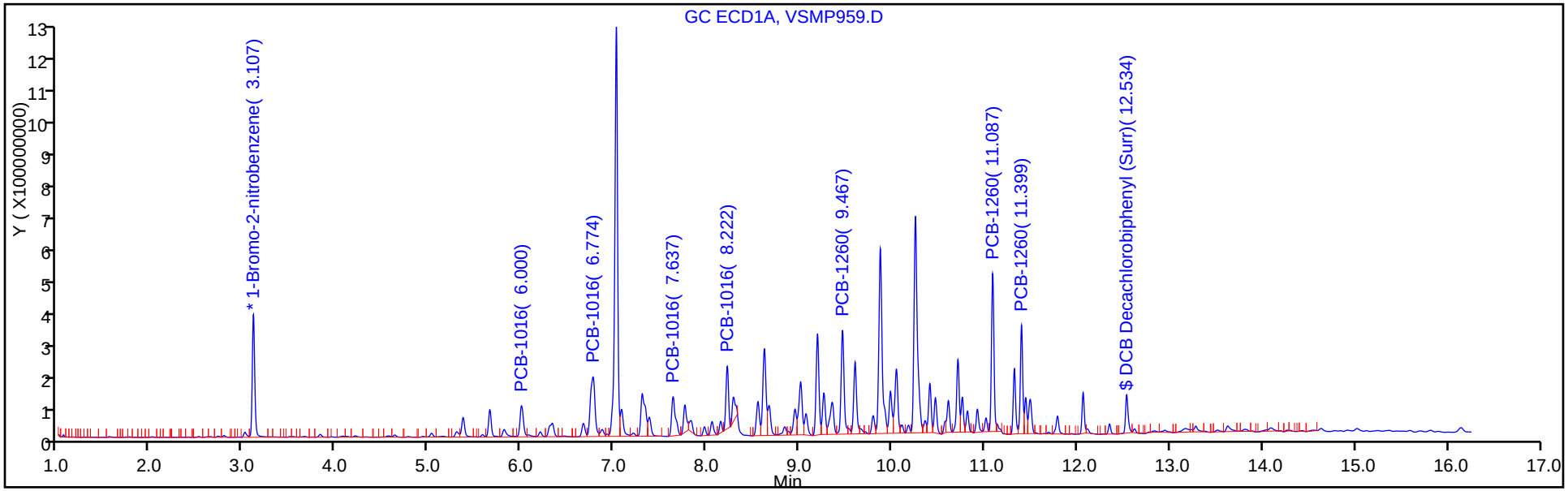
Lims ID: 160-18504-E-1-C MSD Worklist Smp#: 19

Client ID:

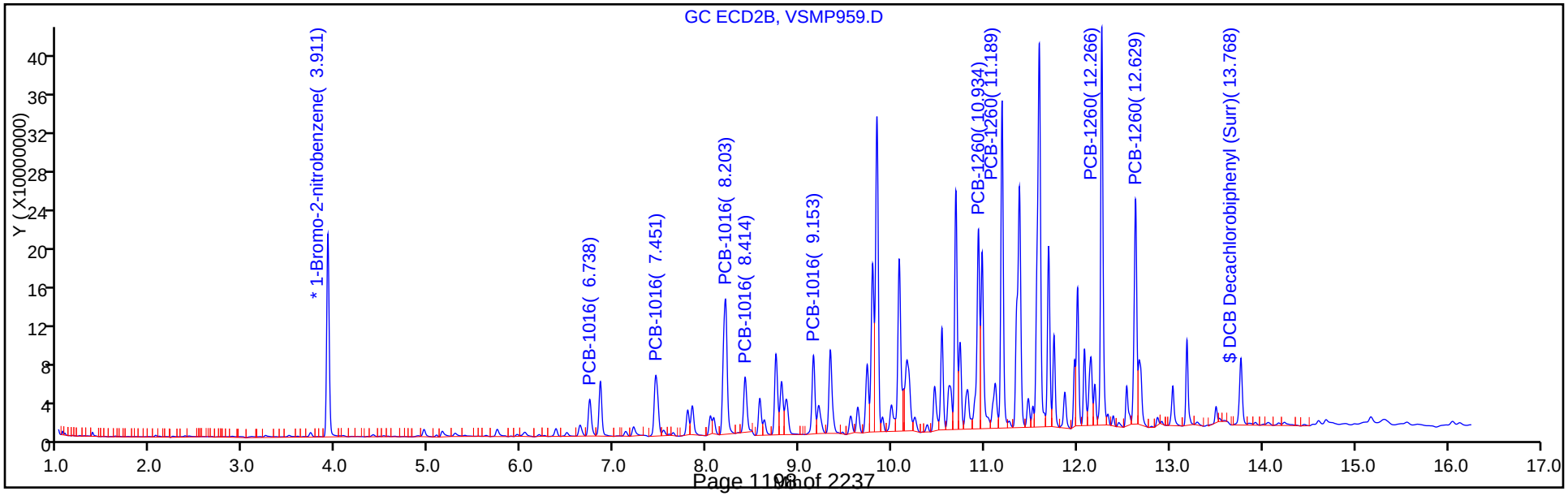
Injection Vol: 2.0 ul Dil. Factor: 1.0000 ALS Bottle#: 19

Method: 8082_IS_SGCV Limit Group: GC 8082A_ICAL_IS

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D				
Lims ID:	160-18504-E-1-C MSD				
Client ID:					
Sample Type:	MSD				
Inject. Date:	19-Aug-2016 15:20:33	ALS Bottle#:	19	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18504-e-1-c msd				
Misc. Info.:	160-0008246-019				
Operator ID:	GLB	Instrument ID:	SGCV		

Method:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m		
Limit Group:	GC 8082A_ICAL_IS		
Last Update:	22-Aug-2016 06:46:28	Calib Date:	03-Aug-2016 17:51:52
Integrator:	Falcon		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK001	

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:38:46

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	20.3	101.09

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	24.2	120.28

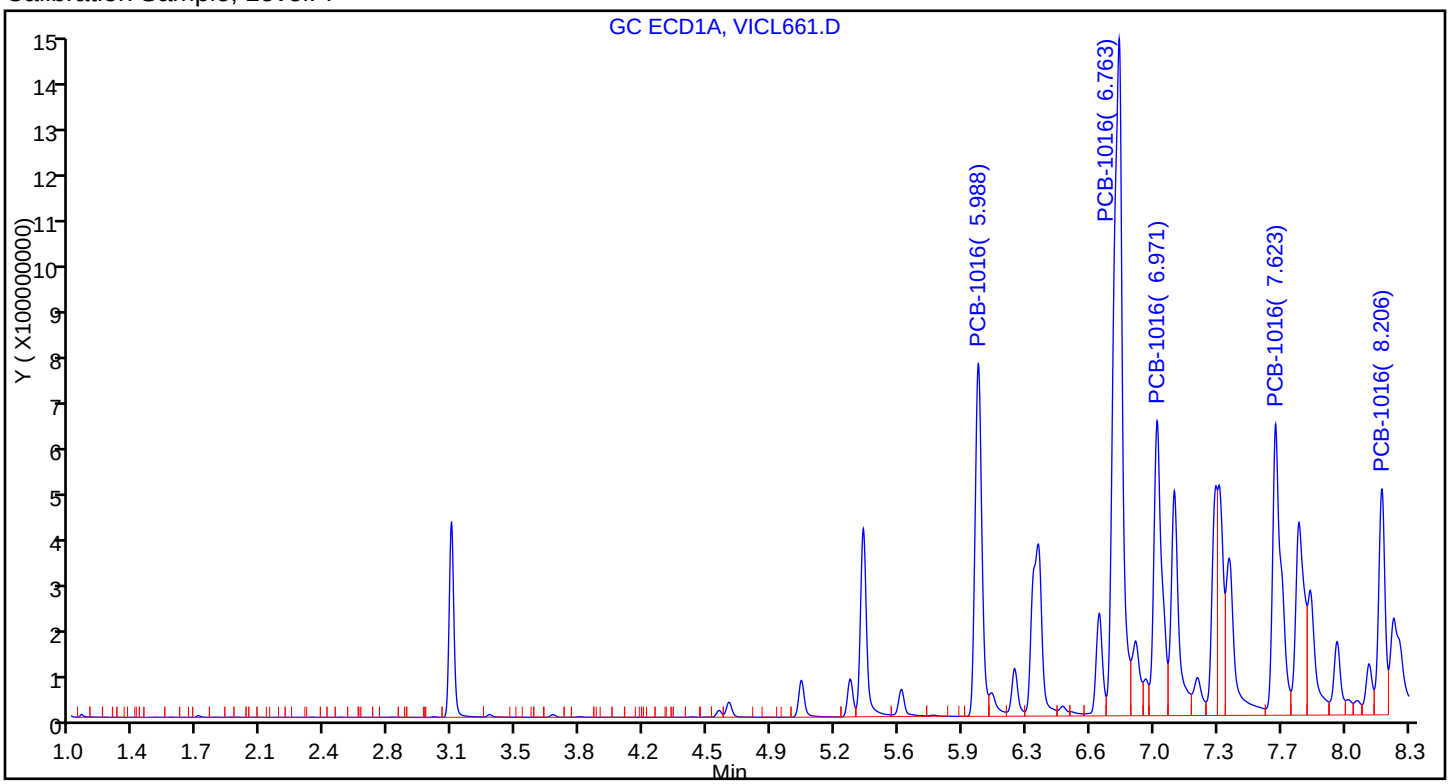
Report Date: 22-Aug-2016 06:48:00 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

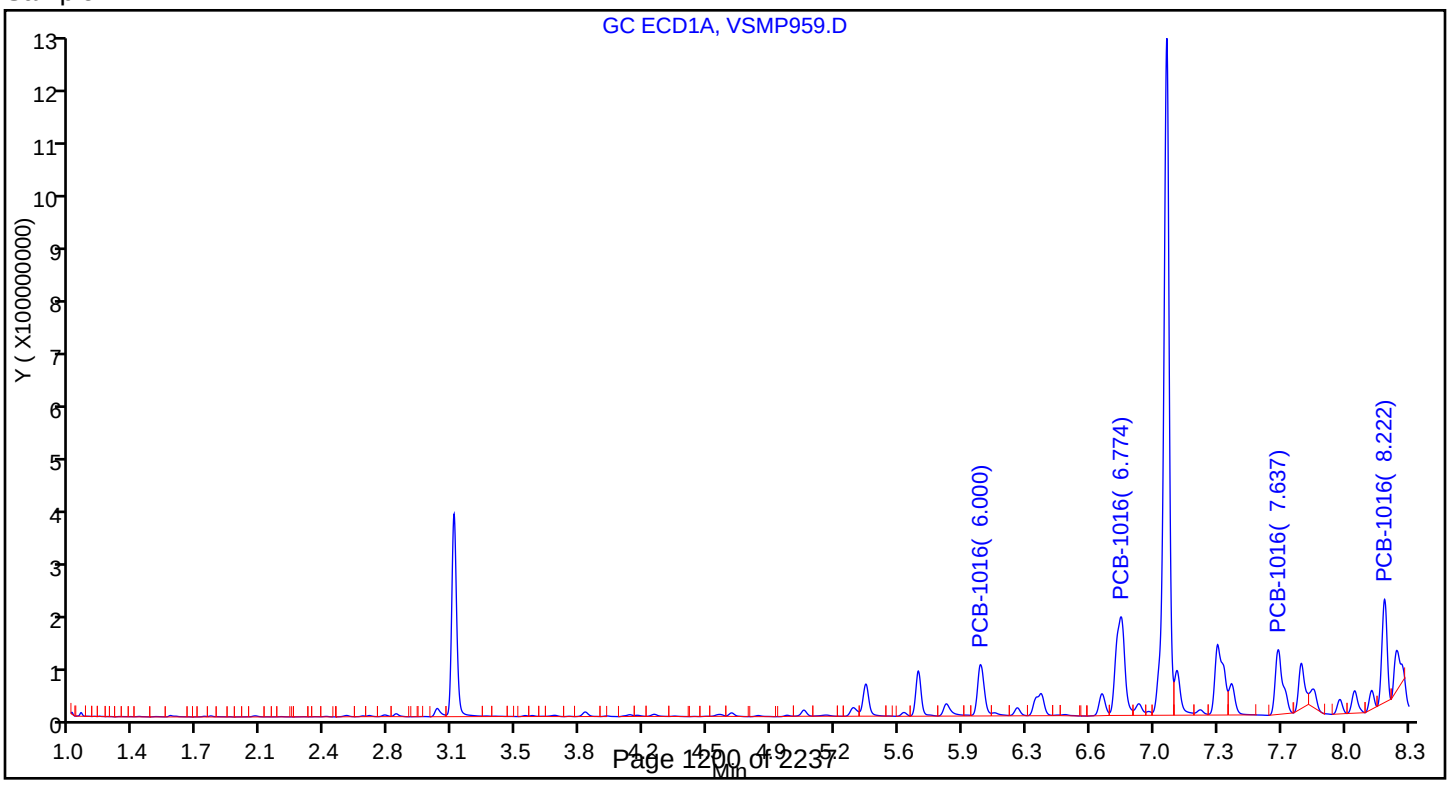
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D				
Injection Date:	19-Aug-2016 15:20:33	Instrument ID:	SGCV		
Lims ID:	160-18504-E-1-C MSD				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	19	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

1 PCB-1016, CAS: 12674-11-2

Calibration Sample, Level: 7



Sample



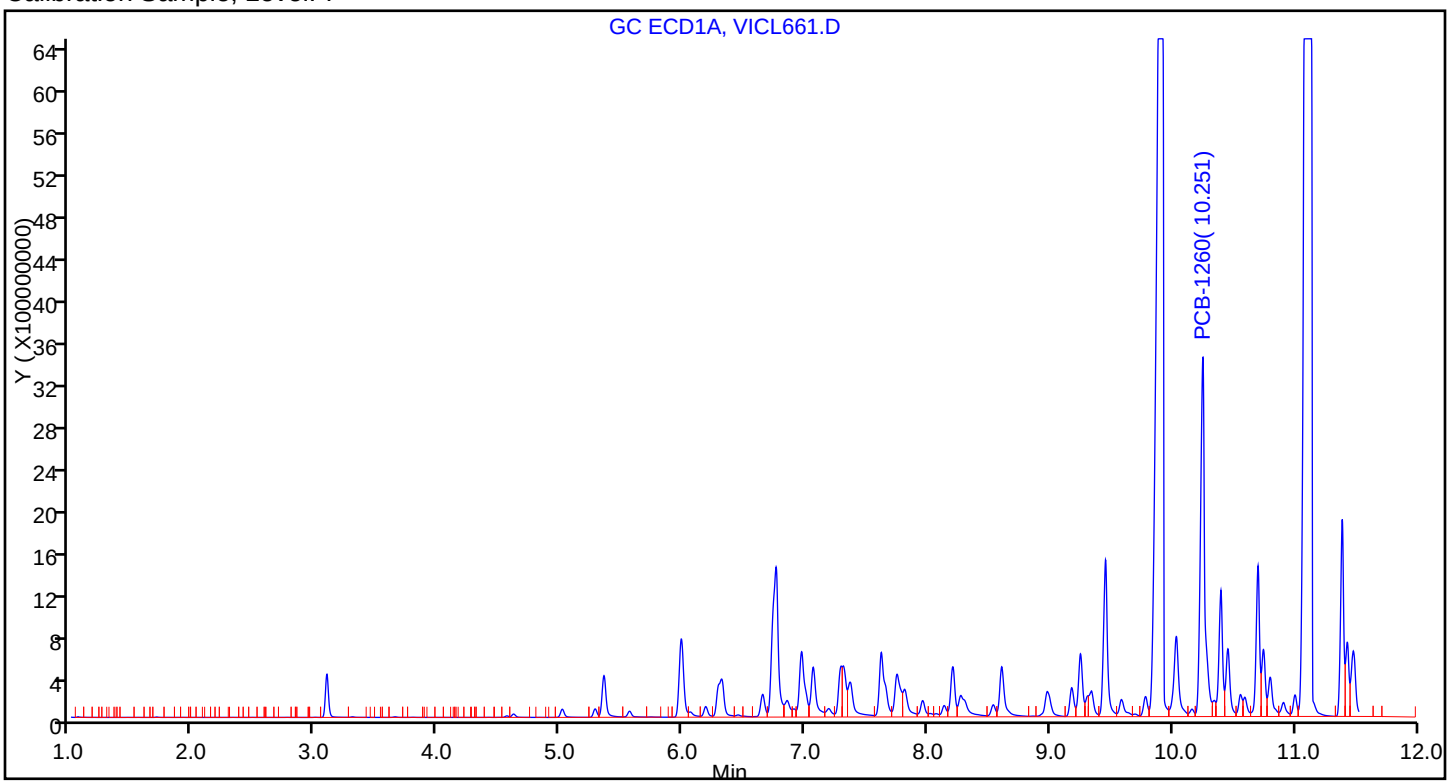
Report Date: 22-Aug-2016 06:48:00 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

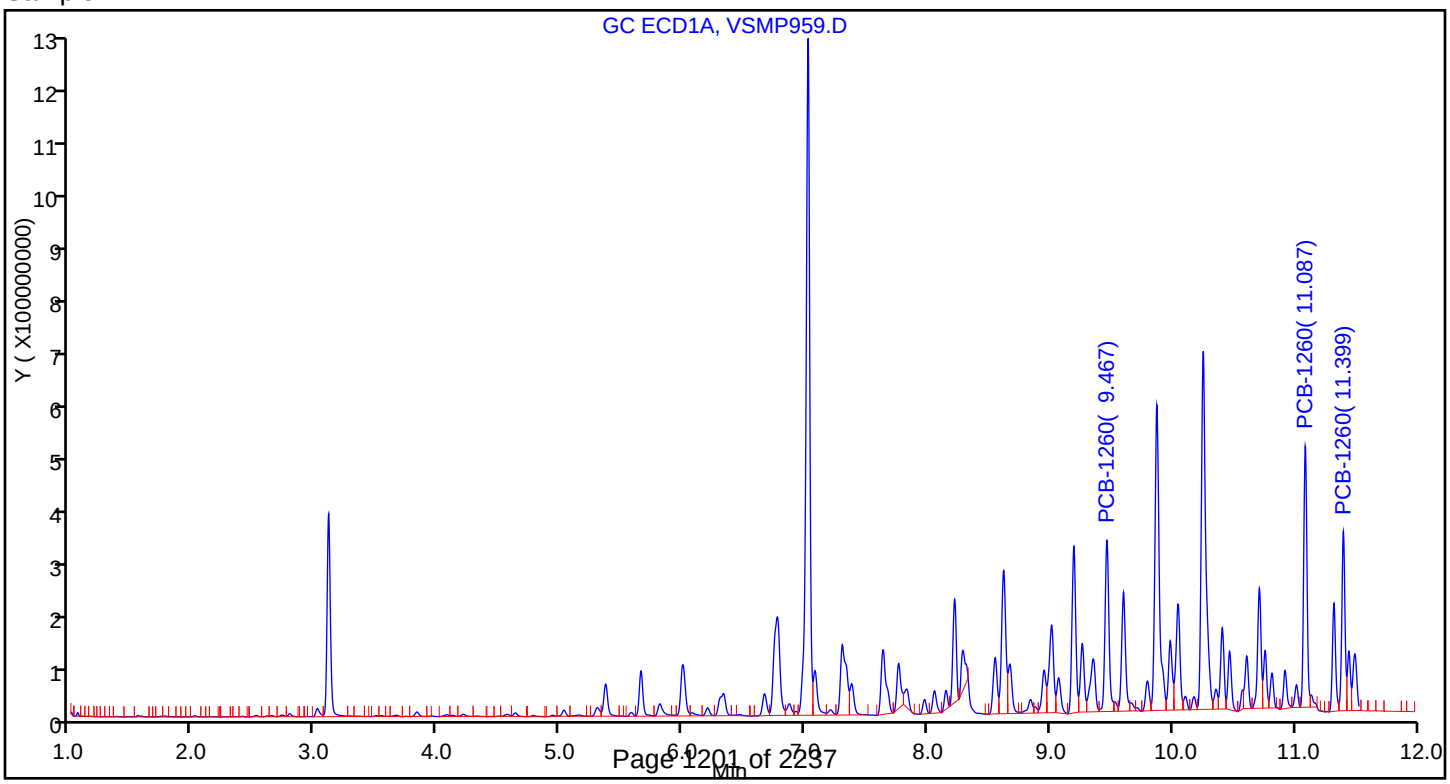
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D				
Injection Date:	19-Aug-2016 15:20:33	Instrument ID:	SGCV		
Lims ID:	160-18504-E-1-C MSD				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	19	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

10 PCB-1260, CAS: 11096-82-5

Calibration Sample, Level: 7



Sample



FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: 160-18504-E-1-C MSD
Matrix: Solid
Lab File ID: VSMP959.D
Analysis Method: 8082A
Date Collected: 08/04/2016 09:00
Extraction Method: 3550C
Date Extracted: 08/15/2016 11:07
Sample wt/vol: 30.04(g)
Date Analyzed: 08/19/2016 15:20
Con. Extract Vol.: 10(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265549
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
12674-11-2	PCB-1016	0.168		0.033	0.0096
11096-82-5	PCB-1260	0.250		0.033	0.0080
1336-36-3	Polychlorinated biphenyls, Total	0.418		0.033	0.0080

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D
Lims ID: 160-18504-E-1-C MSD
Client ID:
Sample Type: MSD
Inject. Date: 19-Aug-2016 15:20:33 ALS Bottle#: 19 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 160-18504-e-1-c msd
Misc. Info.: 160-0008246-019
Operator ID: GLB Instrument ID: SGCV

Method: \\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m
Limit Group: GC 8082A_ICAL_IS
Last Update: 22-Aug-2016 06:46:28 Calib Date: 03-Aug-2016 17:51:52
Integrator: Falcon
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK001

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:38:46

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
* 12 1-Bromo-2-nitrobenzene							
1	3.107	3.105	0.002	706218236	50.4	50.4	
2	3.911	3.911	0.000	392465738	50.4	50.4	
1 PCB-1016							
1	6.000	6.004	-0.004	243257430	500.0	518.3	
1	6.774	6.777	-0.003	627048343	500.0	622.6	
1	0.000	6.987	-6.987	0	500.0	0	
1	7.637	7.640	-0.003	345274307	500.0	755.2	
1	8.222	8.224	-0.002	367863998	500.0	1368.3	
2	6.738	6.737	0.001	89331171	500.0	471.8	
2	7.451	7.452	-0.001	182916789	500.0	474.3	
2	8.203	8.201	0.002	414944394	500.0	497.7	
2	8.414	8.416	-0.002	139141689	500.0	381.8	
2	9.153	9.152	0.001	180739109	500.0	695.5	
						RPD = 47.24	
10 PCB-1260							
1	9.467	9.470	-0.003	705696062	500.0	994.8	
1	0.000	9.877	-9.877	0	500.0	0	
1	0.000	10.254	-10.254	0	500.0	0	
1	11.087	11.090	-0.003	901280455	500.0	598.4	
1	11.399	11.402	-0.003	593502579	500.0	962.0	
2	10.934	10.934	0.000	449124895	500.0	785.5	
2	11.189	11.189	0.000	623618777	500.0	849.7	
2	0.000	11.591	-11.591	0	500.0	0	
2	12.266	12.266	0.000	727628441	500.0	655.3	
2	12.629	12.631	-0.002	459747003	500.0	715.2	
						RPD = 12.52	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
$ 4 DCB Decachlorobiphenyl (Surr)							
1	12.534	12.534	0.000	227192167	20.1	20.3	
2	13.768	13.769	-0.001	151255708	20.1	24.2	
						RPD = 17.34	
S 7 Polychlorinated biphenyls, Total							
1						1667.8	
2						1255.6	
						RPD = 28.20	

Reagents:

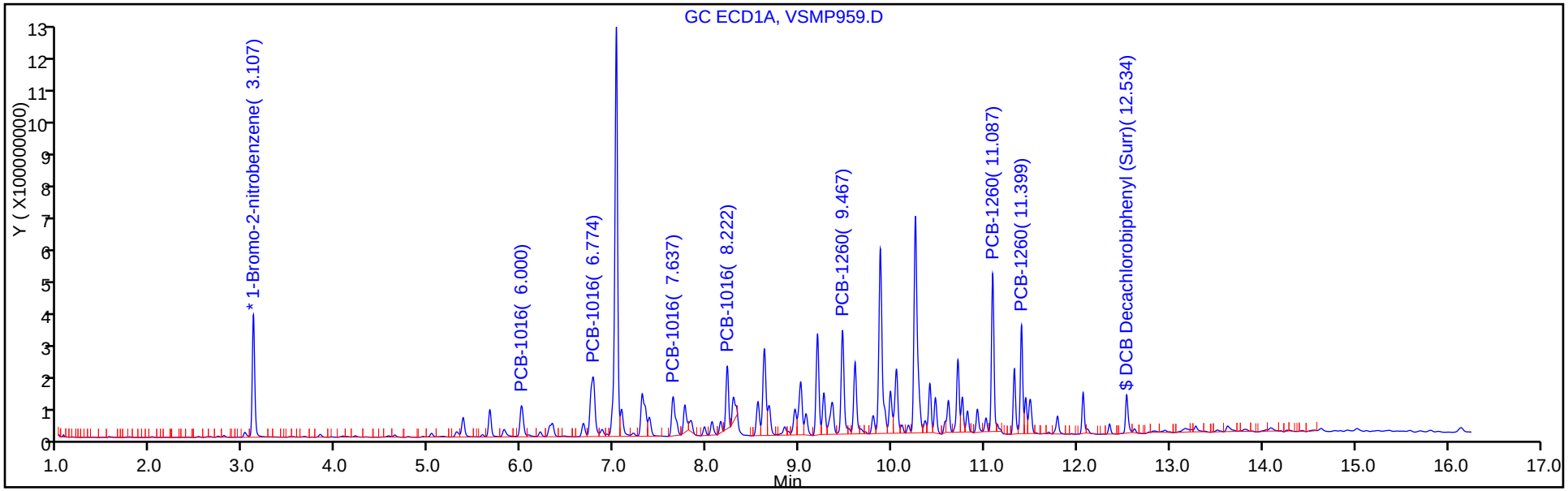
8082_IS_1ppm_00008 Amount Added: 10.00 Units: uL Run Reagent

Report Date: 22-Aug-2016 06:48:01 Chrom Revision: 2.2 20-Apr-2016 13:59:46

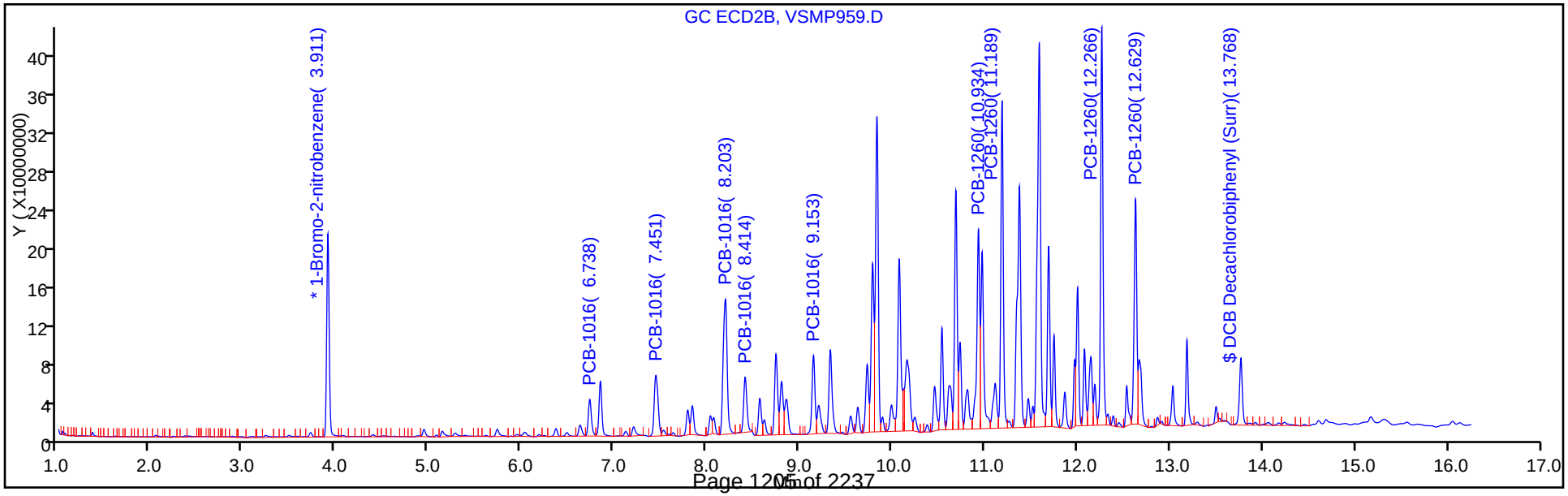
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D				
Injection Date:	19-Aug-2016 15:20:33	Instrument ID:	SGCV	Operator ID:	GLB
Lims ID:	160-18504-E-1-C MSD			Worklist Smp#:	19
Client ID:					
Injection Vol:	2.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	19
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		

Column: RTX-CLP Pesticides (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



Column: RTX-CLP Pesticides2 (0.53 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 1



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D				
Lims ID:	160-18504-E-1-C MSD				
Client ID:					
Sample Type:	MSD				
Inject. Date:	19-Aug-2016 15:20:33	ALS Bottle#:	19	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18504-e-1-c msd				
Misc. Info.:	160-0008246-019				
Operator ID:	GLB	Instrument ID:	SGCV		

Method:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\8082_IS_SGCV.m		
Limit Group:	GC 8082A_ICAL_IS		
Last Update:	22-Aug-2016 06:46:28	Calib Date:	03-Aug-2016 17:51:52
Integrator:	Falcon		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCV\20160803-8076.b\VICL661.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK001	

First Level Reviewer: bonkoskig Date: 22-Aug-2016 06:38:46

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	20.3	101.09

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 4 DCB Decachlorobiphenyl (Surr)	20.1	24.2	120.28

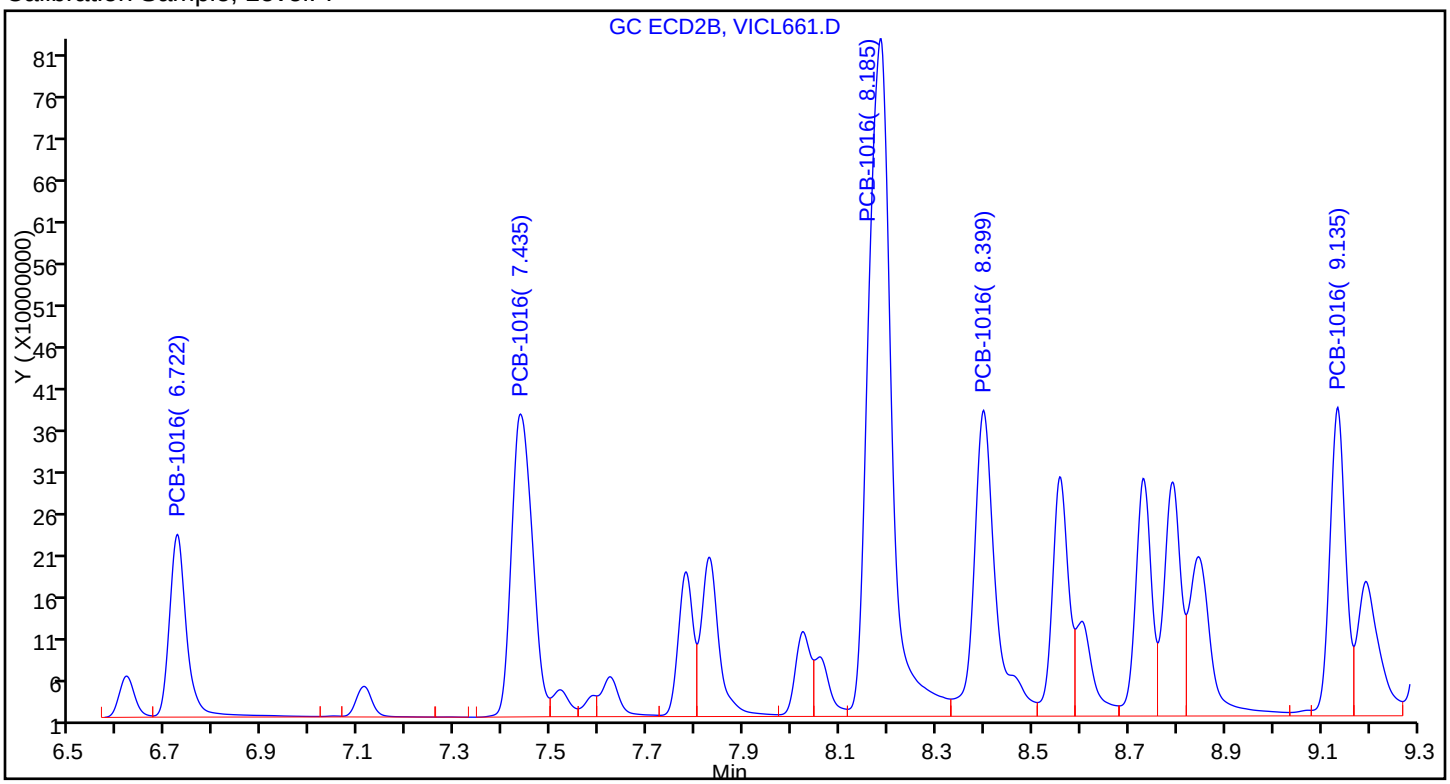
Report Date: 22-Aug-2016 06:48:01 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

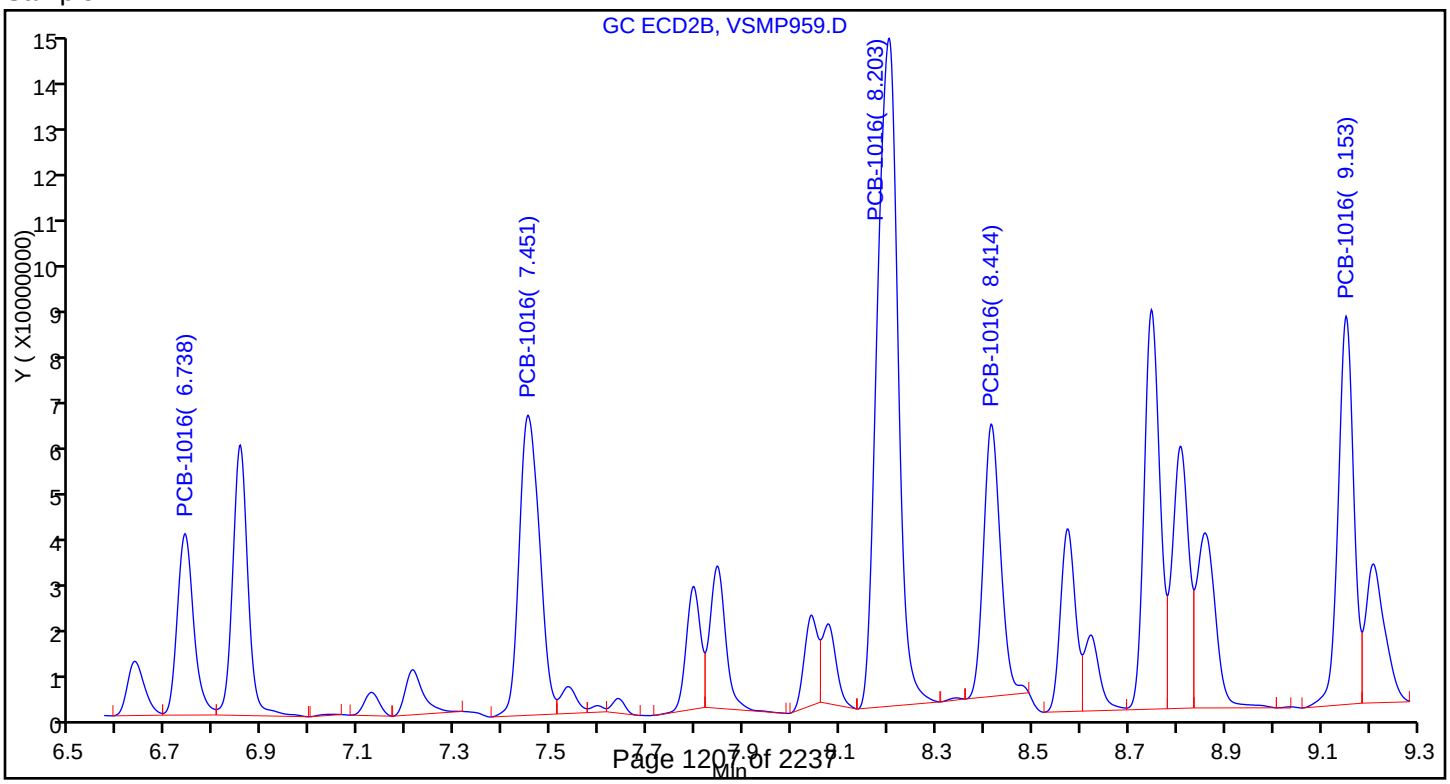
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D				
Injection Date:	19-Aug-2016 15:20:33	Instrument ID:	SGCV		
Lims ID:	160-18504-E-1-C MSD				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	19	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

1 PCB-1016, CAS: 12674-11-2

Calibration Sample, Level: 7



Sample



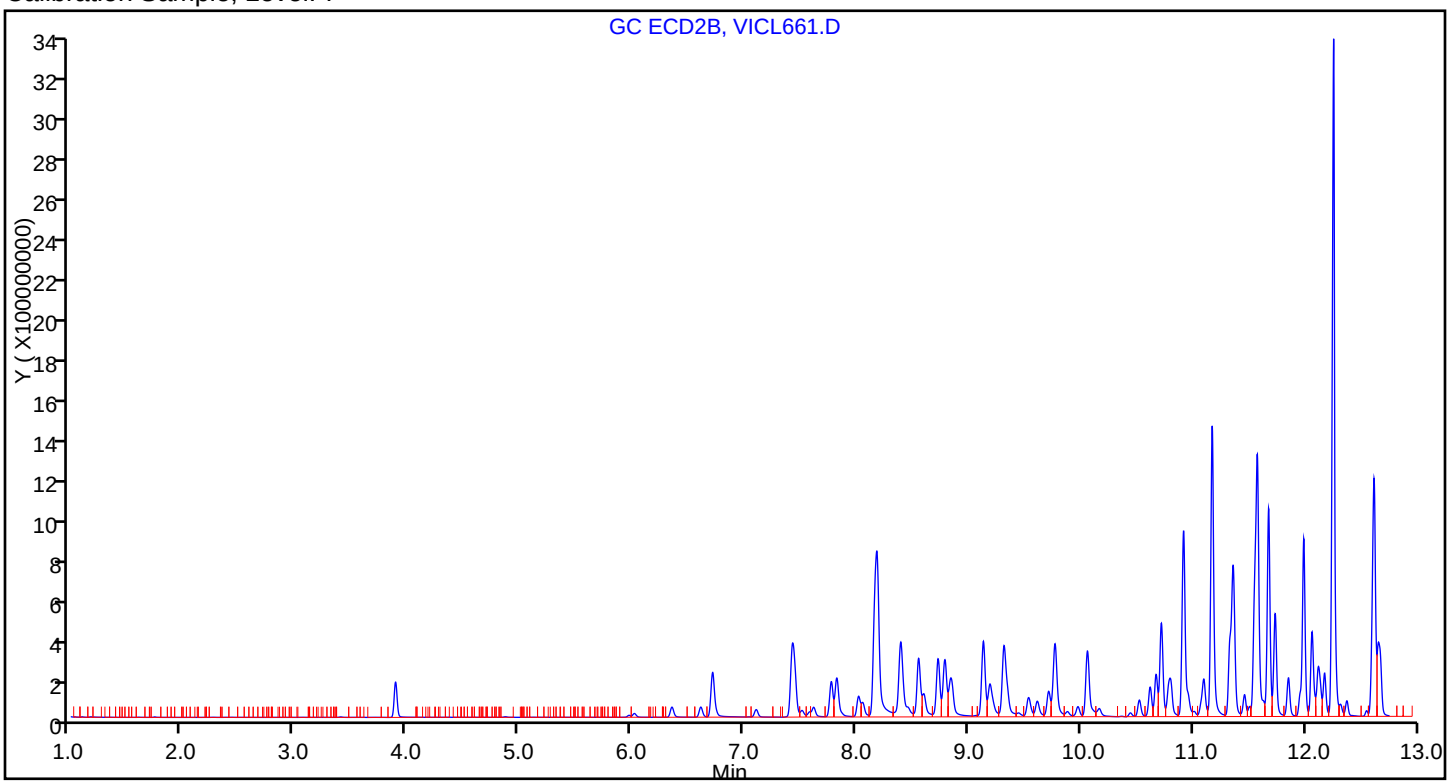
Report Date: 22-Aug-2016 06:48:01 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

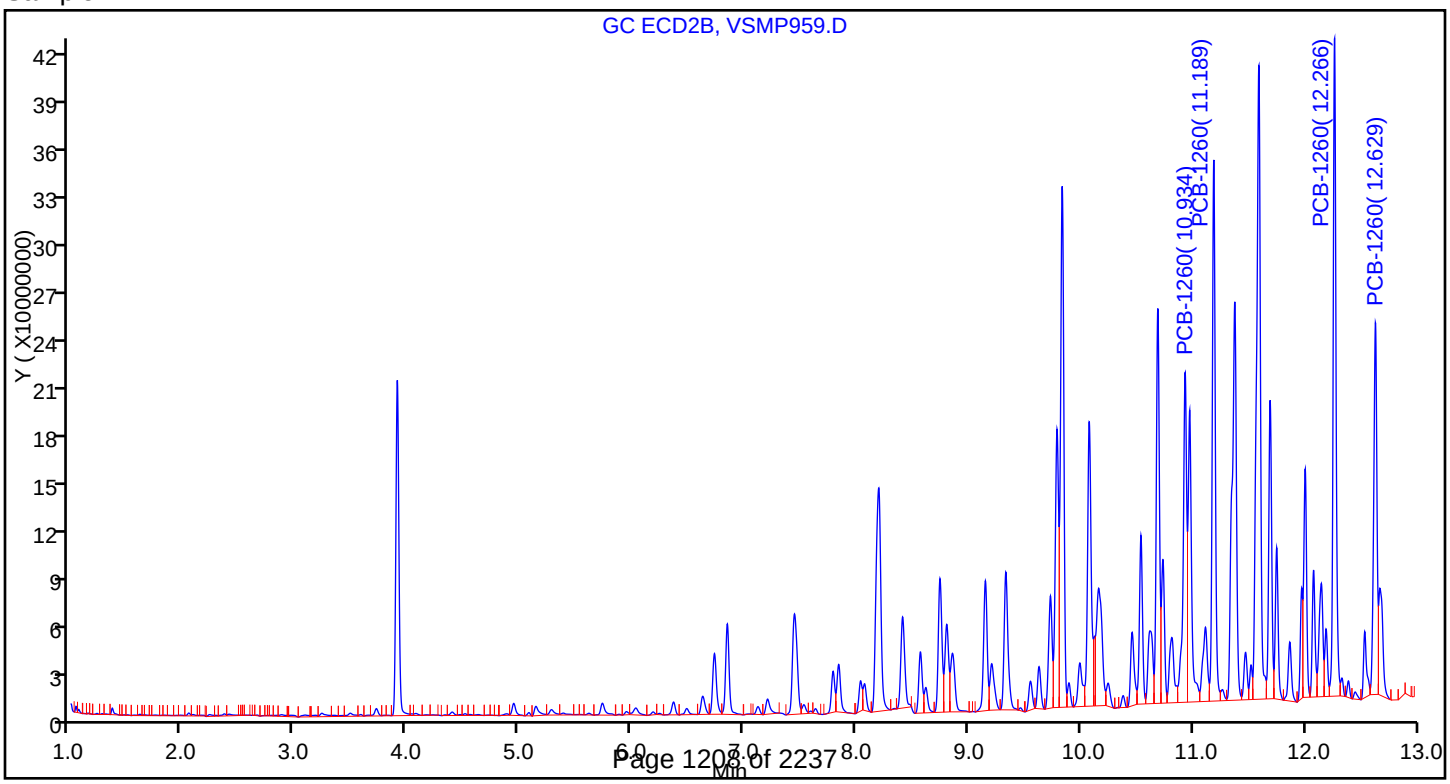
Data File:	\\ChromNA\StLouis\ChromData\SGCV\20160819-8246.b\VSMP959.D				
Injection Date:	19-Aug-2016 15:20:33	Instrument ID:	SGCV		
Lims ID:	160-18504-E-1-C MSD				
Client ID:					
Operator ID:	GLB	ALS Bottle#:	19	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	8082_IS_SGCV	Limit Group:	GC 8082A_ICAL_IS		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

10 PCB-1260, CAS: 11096-82-5

Calibration Sample, Level: 7



Sample



PCBS ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCV Start Date: 08/03/2016 11:06

Analysis Batch Number: 263102 End Date: 08/03/2016 18:14

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		08/03/2016 11:06	1		RTXCLP1 0.53(mm)
ZZZZZ		08/03/2016 11:06	1		RTXCLP2 0.53(mm)
IC 160-263102/4		08/03/2016 11:28	1	VICL644.D	RTXCLP1 0.53(mm)
IC 160-263102/4		08/03/2016 11:28	1	VICL644.D	RTXCLP2 0.53(mm)
IC 160-263102/5		08/03/2016 11:51	1	VICL645.D	RTXCLP1 0.53(mm)
IC 160-263102/5		08/03/2016 11:51	1	VICL645.D	RTXCLP2 0.53(mm)
IC 160-263102/6		08/03/2016 12:13	1	VICL646.D	RTXCLP1 0.53(mm)
IC 160-263102/6		08/03/2016 12:13	1	VICL646.D	RTXCLP2 0.53(mm)
IC 160-263102/7		08/03/2016 12:36	1		RTXCLP1 0.53(mm)
IC 160-263102/7		08/03/2016 12:36	1		RTXCLP2 0.53(mm)
IC 160-263102/8		08/03/2016 12:58	1	VICL648.D	RTXCLP1 0.53(mm)
IC 160-263102/8		08/03/2016 12:58	1	VICL648.D	RTXCLP2 0.53(mm)
IC 160-263102/9		08/03/2016 13:21	1	VICL649.D	RTXCLP1 0.53(mm)
IC 160-263102/9		08/03/2016 13:21	1	VICL649.D	RTXCLP2 0.53(mm)
IC 160-263102/10		08/03/2016 13:44	1	VICL650.D	RTXCLP1 0.53(mm)
IC 160-263102/10		08/03/2016 13:44	1	VICL650.D	RTXCLP2 0.53(mm)
IC 160-263102/11		08/03/2016 14:06	1	VICL651.D	RTXCLP1 0.53(mm)
IC 160-263102/11		08/03/2016 14:06	1	VICL651.D	RTXCLP2 0.53(mm)
IC 160-263102/12		08/03/2016 14:29	1	VICL652.D	RTXCLP1 0.53(mm)
IC 160-263102/12		08/03/2016 14:29	1	VICL652.D	RTXCLP2 0.53(mm)
IC 160-263102/13		08/03/2016 14:51	1	VICL653.D	RTXCLP1 0.53(mm)
IC 160-263102/13		08/03/2016 14:51	1	VICL653.D	RTXCLP2 0.53(mm)
ICV 160-263102/14		08/03/2016 15:14	1	VICL654.D	RTXCLP1 0.53(mm)
ICV 160-263102/14		08/03/2016 15:14	1	VICL654.D	RTXCLP2 0.53(mm)
IC 160-263102/15		08/03/2016 15:36	1		RTXCLP1 0.53(mm)
IC 160-263102/15		08/03/2016 15:36	1		RTXCLP2 0.53(mm)
IC 160-263102/16		08/03/2016 15:59	1	VICL656.D	RTXCLP1 0.53(mm)
IC 160-263102/16		08/03/2016 15:59	1	VICL656.D	RTXCLP2 0.53(mm)
IC 160-263102/17		08/03/2016 16:21	1	VICL657.D	RTXCLP1 0.53(mm)
IC 160-263102/17		08/03/2016 16:21	1	VICL657.D	RTXCLP2 0.53(mm)
IC 160-263102/18		08/03/2016 16:44	1	VICL658.D	RTXCLP1 0.53(mm)
IC 160-263102/18		08/03/2016 16:44	1	VICL658.D	RTXCLP2 0.53(mm)
ICIS 160-263102/19		08/03/2016 17:06	1	VICL659.D	RTXCLP1 0.53(mm)
ICIS 160-263102/19		08/03/2016 17:06	1	VICL659.D	RTXCLP2 0.53(mm)
IC 160-263102/20		08/03/2016 17:29	1	VICL660.D	RTXCLP1 0.53(mm)
IC 160-263102/20		08/03/2016 17:29	1	VICL660.D	RTXCLP2 0.53(mm)
IC 160-263102/21		08/03/2016 17:51	1	VICL661.D	RTXCLP1 0.53(mm)
IC 160-263102/21		08/03/2016 17:51	1	VICL661.D	RTXCLP2 0.53(mm)
ICV 160-263102/22		08/03/2016 18:14	1	VICL662.D	RTXCLP1 0.53(mm)
ICV 160-263102/22		08/03/2016 18:14	1	VICL662.D	RTXCLP2 0.53(mm)

8082A

PCBS ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCV Start Date: 08/17/2016 10:21

Analysis Batch Number: 265137 End Date: 08/17/2016 19:53

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVIS 160-265137/3		08/17/2016 10:21	1	VCCV903.D	RTXCLP1 0.53(mm)
CCVIS 160-265137/3		08/17/2016 10:21	1	VCCV903.D	RTXCLP2 0.53(mm)
CCV 160-265137/4		08/17/2016 10:43	1	VCCV904.D	RTXCLP1 0.53(mm)
CCV 160-265137/4		08/17/2016 10:43	1	VCCV904.D	RTXCLP2 0.53(mm)
MB 160-264775/1-A		08/17/2016 11:06	1	VBLK905.D	RTXCLP1 0.53(mm)
MB 160-264775/1-A		08/17/2016 11:06	1	VBLK905.D	RTXCLP2 0.53(mm)
LCS 160-264775/2-A		08/17/2016 11:28	1	VLCS906.D	RTXCLP1 0.53(mm)
LCS 160-264775/2-A		08/17/2016 11:28	1	VLCS906.D	RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 12:00	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 12:00	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 12:23	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 12:23	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 12:45	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 12:45	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 13:08	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 13:08	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 13:30	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 13:30	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 13:53	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 13:53	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 14:15	10		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 14:15	10		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 14:38	10		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 14:38	10		RTXCLP2 0.53(mm)
CCV 160-265137/15		08/17/2016 15:00	1	VCCV915.D	RTXCLP1 0.53(mm)
CCV 160-265137/15		08/17/2016 15:00	1	VCCV915.D	RTXCLP2 0.53(mm)
CCV 160-265137/16		08/17/2016 15:23	1	VCCV916.D	RTXCLP1 0.53(mm)
CCV 160-265137/16		08/17/2016 15:23	1	VCCV916.D	RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 15:45	10		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 15:45	10		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 16:08	10		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 16:08	10		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 16:30	10		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 16:30	10		RTXCLP2 0.53(mm)
CCV 160-265137/27		08/17/2016 19:30	1		RTXCLP1 0.53(mm)
CCV 160-265137/27		08/17/2016 19:30	1		RTXCLP2 0.53(mm)
CCV 160-265137/28		08/17/2016 19:53	1		RTXCLP1 0.53(mm)
CCV 160-265137/28		08/17/2016 19:53	1		RTXCLP2 0.53(mm)

8082A

PCBS ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCV Start Date: 08/19/2016 09:20

Analysis Batch Number: 265549 End Date: 08/19/2016 17:13

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVIS 160-265549/3		08/19/2016 09:20	1	VCCV943.D	RTXCLP1 0.53(mm)
CCVIS 160-265549/3		08/19/2016 09:20	1	VCCV943.D	RTXCLP2 0.53(mm)
CCV 160-265549/4		08/19/2016 09:43	1	VCCV944.D	RTXCLP1 0.53(mm)
CCV 160-265549/4		08/19/2016 09:43	1	VCCV944.D	RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 10:05	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 10:05	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 10:28	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 10:28	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 10:50	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 10:50	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 11:13	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 11:13	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 11:35	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 11:35	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 11:58	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 11:58	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 12:20	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 12:20	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 12:43	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 12:43	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 13:05	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 13:05	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 13:28	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 13:28	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 13:50	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 13:50	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 14:13	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 14:13	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 14:35	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 14:35	1		RTXCLP2 0.53(mm)
160-18504-E-1-B MS		08/19/2016 14:58	1	VSMP958.D	RTXCLP1 0.53(mm)
160-18504-E-1-B MS		08/19/2016 14:58	1	VSMP958.D	RTXCLP2 0.53(mm)
160-18504-E-1-C MSD		08/19/2016 15:20	1	VSMP959.D	RTXCLP1 0.53(mm)
160-18504-E-1-C MSD		08/19/2016 15:20	1	VSMP959.D	RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 15:43	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 15:43	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 16:05	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 16:05	1		RTXCLP2 0.53(mm)
ZZZZZ		08/19/2016 16:28	1		RTXCLP1 0.53(mm)
ZZZZZ		08/19/2016 16:28	1		RTXCLP2 0.53(mm)
160-18521-1		08/19/2016 16:50	1	VSMP963.D	RTXCLP1 0.53(mm)
160-18521-1		08/19/2016 16:50	1	VSMP963.D	RTXCLP2 0.53(mm)
160-18521-2		08/19/2016 17:13	1	VSMP964.D	RTXCLP1 0.53(mm)
160-18521-2		08/19/2016 17:13	1	VSMP964.D	RTXCLP2 0.53(mm)

8082A

PCBS BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264775 Batch Start Date: 08/15/16 11:07 Batch Analyst: Agu, Kelli K

Batch Method: 3550C Batch End Date: 08/15/16 12:05

Lab Sample ID	Client Sample ID	Method Chain	Basis	CalcMsg	InitialAmount	FinalAmount	SonicatorID	PCB Surr 00011	PCB_Spike 00018
MB 160-264775/1		3550C, 8082A		CALC NOT SET TO RUN	30 g	10 mL	1	500 uL	
LCS 160-264775/2		3550C, 8082A		CALC NOT SET TO RUN	30 g	10 mL	2	500 uL	500 uL
160-18504-E-1 MS		3550C, 8082A	T	CALC NOT SET TO RUN	30.02 g	10 mL	1	500 uL	500 uL
160-18504-E-1 MSD		3550C, 8082A	T	CALC NOT SET TO RUN	30.04 g	10 mL	2	500 uL	500 uL
160-18521-E-1	YMTFA74SE001	3550C, 8082A	T	CALC NOT SET TO RUN	30.06 g	10 mL	8	500 uL	
160-18521-B-2	YMTFA75SE001	3550C, 8082A	T	CALC NOT SET TO RUN	30.05 g	10 mL	9	500 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

PCBS BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264775 Batch Start Date: 08/15/16 11:07 Batch Analyst: Agu, Kelli K

Batch Method: 3550C Batch End Date: 08/15/16 12:05

Batch Notes	
Acid used for Clean Up ID	sulfuric 943635
Balance ID	27250189
Concentration End Time	8:00 8/16/16
Concentration Start Time	7:00 8/16/16
Analyst ID - Concentration	kelsie richerson
Analyst ID - Clean Up	kelsie richerson
Exchange Solvent ID	954031
Exchange Solvent Name	hexane
N-evap ID	40656
N-evap Temperature	35 Degrees C
Na2SO4 ID	935520
Nominal Amount Used	30 g
Prep Solvent ID	947129;969408
Prep Solvent Name	methylene chloride/acetone;methylene chloride
Prep Solvent Volume Used	300 mL
Person's name who did the prep	kelli agu
Analyst ID - Reagent Drop Witness	kelli agu
Analyst ID - Reagent Drop	kelli agu
Vendor of Reagent used	j.t. baker
Water Bath ID	2,4
Water Bath Temperature	95 Degrees C

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Method 8151A

Herbicides (GC) by Method 8151A

FORM II
HERBICIDES SURROGATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid (TCLP) Level: Low

GC Column (2): RTXCLP2 ID: 0.53(mm)

Client Sample ID	Lab Sample ID	DCPAA2 #
YMTFA74SE001	160-18521-1	80
YMTFA75SE001	160-18521-2	104
	LB 160-264502/1-C	78
	LCS 160-264676/2-A	115
	160-18504-C-1-E MS	94
	160-18504-C-1-F MSD	107

	QC LIMITS
DCPAA = 2,4-Dichlorophenylacetic acid	56-147

Column to be used to flag recovery values

FORM II 8151A

FORM III
HERBICIDES LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Water Level: Low Lab File ID: MLCS1798.D

Lab ID: LCS 160-264676/2-A Client ID:

COMPOUND	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC	QC LIMITS REC	#
2,4-D	0.200	0.237	119	46-140	
Silvex (2,4,5-TP)	0.0500	0.0641	128	42-140	

Column to be used to flag recovery and RPD values

FORM III 8151A

FORM III
HERBICIDES MATRIX SPIKE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid (TCLP) Level: Low Lab File ID: MSMP1800.D

Lab ID: 160-18504-C-1-E MS Client ID:

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC	QC LIMITS REC	#
2,4-D	0.200	0.020 U	0.171	86	52-150	
Silvex (2,4,5-TP)	0.0500	0.0030 U	0.0459	92	45-150	

Column to be used to flag recovery and RPD values

FORM III 8151A

FORM III
HERBICIDES MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid (TCLP) Level: Low Lab File ID: MSMP1801.D

Lab ID: 160-18504-C-1-F MSD Client ID:

COMPOUND	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
2,4-D	0.200	0.188	94	9	20	52-150	
Silvex (2,4,5-TP)	0.0500	0.0514	103	11	20	45-150	

Column to be used to flag recovery and RPD values

FORM III 8151A

FORM VIII
HERBICIDES ANALYTICAL SEQUENCE

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: ICRT 160-264929/7 Date Analyzed: 08/16/2016 12:27

Instrument ID: SGCM GC Column: RTXCLP1 ID: 0.53(mm)

Lab File ID (Standard): MICL1731.D Heated Purge: (Y/N) N

Calibration ID: 11326

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs AND LCSs IS GIVEN BELOW:

				DCPAA		
				RT #		
INITIAL CALIBRATION SURROGATE				10.99		
UPPER LIMIT				11.02		
LOWER LIMIT				10.96		
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	LAB FILE ID			
ICRT 160-264929/7		08/16/2016 12:27	MICL1731.D	10.99		
ICV 160-264929/10		08/16/2016 14:06	MICV1734.D	11.00		
CCV 160-265408/3		08/18/2016 14:07	MCCV1796.D	11.00		
CCV 160-265408/15		08/18/2016 19:55	MCCV1807.D	10.99		
CCV 160-265408/20		08/18/2016 22:20	MCCV1812.D	10.99		

DCPAA = 2,4-Dichlorophenylacetic acid

DCPAA RT Limit = ± 0.03 minutes of surrogate RT

Column used to flag values outside QC limits

FORM VIII 8151A

FORM VIII
HERBICIDES ANALYTICAL SEQUENCE

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Sample No.: ICRT 160-264929/7 Date Analyzed: 08/16/2016 12:27

Instrument ID: SGCM GC Column: RTXCLP2 ID: 0.53(mm)

Lab File ID (Standard): MICL1731.D Heated Purge: (Y/N) N

Calibration ID: 11327

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs AND LCSs IS GIVEN BELOW:

				DCPAA		
				RT #		
INITIAL CALIBRATION SURROGATE				12.18		
UPPER LIMIT				12.21		
LOWER LIMIT				12.15		
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	LAB FILE ID			
ICRT 160-264929/7		08/16/2016 12:27	MICL1731.D	12.18		
ICV 160-264929/10		08/16/2016 14:06	MICV1734.D	12.18		
CCV 160-265408/3		08/18/2016 14:07	MCCV1796.D	12.18		
LB 160-264502/1-C		08/18/2016 14:40	MBLK1797.D	12.18		
LCS 160-264676/2-A		08/18/2016 15:14	MLCS1798.D	12.18		
160-18504-C-1-E MS		08/18/2016 16:20	MSMP1800.D	12.18		
160-18504-C-1-F MSD		08/18/2016 16:53	MSMP1801.D	12.18		
CCV 160-265408/15		08/18/2016 19:55	MCCV1807.D	12.18		
160-18521-1	YMTFA74SE001	08/18/2016 21:22	MSMP1810.D	12.18		
160-18521-2	YMTFA75SE001	08/18/2016 21:52	MSMP1811.D	12.18		
CCV 160-265408/20		08/18/2016 22:20	MCCV1812.D	12.18		

DCPAA = 2,4-Dichlorophenylacetic acid

DCPAA RT Limit = ± 0.03 minutes of surrogate RT

Column used to flag values outside QC limits

FORM VIII 8151A

FORM X
IDENTIFICATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: Lab Sample ID: LCS 160-264676/2-A

Instrument ID (1): SGCM Instrument ID (2): SGCM

Date Analyzed (1): 08/18/2016 15:14 Date Analyzed (2): 08/18/2016 15:14

GC Column (1): RTXCLP1 ID: 0.53(mm) GC Column (2): RTXCLP2 ID: 0.53(mm)

ANALYTE	COL	PEAK	RT	RT WINDOW		CONCENTRATION		RPD
				FROM	TO	PEAK	MEAN	
2,4-D	1		13.23	13.22	13.28	0.276		15.2
	2		14.49	14.47	14.53	0.237		
Silvex (2,4,5-TP)	1		14.68	14.67	14.73	0.0686		6.8
	2		15.88	15.86	15.92	0.0641		

FORM X 8151A

FORM X
IDENTIFICATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: Lab Sample ID: 160-18504-C-1-E MS

Instrument ID (1): SGCM Instrument ID (2): SGCM

Date Analyzed (1): 08/18/2016 16:20 Date Analyzed (2): 08/18/2016 16:20

GC Column (1): RTXCLP1 ID: 0.53(mm) GC Column (2): RTXCLP2 ID: 0.53(mm)

ANALYTE	COL	PEAK	RT	RT WINDOW		CONCENTRATION		RPD
				FROM	TO	PEAK	MEAN	
2,4-D	1		13.23	13.22	13.28	0.184		7.2
	2		14.49	14.47	14.53	0.171		
Silvex (2,4,5-TP)	1		14.68	14.67	14.73	0.0507		9.8
	2		15.88	15.86	15.92	0.0459		

FORM X 8151A

FORM X
IDENTIFICATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Client Sample ID: Lab Sample ID: 160-18504-C-1-F MSD

Instrument ID (1): SGCM Instrument ID (2): SGCM

Date Analyzed (1): 08/18/2016 16:53 Date Analyzed (2): 08/18/2016 16:53

GC Column (1): RTXCLP1 ID: 0.53(mm) GC Column (2): RTXCLP2 ID: 0.53(mm)

ANALYTE	COL	PEAK	RT	RT WINDOW		CONCENTRATION		RPD
				FROM	TO	PEAK	MEAN	
2,4-D	1		13.23	13.22	13.28	0.211		11.2
	2		14.49	14.47	14.53	0.188		
Silvex (2,4,5-TP)	1		14.68	14.67	14.73	0.0537		4.4
	2		15.88	15.86	15.92	0.0514		

FORM X 8151A

FORM I
HERBICIDES ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID: YMTFA74SE001
Lab Sample ID: 160-18521-1
Matrix: Solid (TCLP)
Lab File ID: MSMP1810.D
Analysis Method: 8151A
Date Collected: 08/05/2016 07:50
Extraction Method: 8151A
Date Extracted: 08/12/2016 16:02
Sample wt/vol: 100(mL)
Date Analyzed: 08/18/2016 21:22
Con. Extract Vol.: 200(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265408
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
94-75-7	2,4-D	0.020	U	0.040	0.020
93-72-1	Silvex (2,4,5-TP)	0.0030	U	0.010	0.0030

CAS NO.	SURROGATE	%REC	Q	LIMITS
19719-28-9	2,4-Dichlorophenylacetic acid	80		56-147

TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1810.D				
Lims ID:	160-18521-B-1-D				
Client ID:	YMTFA74SE001				
Sample Type:	Client				
Inject. Date:	18-Aug-2016 21:22:54	ALS Bottle#:	17	Worklist Smp#:	18
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18521-B-1-D				
Misc. Info.:	160-0008237-018				
Operator ID:	DEK	Instrument ID:	SGCM		

Method:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m		
Limit Group:	GC 8151 DOD ICAL		
Last Update:	19-Aug-2016 09:19:36	Calib Date:	16-Aug-2016 13:33:13
Integrator:	Falcon		
Quant Method:	External Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK010	

First Level Reviewer: konopkad Date: 19-Aug-2016 09:18:01

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ng/ml	Flags
$ 11 2,4-Dichlorophenylacetic acid						M
1	10.986	11.017	-0.031	6016607	50.6	M
2	12.178	12.196	-0.018	10787473	39.8	a
					RPD = 23.84	

QC Flag Legend

Review Flags

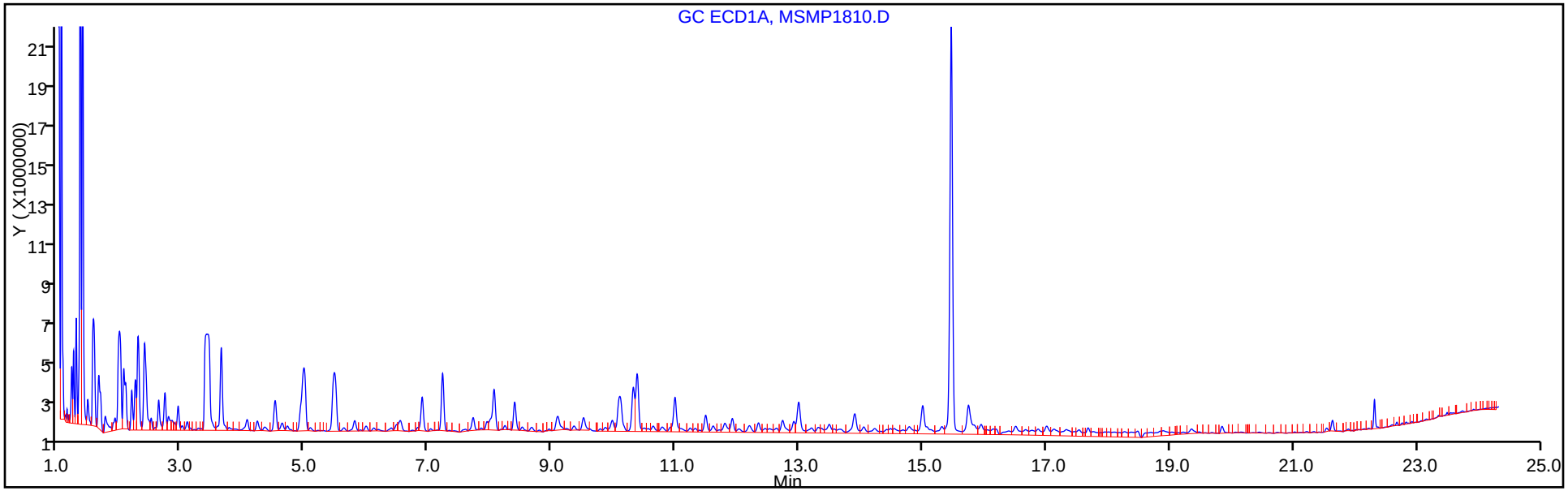
M - Manually Integrated

Report Date: 19-Aug-2016 09:19:48 Chrom Revision: 2.2 20-Apr-2016 13:59:46

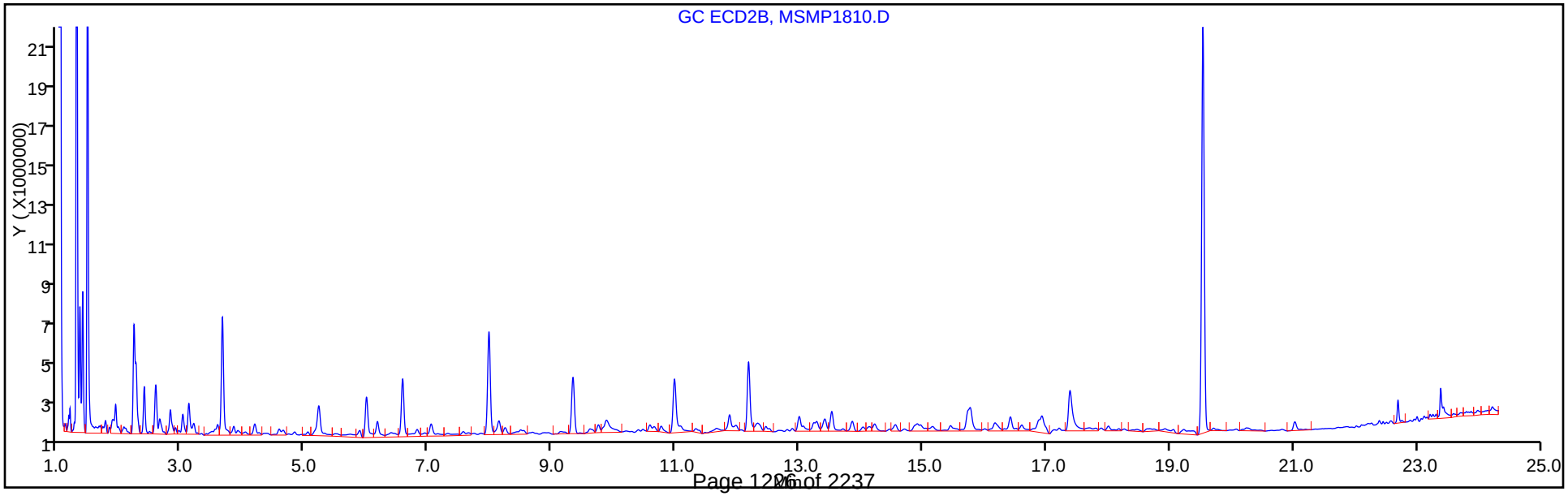
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1810.D				
Injection Date:	18-Aug-2016 21:22:54	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	160-18521-B-1-D	Lab Sample ID:	160-18521-1	Worklist Smp#:	18
Client ID:	YMTFA74SE001				
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	17
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1810.D				
Lims ID:	160-18521-B-1-D				
Client ID:	YMTFA74SE001				
Sample Type:	Client				
Inject. Date:	18-Aug-2016 21:22:54	ALS Bottle#:	17	Worklist Smp#:	18
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18521-B-1-D				
Misc. Info.:	160-0008237-018				
Operator ID:	DEK	Instrument ID:	SGCM		
Method:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m				
Limit Group:	GC 8151 DOD ICAL				
Last Update:	19-Aug-2016 09:19:36	Calib Date:	16-Aug-2016 13:33:13		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK010				
First Level Reviewer: konopkad		Date:	19-Aug-2016 09:18:01		

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	50.6	101.24

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	39.8	79.68

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

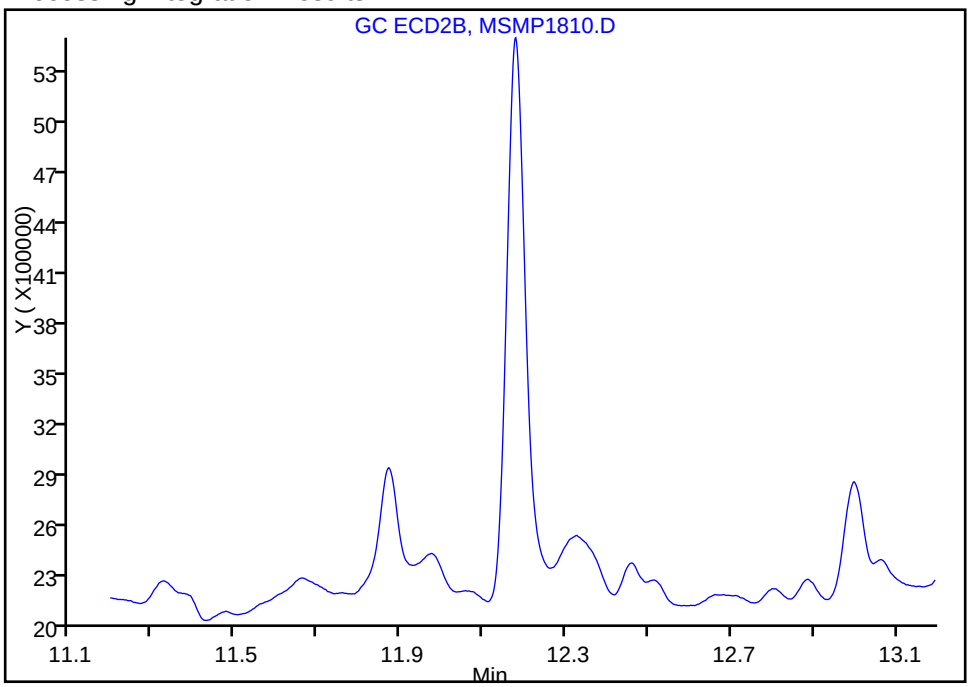
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1810.D				
Injection Date:	18-Aug-2016 21:22:54	Instrument ID:	SGCM		
Lims ID:	160-18521-B-1-D	Lab Sample ID:	160-18521-1		
Client ID:	YMTFA74SE001				
Operator ID:	DEK	ALS Bottle#:	17	Worklist Smp#:	18
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

$ 11 2,4-Dichlorophenylacetic acid, CAS: 19719-28-9

Signal: 2

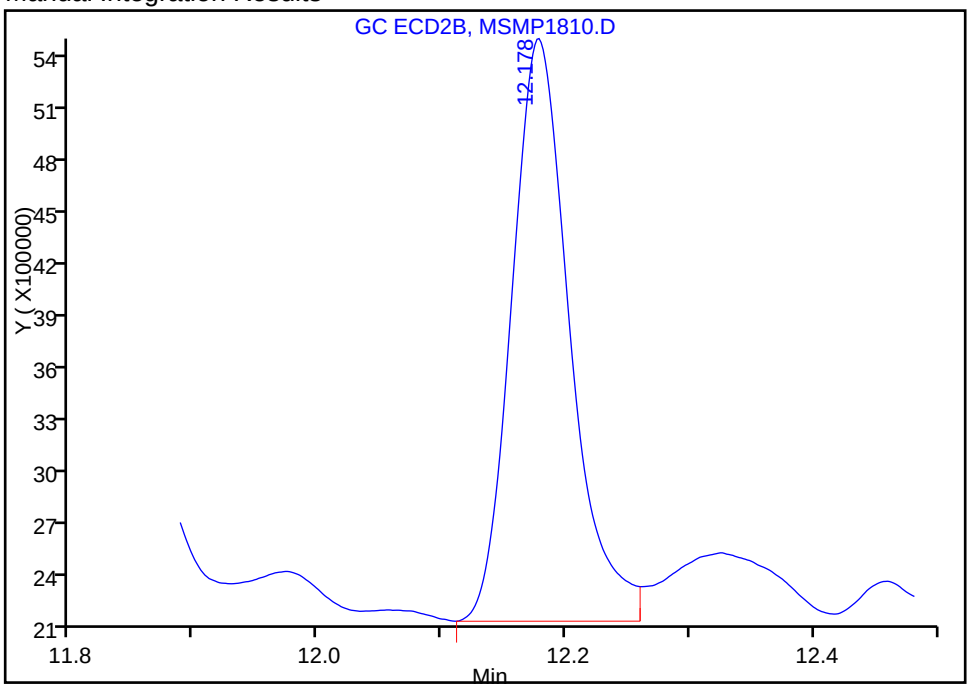
Processing Integration Results

Not Detected
Expected RT: 12.20



Manual Integration Results

RT: 12.18
Area: 10787473
Amount: 39.837932
Amount Units: ng/ml



Reviewer: konopkad, 19-Aug-2016 09:18:01
Audit Action: Assigned Compound ID Audit Reason: Split Peak

FORM I
HERBICIDES ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID: YMTFA75SE001
Lab Sample ID: 160-18521-2
Matrix: Solid (TCLP)
Lab File ID: MSMP1811.D
Analysis Method: 8151A
Date Collected: 08/05/2016 09:25
Extraction Method: 8151A
Date Extracted: 08/12/2016 16:02
Sample wt/vol: 100(mL)
Date Analyzed: 08/18/2016 21:52
Con. Extract Vol.: 200(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265408
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
94-75-7	2,4-D	0.020	U	0.040	0.020
93-72-1	Silvex (2,4,5-TP)	0.0030	U	0.010	0.0030

CAS NO.	SURROGATE	%REC	Q	LIMITS
19719-28-9	2,4-Dichlorophenylacetic acid	104		56-147

TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1811.D				
Lims ID:	160-18521-D-2-D				
Client ID:	YMTFA75SE001				
Sample Type:	Client				
Inject. Date:	18-Aug-2016 21:52:01	ALS Bottle#:	18	Worklist Smp#:	19
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18521-D-2-D				
Misc. Info.:	160-0008237-019				
Operator ID:	DEK	Instrument ID:	SGCM		

Method:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m		
Limit Group:	GC 8151 DOD ICAL		
Last Update:	19-Aug-2016 09:19:36	Calib Date:	16-Aug-2016 13:33:13
Integrator:	Falcon		
Quant Method:	External Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK010	

First Level Reviewer: konopkad Date: 19-Aug-2016 09:18:29

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ng/ml	Flags
$ 11 2,4-Dichlorophenylacetic acid						M
1	10.988	11.017	-0.029	8146416	68.5	M
2	12.179	12.196	-0.017	14072016	52.0	M
					RPD = 27.51	

QC Flag Legend

Review Flags

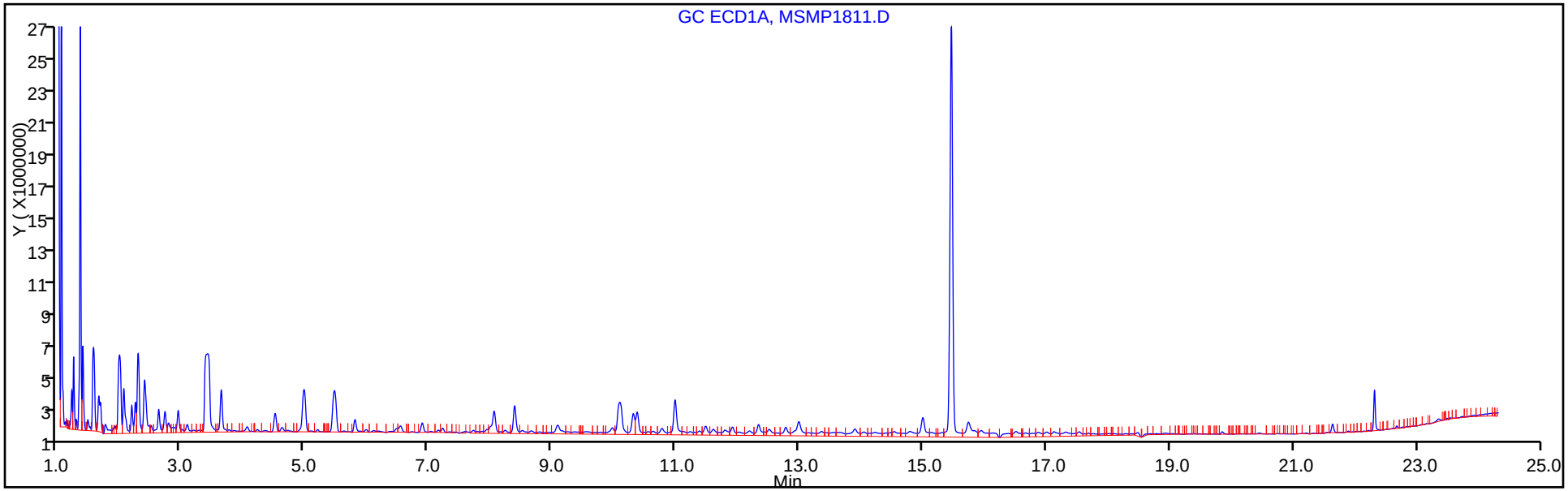
M - Manually Integrated

Report Date: 19-Aug-2016 09:19:50 Chrom Revision: 2.2 20-Apr-2016 13:59:46

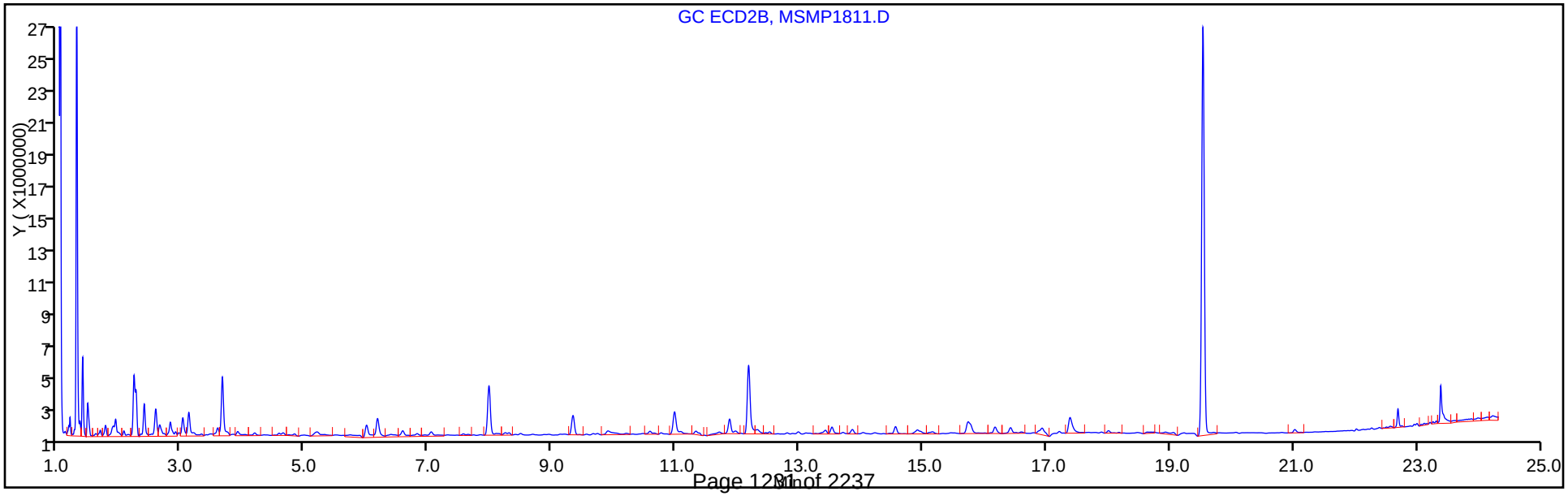
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1811.D				
Injection Date:	18-Aug-2016 21:52:01	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	160-18521-D-2-D	Lab Sample ID:	160-18521-2	Worklist Smp#:	19
Client ID:	YMTFA75SE001				
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	18
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1811.D				
Lims ID:	160-18521-D-2-D				
Client ID:	YMTFA75SE001				
Sample Type:	Client				
Inject. Date:	18-Aug-2016 21:52:01	ALS Bottle#:	18	Worklist Smp#:	19
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18521-D-2-D				
Misc. Info.:	160-0008237-019				
Operator ID:	DEK	Instrument ID:	SGCM		
Method:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m				
Limit Group:	GC 8151 DOD ICAL				
Last Update:	19-Aug-2016 09:19:36	Calib Date:	16-Aug-2016 13:33:13		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK010				
First Level Reviewer: konopkad		Date:	19-Aug-2016 09:18:29		

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	68.5	137.08

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	52.0	103.94

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

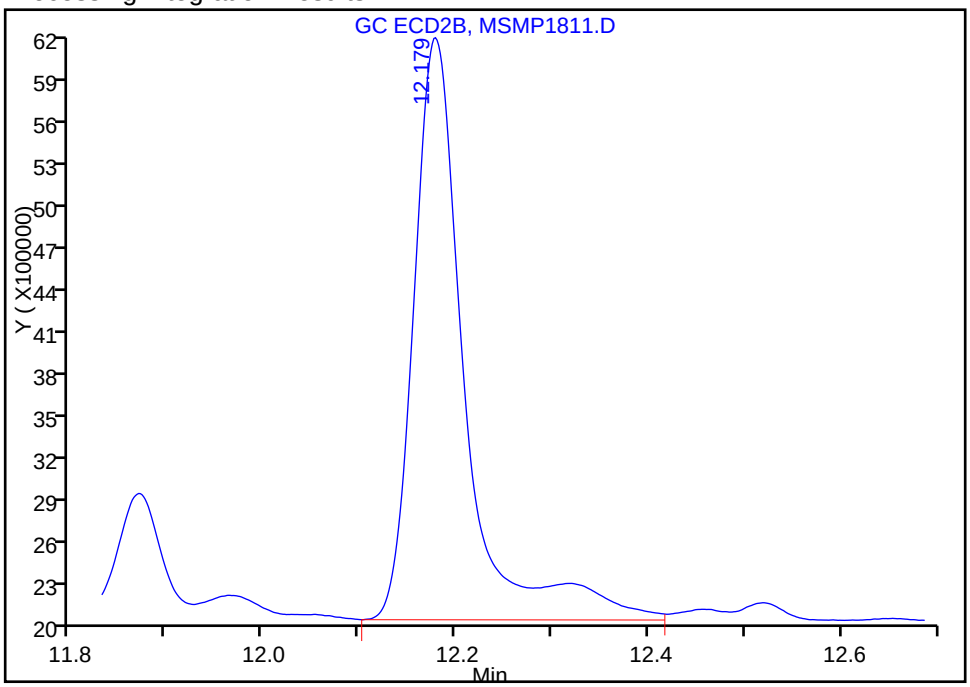
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1811.D				
Injection Date:	18-Aug-2016 21:52:01	Instrument ID:	SGCM		
Lims ID:	160-18521-D-2-D	Lab Sample ID:	160-18521-2		
Client ID:	YMTFA75SE001				
Operator ID:	DEK	ALS Bottle#:	18	Worklist Smp#:	19
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

$ 11 2,4-Dichlorophenylacetic acid, CAS: 19719-28-9

Signal: 2

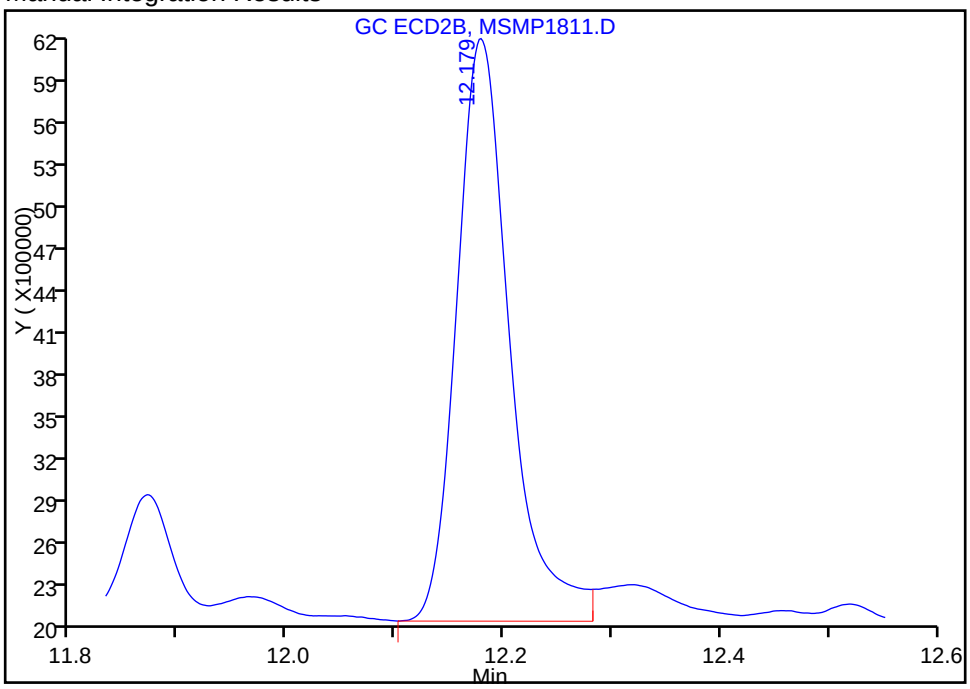
Processing Integration Results

RT: 12.18
Area: 15397372
Amount: 56.862200
Amount Units: ng/ml



Manual Integration Results

RT: 12.18
Area: 14072016
Amount: 51.967686
Amount Units: ng/ml



Reviewer: konopkad, 19-Aug-2016 09:18:29

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM VI
HERBICIDES BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264929

SDG No.: Headworks/9720-8

Instrument ID: SGCM GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/16/2016 10:17 Calibration End Date: 08/16/2016 13:33 Calibration ID: 11326

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-264929/3	MICL1727.D
Level 2	IC 160-264929/4	MICL1728.D
Level 3	IC 160-264929/5	MICL1729.D
Level 4	IC 160-264929/6	MICL1730.D
Level 5	ICRT 160-264929/7	MICL1731.D
Level 6	IC 160-264929/8	MICL1732.D
Level 7	IC 160-264929/9	MICL1733.D

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Dalapon	1.683	1.683	1.683	1.683	1.678	1.682	1.684				1.648 - 1.708	1.682
Dicamba	11.297	11.297	11.296	11.295	11.288	11.293	11.292				11.258 - 11.318	11.294
MCPA		11.830	11.828	11.828	11.819	11.823	11.824				11.789 - 11.849	11.825
MCPP		12.128	12.128	12.127	12.119	12.122	12.120				12.089 - 12.149	12.124
Dichlorprop	12.808	12.807	12.805	12.803	12.796	12.802	12.799				12.766 - 12.826	12.803
2,4-D	13.240	13.237	13.235	13.233	13.226	13.228	13.227				13.196 - 13.256	13.232
Pentachlorophenol	13.368	13.367	13.368	13.367	13.359	13.363	13.364				13.329 - 13.389	13.365
Silvex (2,4,5-TP)	14.685	14.682	14.686	14.683	14.676	14.680	14.679				14.646 - 14.706	14.682
2,4,5-T	15.160	15.160	15.160	15.157	15.149	15.152	15.150				15.119 - 15.179	15.155
2,4-DB	16.058	16.062	16.058	16.055	16.049	16.052	16.049				16.019 - 16.079	16.055
Dinoseb	17.633	17.633	17.633	17.632	17.628	17.632	17.629				17.598 - 17.658	17.631
2,4-Dichlorophenylacetic acid	11.000	11.000	11.000	10.998	10.989	10.993	10.992				10.959 - 11.019	10.996

FORM VI
HERBICIDES BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264929

SDG No.: Headworks/9720-8

Instrument ID: SGCM GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/16/2016 10:17 Calibration End Date: 08/16/2016 13:33 Calibration ID: 11326

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-264929/3	MICL1727.D
Level 2	IC 160-264929/4	MICL1728.D
Level 3	IC 160-264929/5	MICL1729.D
Level 4	IC 160-264929/6	MICL1730.D
Level 5	ICRT 160-264929/7	MICL1731.D
Level 6	IC 160-264929/8	MICL1732.D
Level 7	IC 160-264929/9	MICL1733.D

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
Dalapon	267396 221700	261891 215721	245736 204853	255091	Ave		238912.632				10.3		20.0			
Dicamba	639611 554940	557348 534861	571313 502672	563600	Ave		560620.665				7.4		20.0			
MCPA	 806.97	485.50 732.80	592.39 592.49	750.02	Ave		660.025275				18.5		20.0			
MCPP	 1112.4	950.05 961.56	1009.1 758.00	1124.5	Ave		985.932137				13.6		20.0			
Dichlorprop	152764 137380	145979 132826	130448 122085	133924	Ave		136486.586				7.4		20.0			
2,4-D	149655 137172	132856 135072	125339 125988	132986	Ave		134152.342				6.1		20.0			
Pentachlorophenol	2857210 2445448	2620296 2413355	2391899 2317956	2478637	Ave		2503542.84				7.3		20.0			
Silvex (2,4,5-TP)	868838 822500	812121 804169	782053 772923	794863	Ave		808209.567				3.9		20.0			
2,4,5-T	935780 822132	846606 830732	783337 785410	821019	Ave		832145.138				6.2		20.0			
2,4-DB	78497 70987	67358 71551	60121 65917	64917	Ave		68478.1283				8.6		20.0			
Dinoseb	349056 288645	324616 281931	289477 263722	292950	Ave		298627.989				9.6		20.0			
2,4-Dichlorophenylacetic acid	122663 117839	136490 112688	120057 102914	119321	Ave		118853.131				8.6		20.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
HERBICIDES BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264929

SDG No.: Headworks/9720-8

Instrument ID: SGCM GC Column: RTXCLP1 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/16/2016 10:17 Calibration End Date: 08/16/2016 13:33 Calibration ID: 11326

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-264929/3	MICL1727.D
Level 2	IC 160-264929/4	MICL1728.D
Level 3	IC 160-264929/5	MICL1729.D
Level 4	IC 160-264929/6	MICL1730.D
Level 5	ICRT 160-264929/7	MICL1731.D
Level 6	IC 160-264929/8	MICL1732.D
Level 7	IC 160-264929/9	MICL1733.D

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Dalapon	Ave	533989 13785411	1045993 26181862	1962943	4075337	7083770	2.00 63.9	3.99 128	7.99	16.0	32.0
Dicamba	Ave	639611 17115565	1114695 32171004	2285251	4508800	8879041	1.00 32.0	2.00 64.0	4.00	8.00	16.0
MCPA	Ave	 4689955	194200 7583918	473914	1200039	2582321	 6400	400 12800	800	1600	3200
MCPP	Ave	 6155853	380133 9705358	807558	1799667	3560680	 6402	400 12804	800	1600	3201
Dichlorprop	Ave	305527 8500892	583916 15626857	1043584	2142784	4396171	2.00 64.0	4.00 128	8.00	16.0	32.0
2,4-D	Ave	299310 8644605	531425 16126400	1002709	2127769	4389488	2.00 64.0	4.00 128	8.00	16.0	32.0
Pentachlorophenol	Ave	1428605 38613674	2620296 74174581	4783797	9914548	19563585	0.500 16.0	1.00 32.0	2.00	4.00	8.00
Silvex (2,4,5-TP)	Ave	434419 12866701	812121 24733545	1564106	3179453	6579997	0.500 16.0	1.00 32.0	2.00	4.00	8.00
2,4,5-T	Ave	467890 13291719	846606 25133117	1566674	3284075	6577055	0.500 16.0	1.00 32.0	2.00	4.00	8.00
2,4-DB	Ave	156993 4579281	269433 8437381	480964	1038669	2271569	2.00 64.0	4.00 128	8.00	16.0	32.0
Dinoseb	Ave	698111 18043567	1298462 33756380	2315818	4687199	9236649	2.00 64.0	4.00 128	8.00	16.0	32.0
2,4-Dichlorophenylacetic acid	Ave	245326 7212049	545960 13172975	960455	1909141	3770835	2.00 64.0	4.00 128	8.00	16.0	32.0

Curve Type Legend:
Ave = Average

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1727.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 16-Aug-2016 10:17:52 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-003
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:04 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:41:27

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							M
1	1.683	1.678	0.005	533989	2.00	2.24	M
2	1.805	1.808	-0.003	745269	2.00	2.20	M
						RPD = 1.76	
$ 11 2,4-Dichlorophenylacetic acid							
1	11.000	10.989	0.011	245326	2.00	2.06	
2	12.185	12.180	0.005	640535	2.00	2.37	
						RPD = 13.61	
1 Dicamba							
1	11.297	11.288	0.009	639611	1.00	1.14	
2	12.485	12.480	0.005	1290661	1.00	1.26	
						RPD = 9.86	
6 Dichlorprop							
1	12.808	12.796	0.012	305527	2.00	2.24	
2	13.919	13.915	0.004	587436	2.00	2.29	
						RPD = 2.12	
8 2,4-D							
1	13.240	13.226	0.014	299310	2.00	2.23	
2	14.495	14.485	0.010	1046405	2.00	2.44	
						RPD = 8.96	
10 Pentachlorophenol							
1	13.368	13.359	0.009	1428605	0.5000	0.5706	
2	14.917	14.915	0.002	1675425	0.5000	0.5689	
						RPD = 0.30	
2 Silvex (2,4,5-TP)							
1	14.685	14.676	0.009	434419	0.5000	0.5375	
2	15.882	15.876	0.006	655317	0.5000	0.5498	
						RPD = 2.27	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
5 2,4,5-T							
1	15.160	15.149	0.011	467890	0.5000	0.5623	
2	16.529	16.521	0.008	723277	0.5000	0.6102	
						RPD = 8.18	
7 2,4-DB							
1	16.058	16.049	0.009	156993	2.00	2.29	a
2	17.369	17.361	0.008	329328	2.00	2.09	M
						RPD = 9.15	
13 Dinoseb							
1	17.633	17.628	0.005	698111	2.00	2.34	
2	17.834	17.830	0.004	947187	2.00	2.38	a
						RPD = 1.68	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

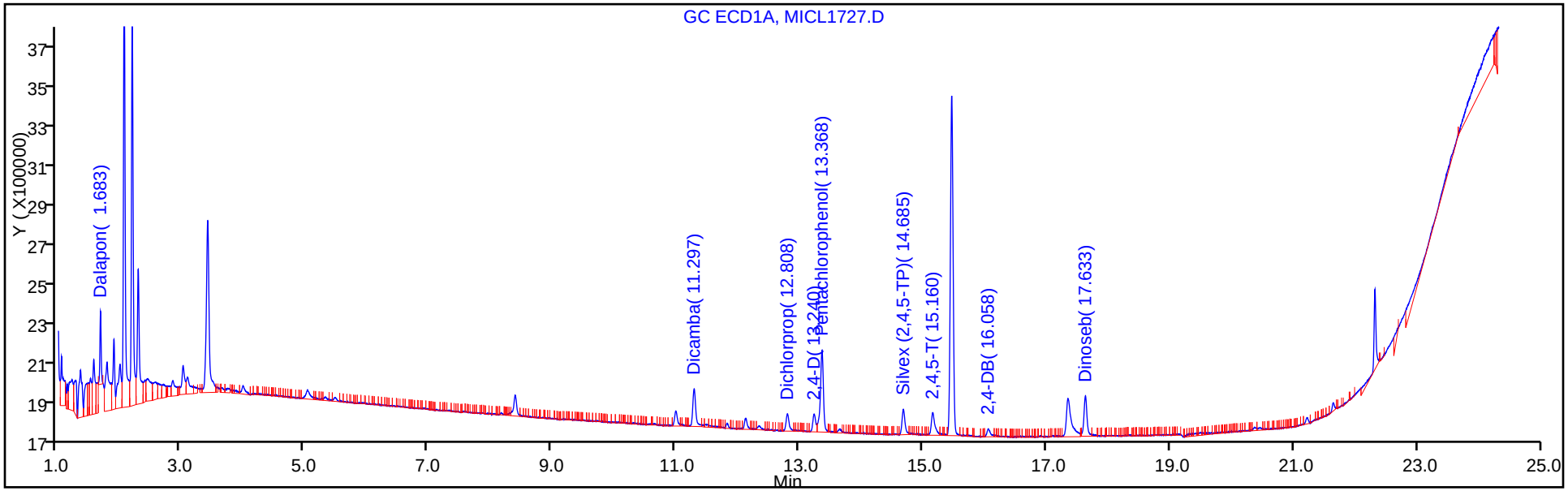
Herb Prime_00022 Amount Added: 15.63 Units: uL

Report Date: 17-Aug-2016 09:40:04 Chrom Revision: 2.2 20-Apr-2016 13:59:46

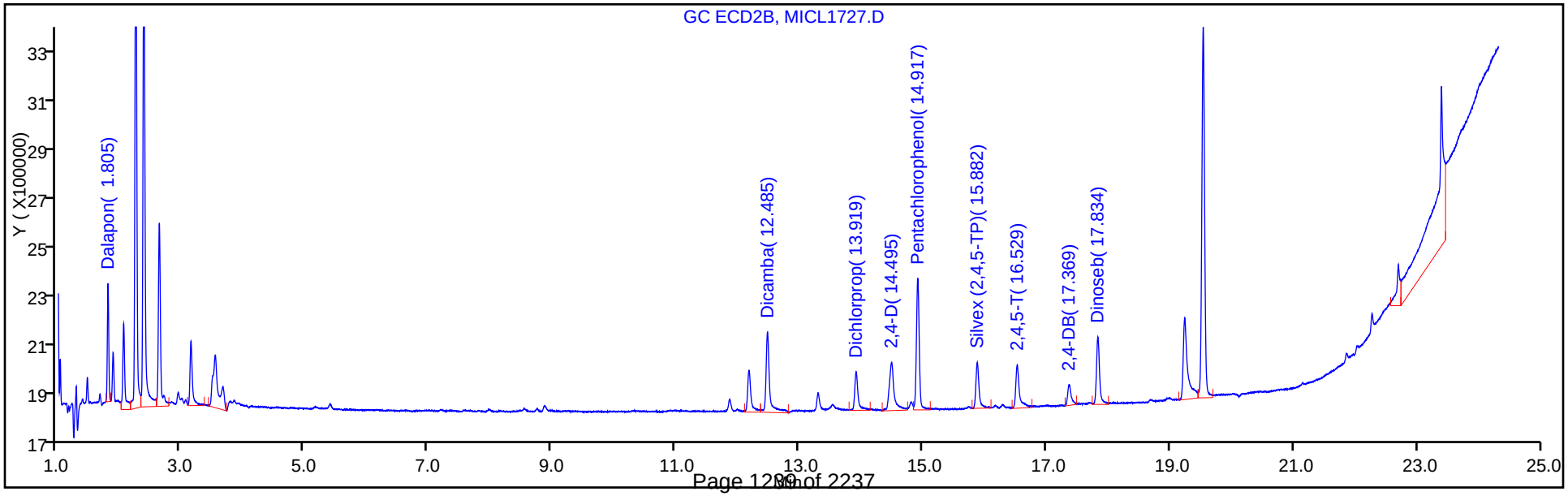
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1727.D				
Injection Date:	16-Aug-2016 10:17:52	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	3
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

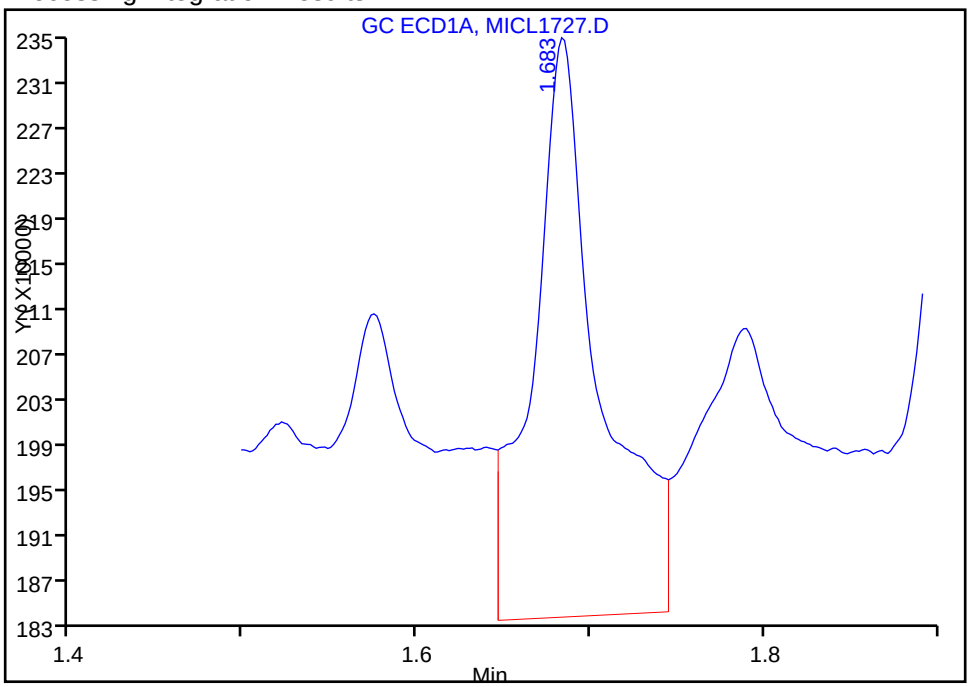
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1727.D				
Injection Date:	16-Aug-2016 10:17:52	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	3	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

12 Dalapon, CAS: 75-99-0

Signal: 1

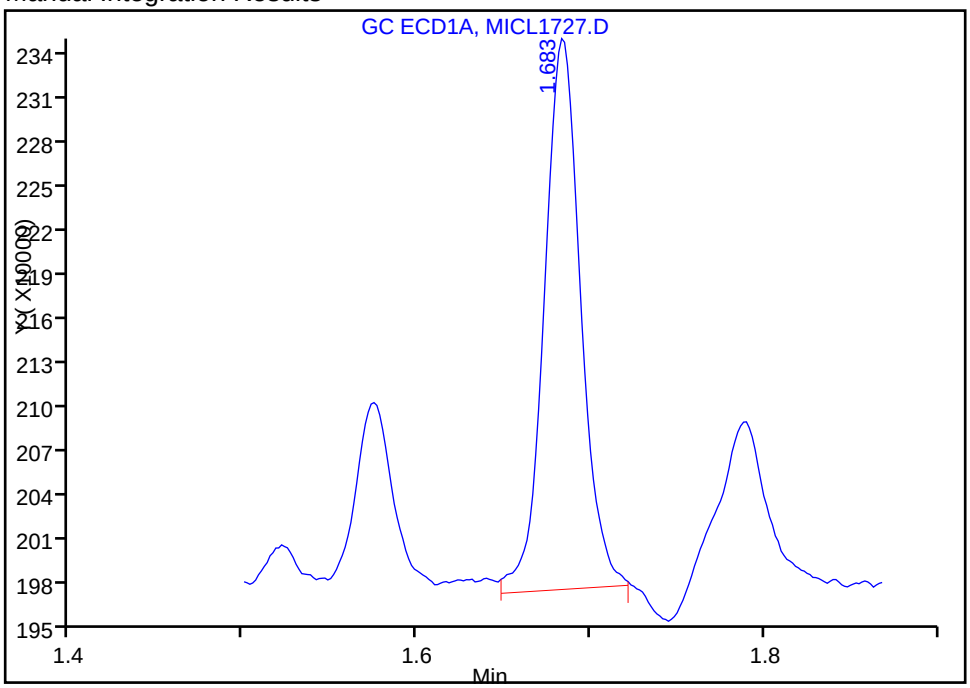
Processing Integration Results

RT: 1.68
Area: 1348809
Amount: 48.111084
Amount Units: ng/ml



Manual Integration Results

RT: 1.68
Area: 533989
Amount: 2.235081
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:41:27

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 16-Aug-2016 10:51:29 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-004
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:05 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:36:56

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							M
1	1.683	1.678	0.005	1045993	3.99	4.38	M
2	1.805	1.808	-0.003	1456159	3.99	4.29	M
						RPD = 2.01	
$ 11 2,4-Dichlorophenylacetic acid							M
1	11.000	10.989	0.011	545960	4.00	4.59	M
2	12.184	12.180	0.004	1134135	4.00	4.19	a
						RPD = 9.23	
1 Dicamba							
1	11.297	11.288	0.009	1114695	2.00	1.99	
2	12.485	12.480	0.005	2079228	2.00	2.03	
						RPD = 2.00	
4 MCPA							M
1	11.830	11.819	0.011	194200	400.0	294.2	M
2	12.847	12.841	0.006	22199	400.0	541.4	M
						RPD = 59.16	
9 MCPP							M
1	12.128	12.119	0.009	380133	400.1	385.6	M
2	13.302	13.296	0.006	436956	400.1	362.8	M
						RPD = 6.09	
6 Dichlorprop							
1	12.807	12.796	0.011	583916	4.00	4.28	M
2	13.919	13.915	0.004	1088195	4.00	4.24	a
						RPD = 1.00	
8 2,4-D							M
1	13.237	13.226	0.011	531425	4.00	3.96	M
2	14.492	14.485	0.007	1815613	4.00	4.23	a
						RPD = 6.66	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							M
1	13.367	13.359	0.008	2620296	1.00	1.05	M
2	14.919	14.915	0.004	3047019	1.00	1.03	
						RPD = 1.14	
2 Silvex (2,4,5-TP)							M
1	14.682	14.676	0.006	812121	1.00	1.00	M
2	15.882	15.876	0.006	1166147	1.00	0.9784	a
						RPD = 2.66	
5 2,4,5-T							M
1	15.160	15.149	0.011	846606	1.00	1.02	M
2	16.527	16.521	0.006	1208403	1.00	1.02	a
						RPD = 0.21	
7 2,4-DB							M
1	16.062	16.049	0.013	269433	4.00	3.93	M
2	17.369	17.361	0.008	704424	4.00	4.47	a
						RPD = 12.84	
13 Dinoseb							
1	17.633	17.628	0.005	1298462	4.00	4.35	
2	17.835	17.830	0.005	1712050	4.00	4.30	
						RPD = 1.19	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

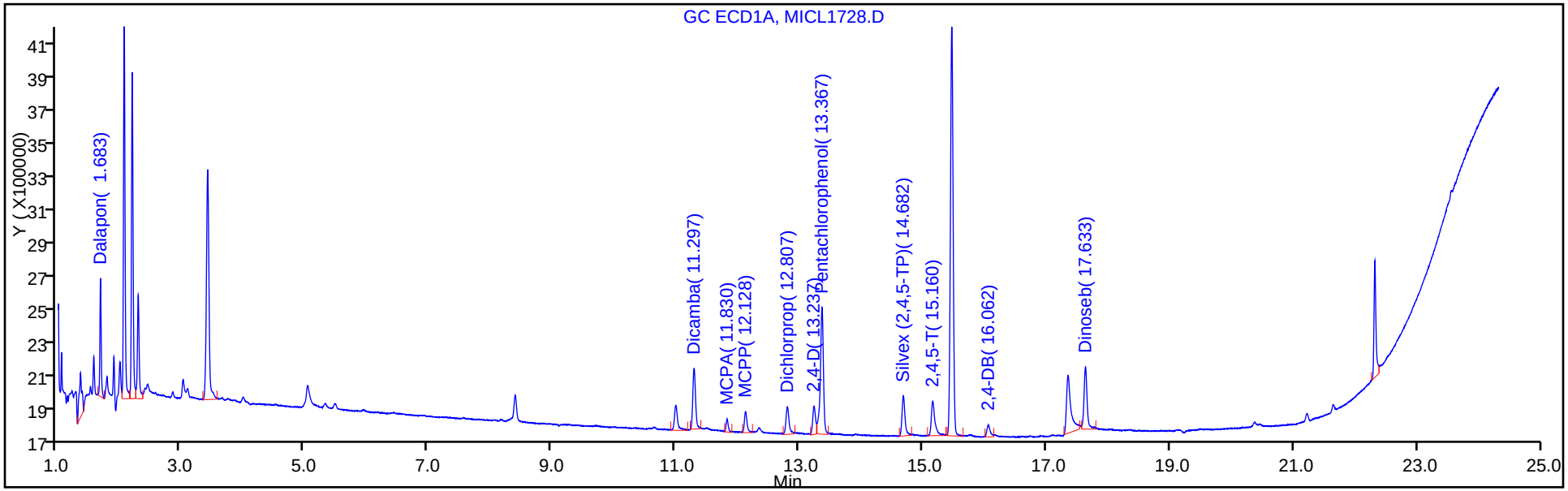
Herb Prime_00022 Amount Added: 31.25 Units: uL

Report Date: 17-Aug-2016 09:40:05 Chrom Revision: 2.2 20-Apr-2016 13:59:46

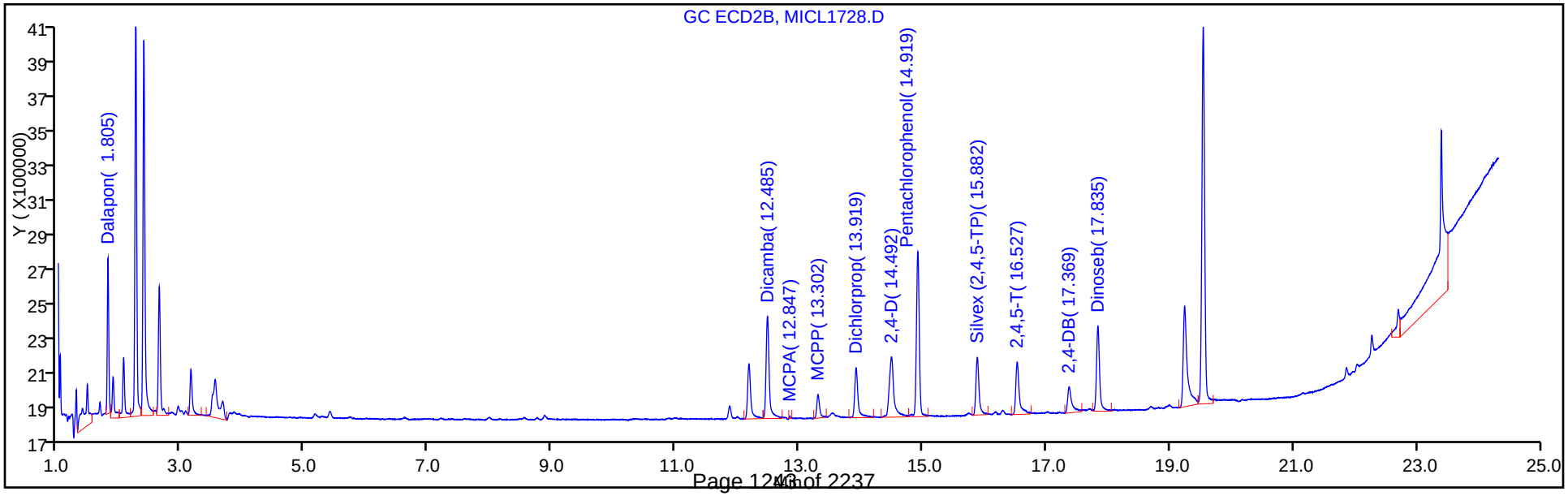
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	4
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

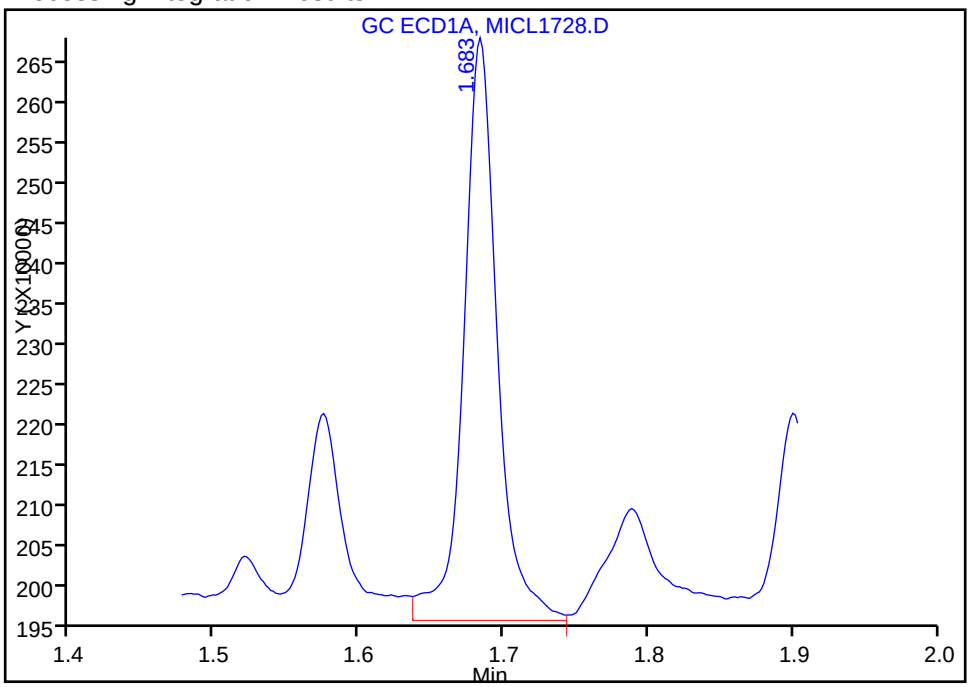
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

12 Dalapon, CAS: 75-99-0

Signal: 1

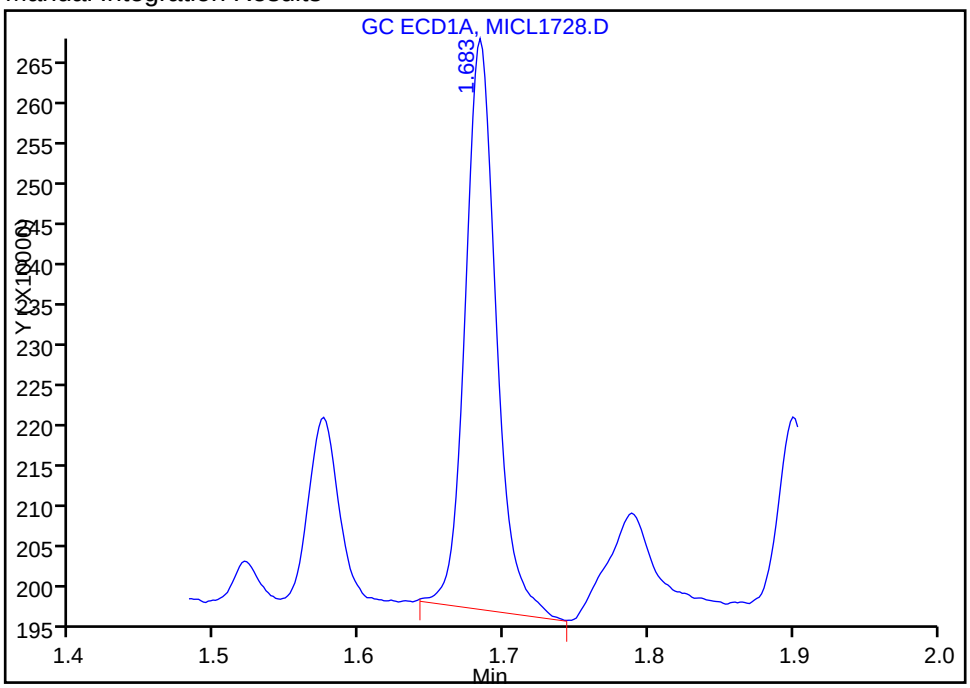
Processing Integration Results

RT: 1.68
Area: 1163398
Amount: 50.928486
Amount Units: ng/ml



Manual Integration Results

RT: 1.68
Area: 1045993
Amount: 4.378140
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:41:52

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

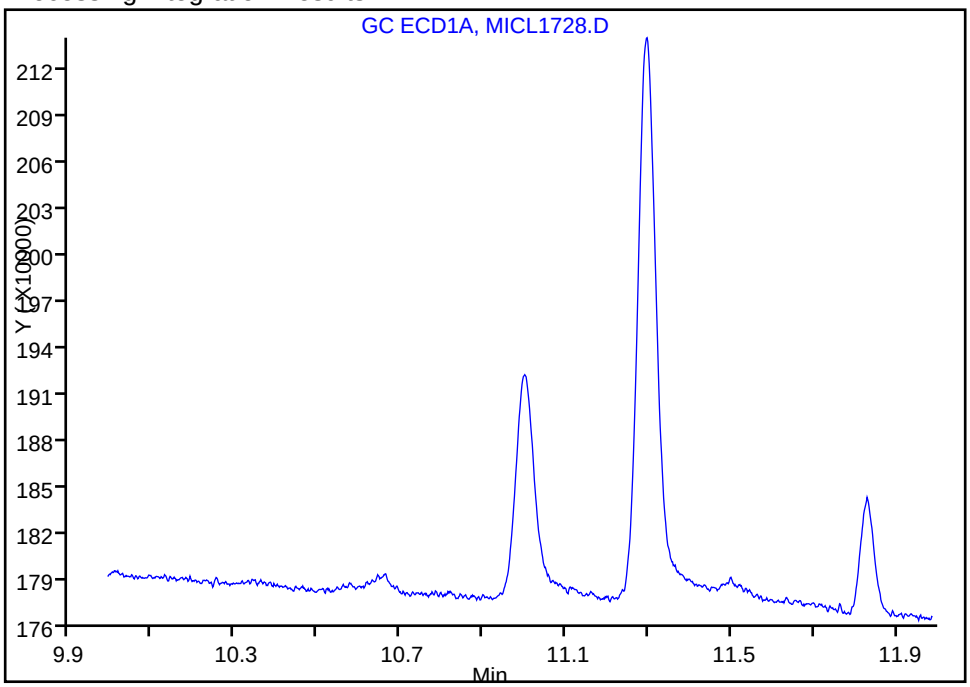
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

$ 11 2,4-Dichlorophenylacetic acid, CAS: 19719-28-9

Signal: 1

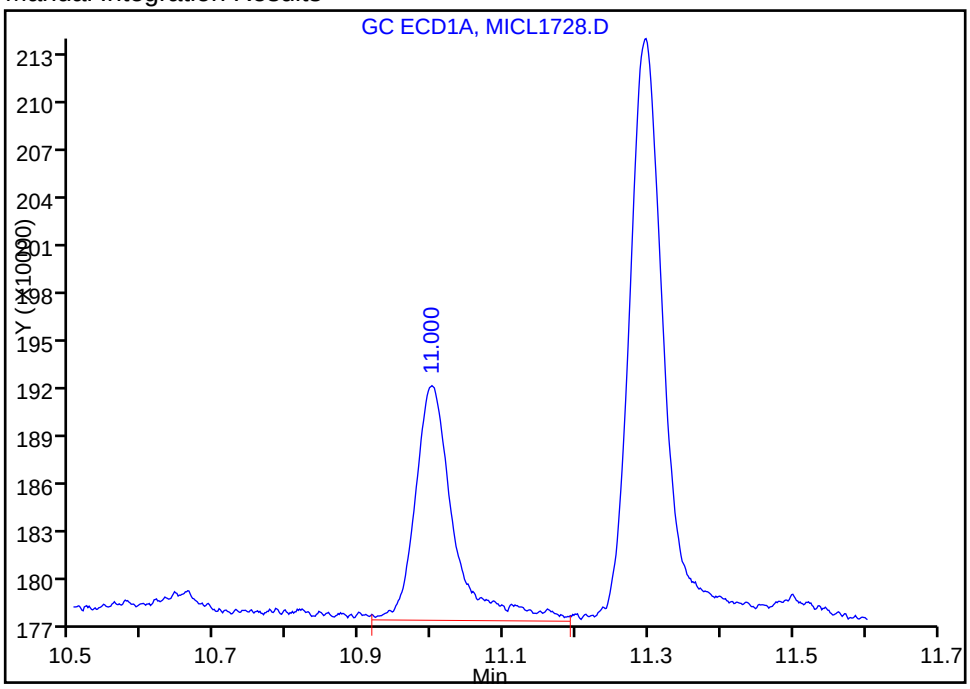
Processing Integration Results

RT: 10.99
Area: 0
Amount: 0
Amount Units: ng/ml



Manual Integration Results

RT: 11.00
Area: 545960
Amount: 4.593569
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

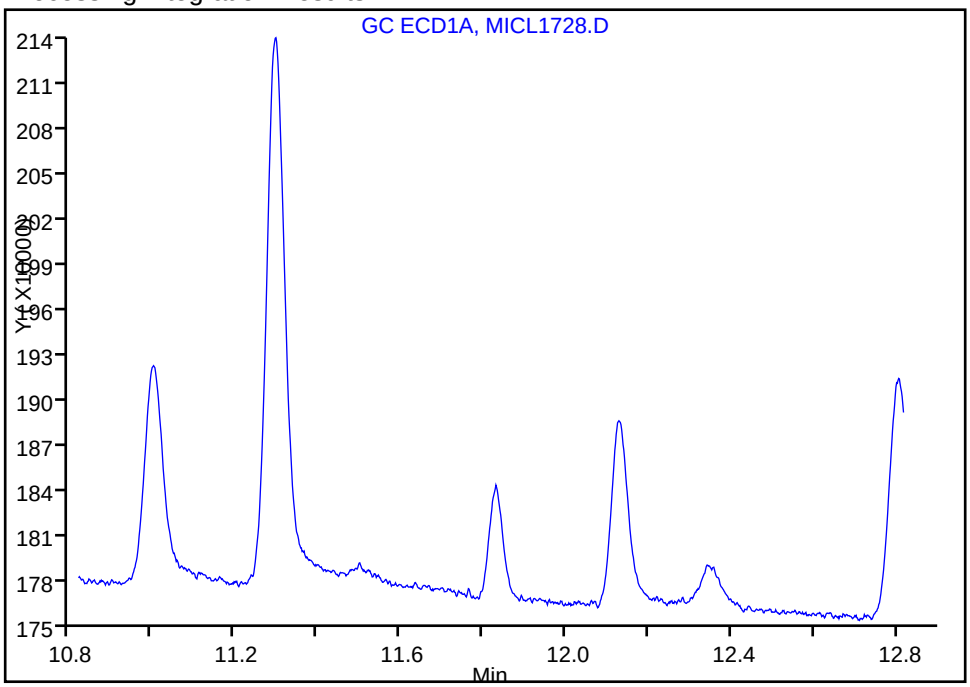
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

4 MCPA, CAS: 94-74-6

Signal: 1

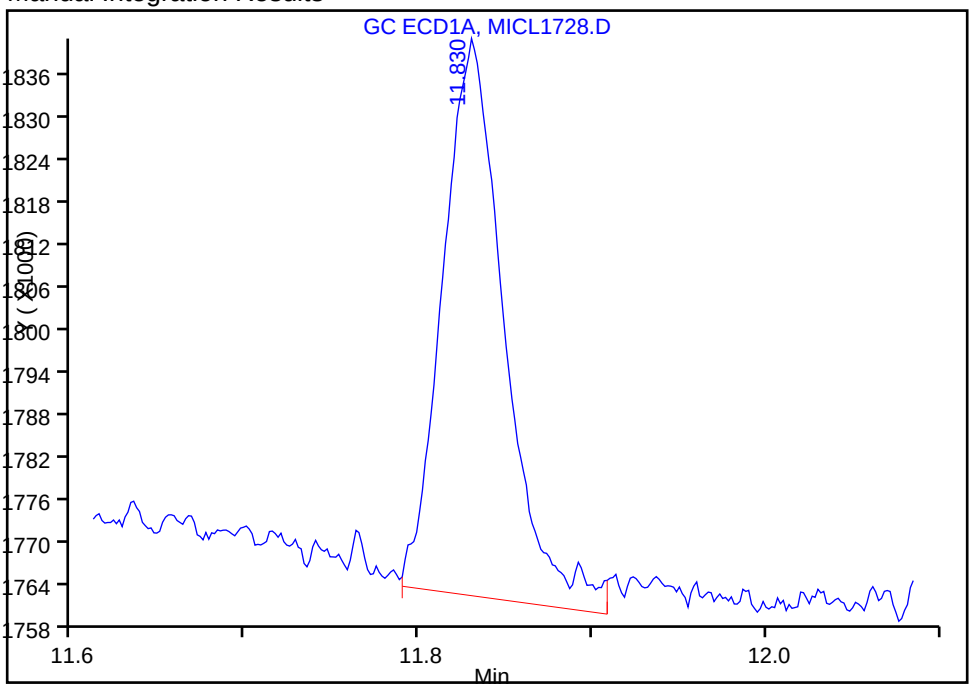
Processing Integration Results

RT: 11.82
Area: 0
Amount: 0
Amount Units: ng/ml



Manual Integration Results

RT: 11.83
Area: 194200
Amount: 294.2312
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

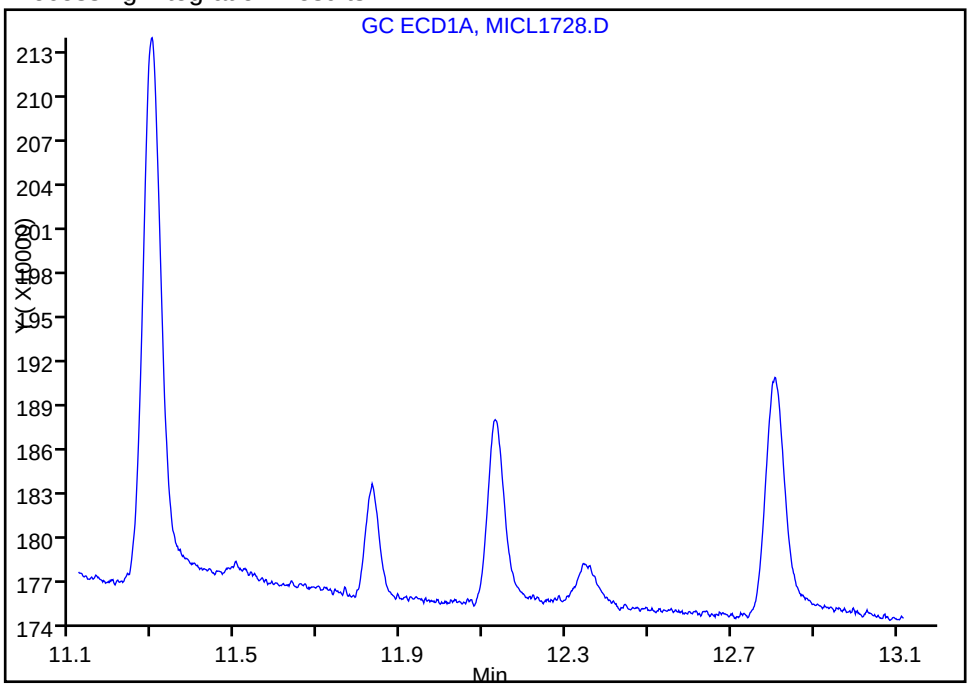
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

9 MCPP, CAS: 93-65-2

Signal: 1

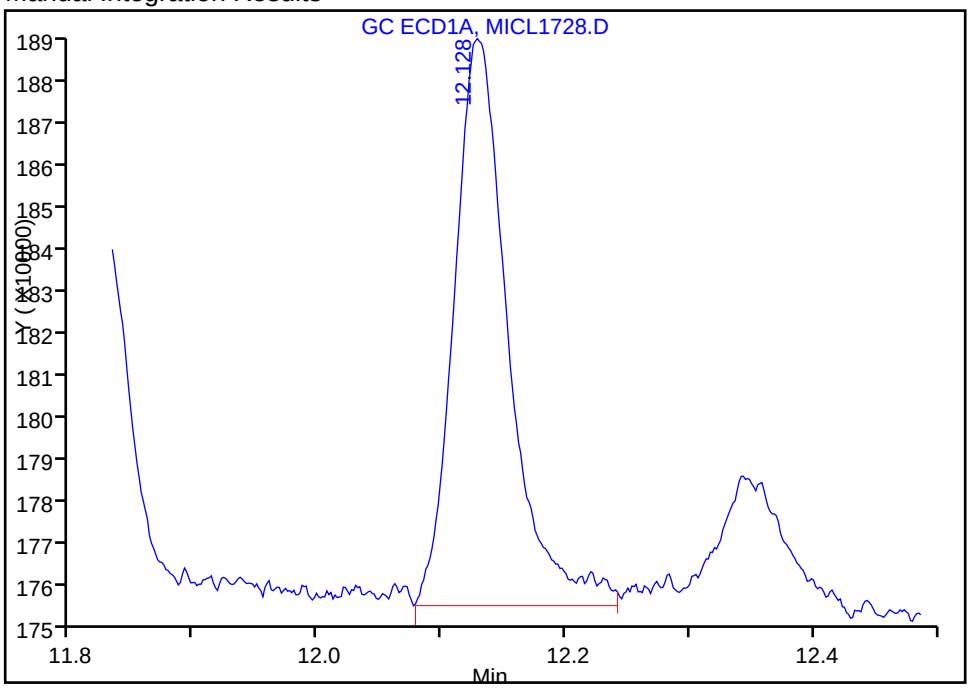
Processing Integration Results

RT: 12.12
Area: 0
Amount: 0
Amount Units: ng/ml



Manual Integration Results

RT: 12.13
Area: 380133
Amount: 385.5570
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

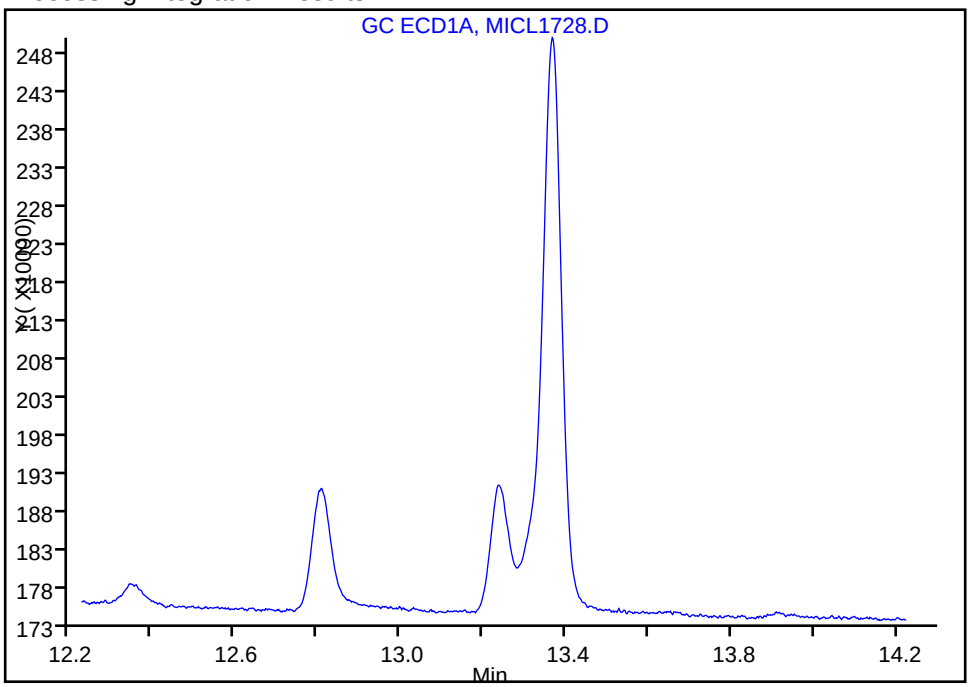
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

8 2,4-D, CAS: 94-75-7

Signal: 1

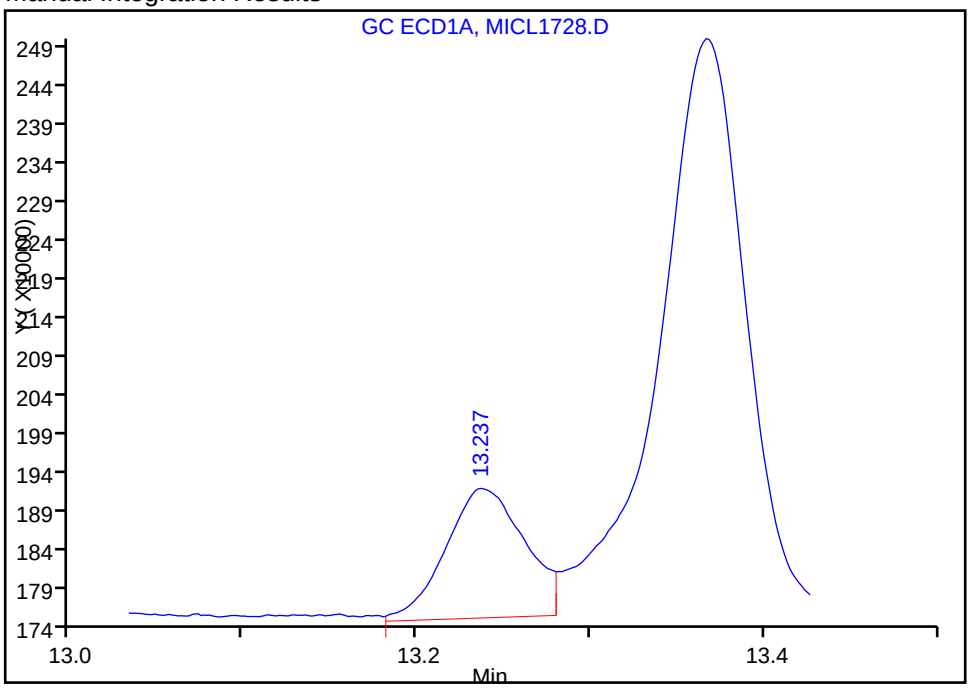
Processing Integration Results

RT: 13.23
Area: 0
Amount: 0
Amount Units: ng/ml



Manual Integration Results

RT: 13.24
Area: 531425
Amount: 3.961355
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

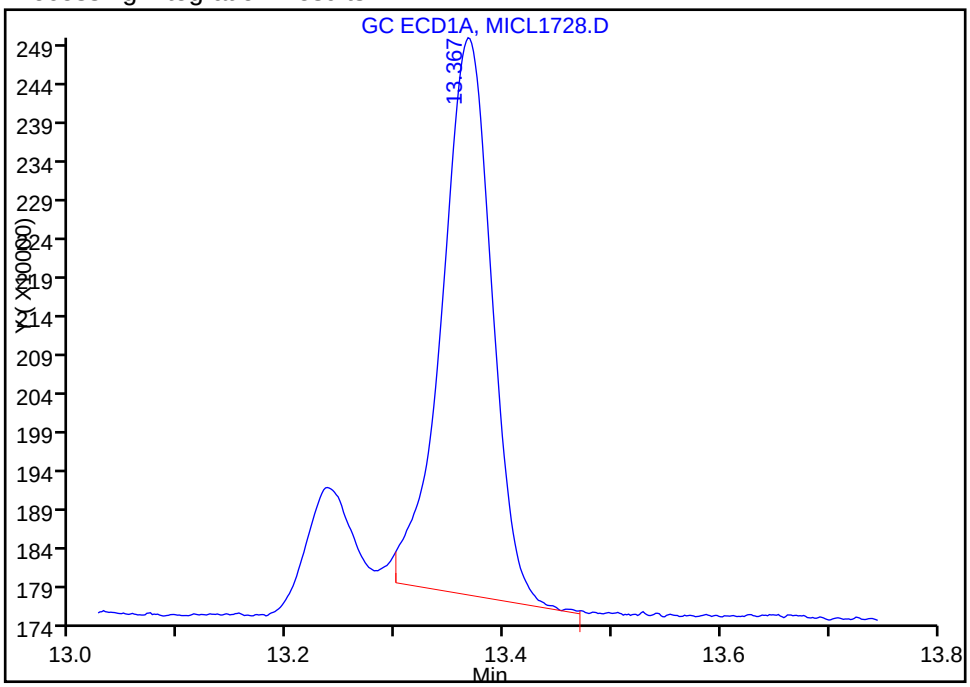
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

10 Pentachlorophenol, CAS: 87-86-5

Signal: 1

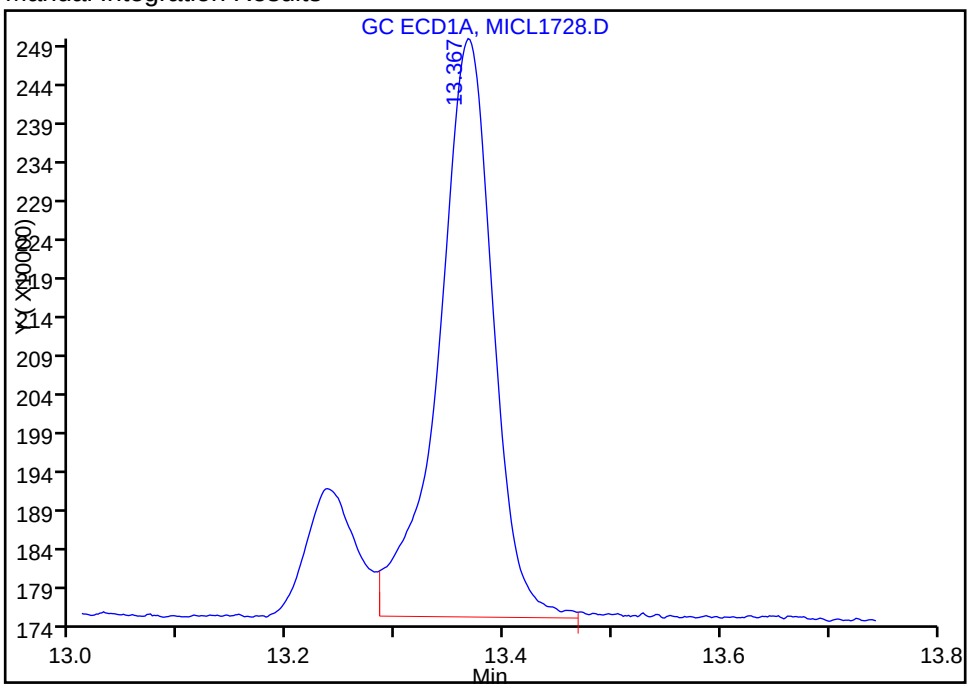
Processing Integration Results

RT: 13.37
Area: 2326653
Amount: 5.054562
Amount Units: ng/ml



Manual Integration Results

RT: 13.37
Area: 2620296
Amount: 1.046635
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

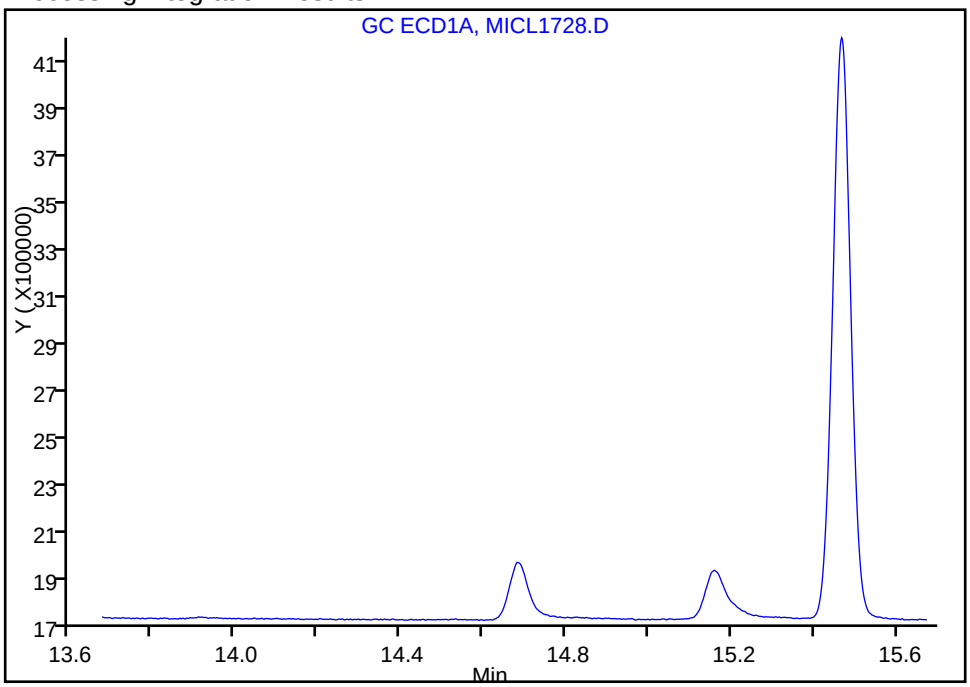
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

2 Silvex (2,4,5-TP), CAS: 93-72-1

Signal: 1

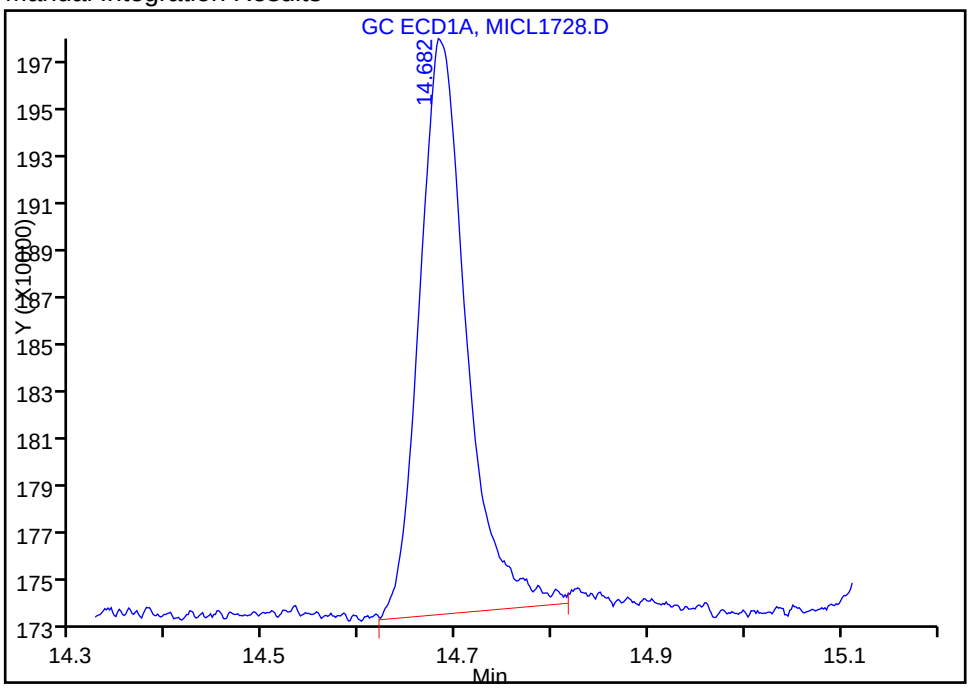
Processing Integration Results

RT: 14.68
Area: 0
Amount: 0
Amount Units: ng/ml



Manual Integration Results

RT: 14.68
Area: 812121
Amount: 1.004840
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

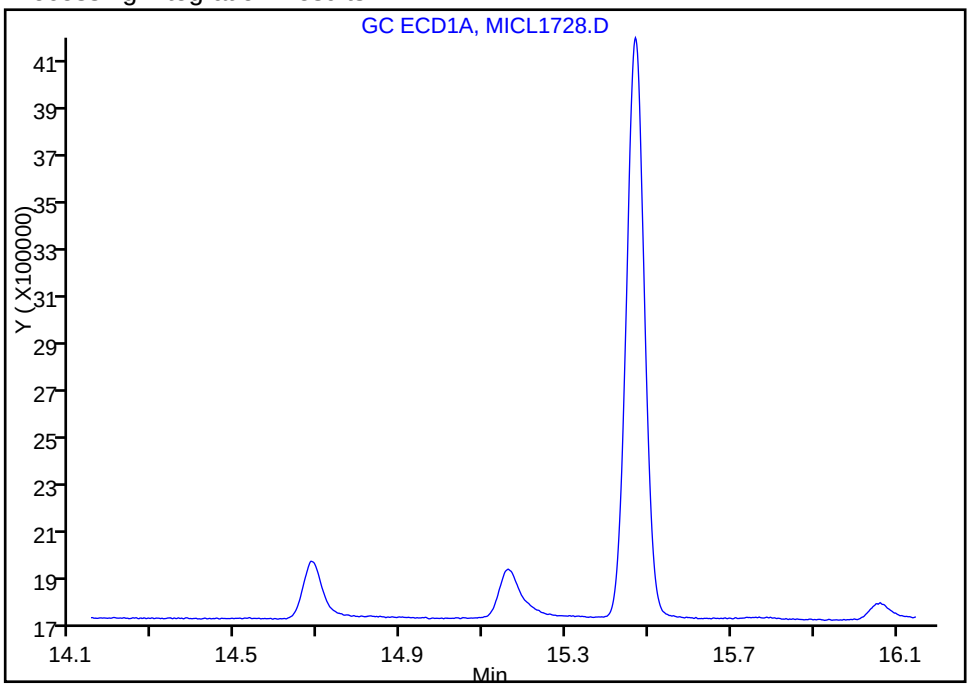
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

5 2,4,5-T, CAS: 93-76-5

Signal: 1

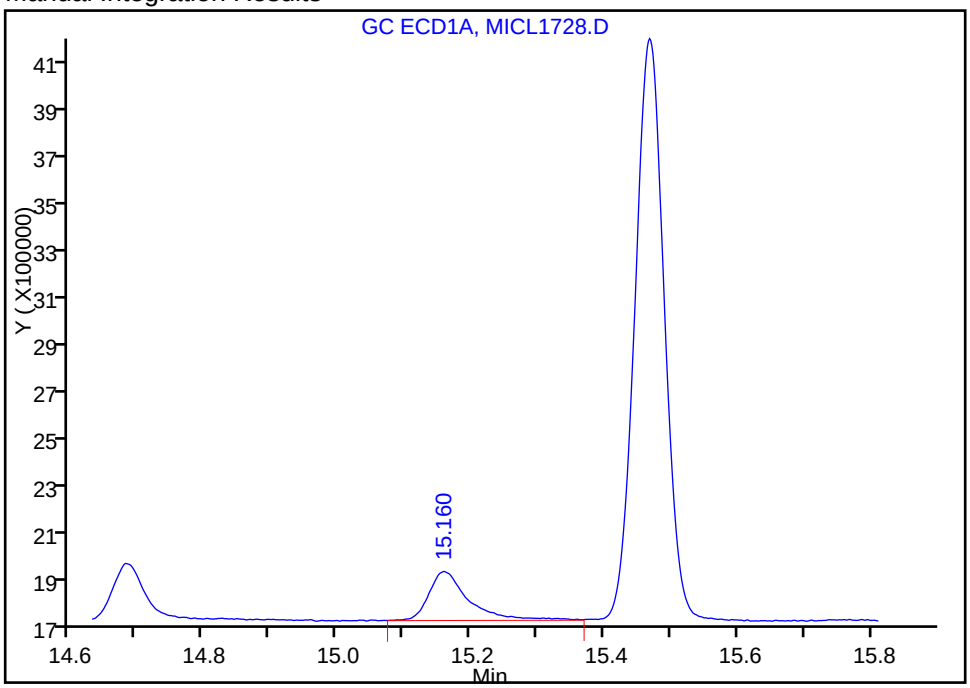
Processing Integration Results

RT: 15.15
Area: 0
Amount: 0
Amount Units: ng/ml



Manual Integration Results

RT: 15.16
Area: 846606
Amount: 1.017378
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

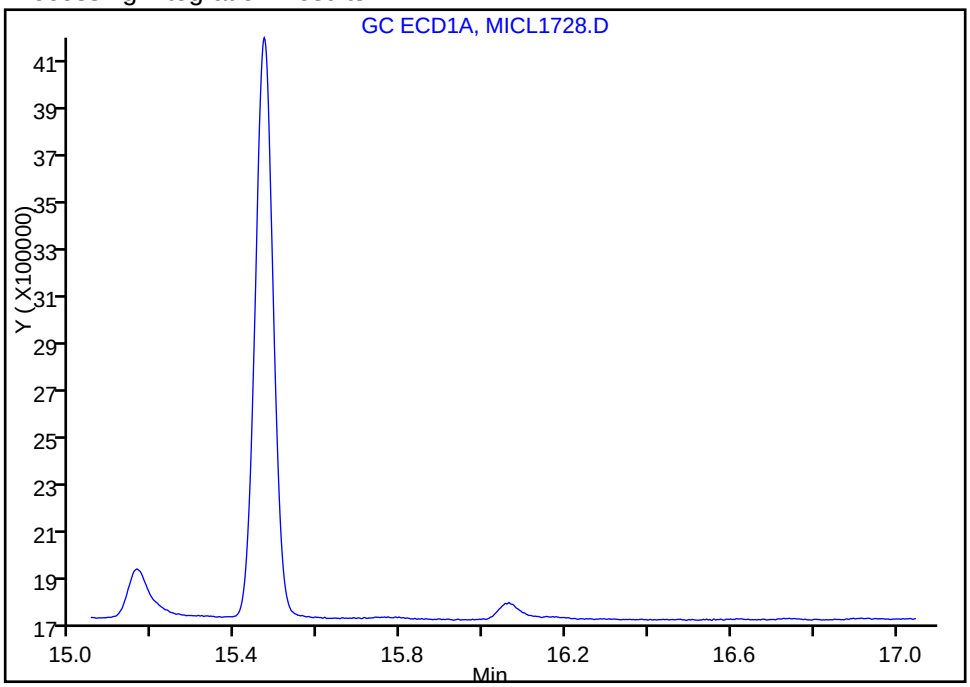
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

7 2,4-DB, CAS: 94-82-6

Signal: 1

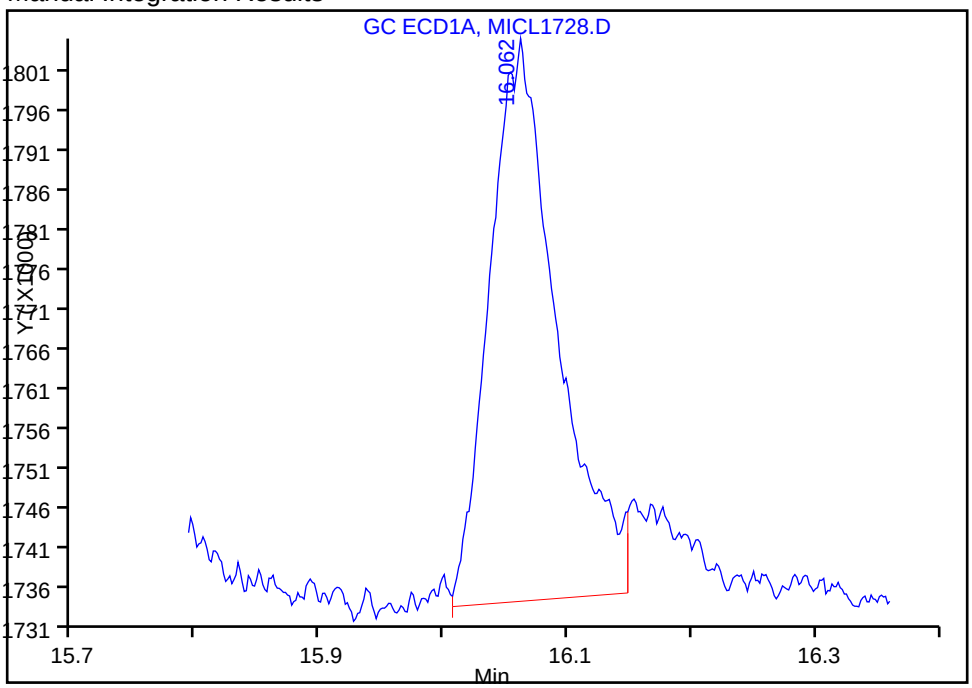
Processing Integration Results

RT: 16.05
Area: 0
Amount: 0
Amount Units: ng/ml



Manual Integration Results

RT: 16.06
Area: 269433
Amount: 3.934585
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1729.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 16-Aug-2016 11:24:55 ALS Bottle#: 5 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-005
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:07 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:33:45

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							M
1	1.683	1.678	0.005	1962943	7.99	8.22	M
2	1.805	1.808	-0.003	2728530	7.99	8.04	M
						RPD = 2.16	
$ 11 2,4-Dichlorophenylacetic acid							
1	11.000	10.989	0.011	960455	8.00	8.08	
2	12.183	12.180	0.003	2172562	8.00	8.02	
						RPD = 0.72	
1 Dicamba							
1	11.296	11.288	0.008	2285251	4.00	4.08	
2	12.483	12.480	0.003	4004254	4.00	3.91	
						RPD = 4.25	
4 MCPA							
1	11.828	11.819	0.009	473914	800.0	718.0	a
2	12.845	12.841	0.004	165063	800.0	760.1	M
						RPD = 5.69	
9 MCPP							
1	12.128	12.119	0.009	807558	800.2	819.1	
2	13.302	13.296	0.006	903986	800.2	750.5	
						RPD = 8.74	
6 Dichlorprop							
1	12.805	12.796	0.009	1043584	8.00	7.65	
2	13.918	13.915	0.003	1986379	8.00	7.73	
						RPD = 1.11	
8 2,4-D							
1	13.235	13.226	0.009	1002709	8.00	7.47	
2	14.492	14.485	0.007	3321963	8.00	7.75	
						RPD = 3.59	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.368	13.359	0.009	4783797	2.00	1.91	
2	14.918	14.915	0.003	5540689	2.00	1.88	
						RPD = 1.54	
2 Silvex (2,4,5-TP)							
1	14.686	14.676	0.010	1564106	2.00	1.94	
2	15.880	15.876	0.004	2152505	2.00	1.81	
						RPD = 6.91	
5 2,4,5-T							
1	15.160	15.149	0.011	1566674	2.00	1.88	
2	16.527	16.521	0.006	2147702	2.00	1.81	
						RPD = 3.82	
7 2,4-DB							
1	16.058	16.049	0.009	480964	8.00	7.02	
2	17.367	17.361	0.006	1132251	8.00	7.19	
						RPD = 2.37	
13 Dinoseb							
1	17.633	17.628	0.005	2315818	8.00	7.75	
2	17.833	17.830	0.003	2937513	8.00	7.37	
						RPD = 5.06	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

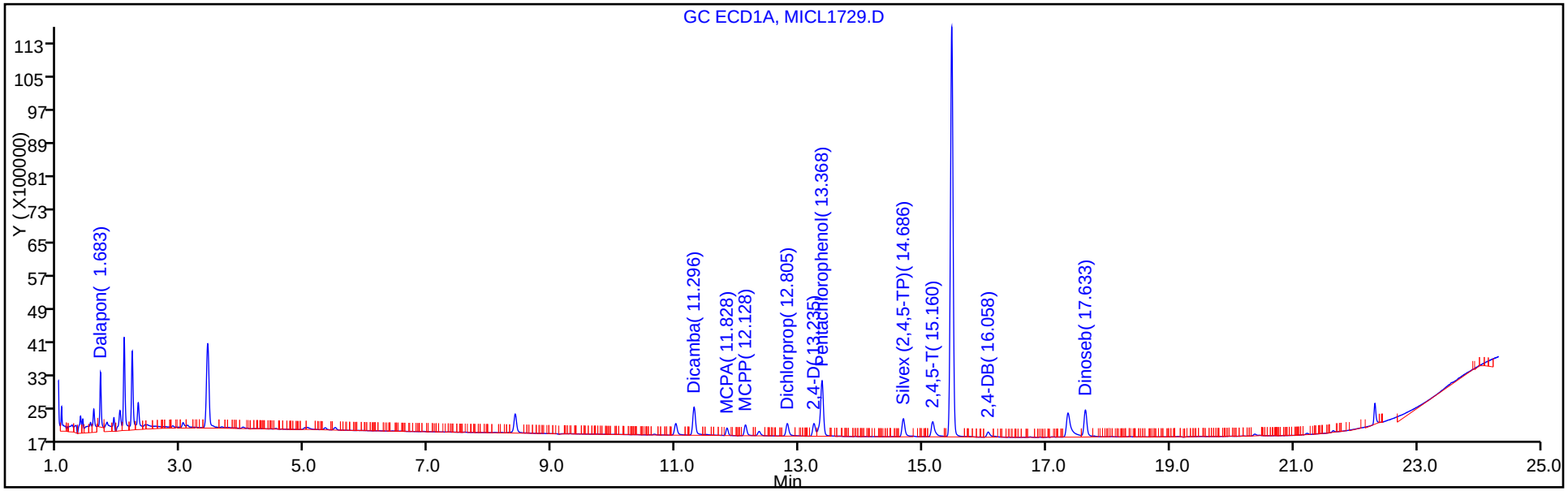
Herb Prime_00022 Amount Added: 62.50 Units: uL

Report Date: 17-Aug-2016 09:40:08 Chrom Revision: 2.2 20-Apr-2016 13:59:46

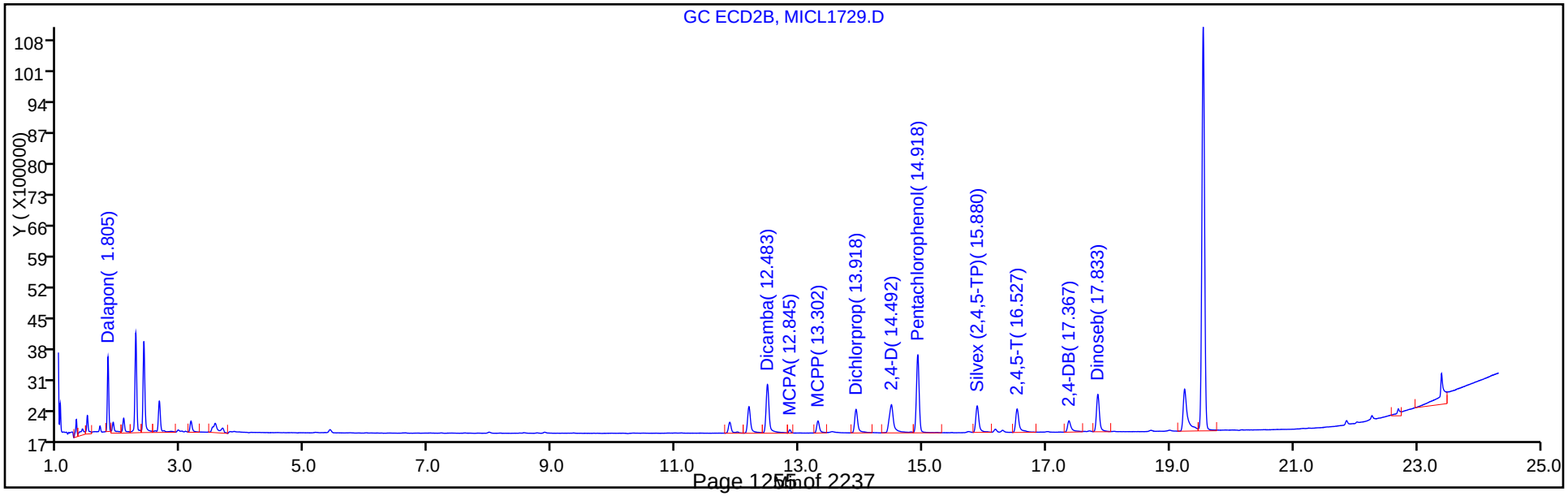
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1729.D				
Injection Date:	16-Aug-2016 11:24:55	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	5
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

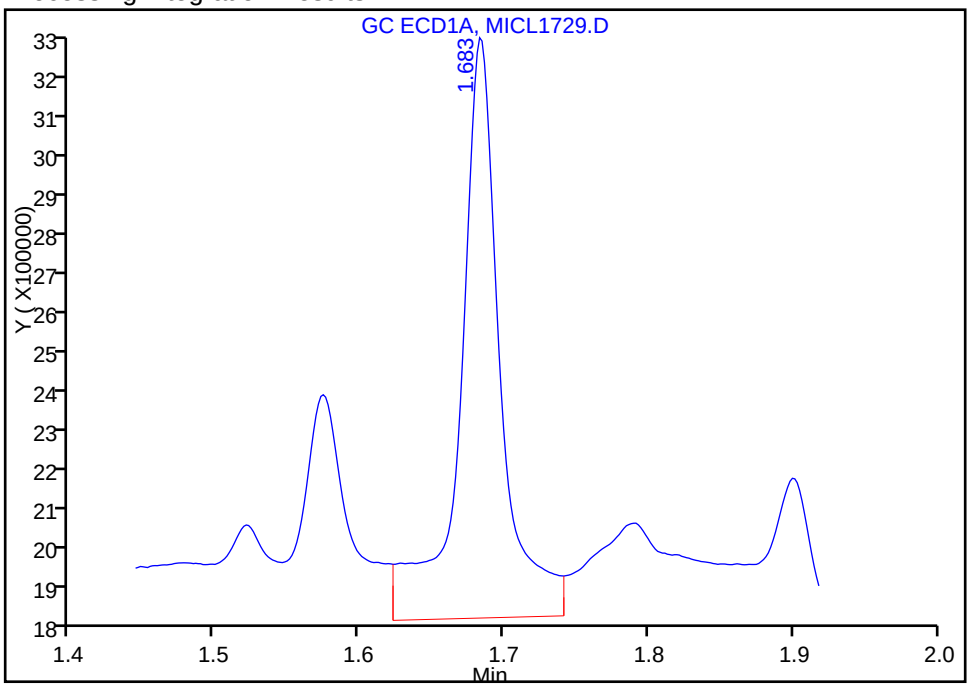
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1729.D				
Injection Date:	16-Aug-2016 11:24:55	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	5	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

12 Dalapon, CAS: 75-99-0

Signal: 1

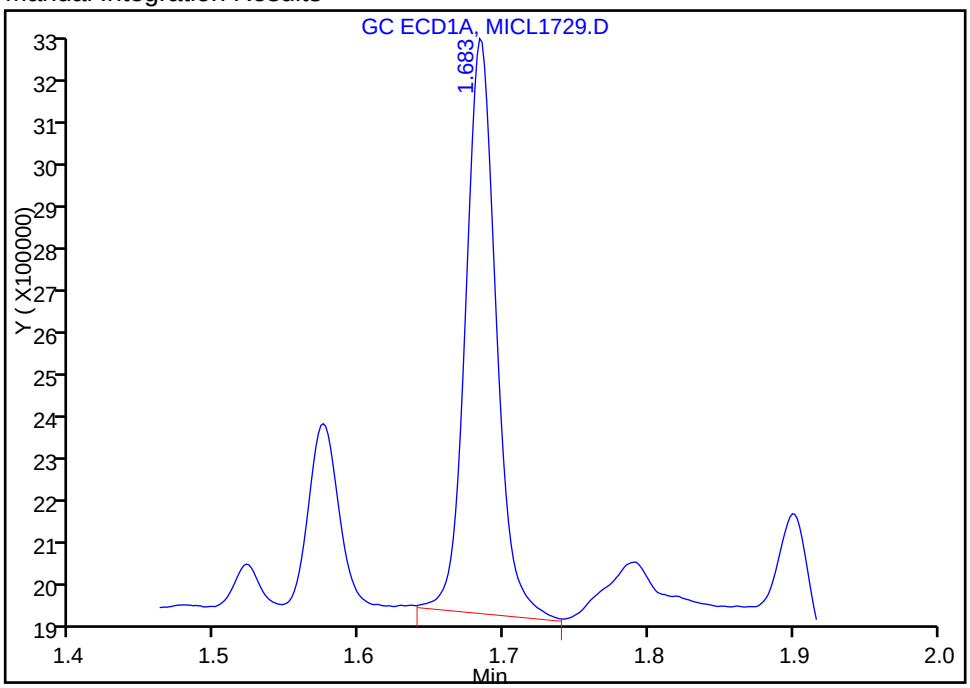
Processing Integration Results

RT: 1.68
Area: 2803875
Amount: 110.4097
Amount Units: ng/ml



Manual Integration Results

RT: 1.68
Area: 1962943
Amount: 8.216154
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:42:58

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1730.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 16-Aug-2016 11:58:00 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-006
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:08 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:32:02

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							M
1	1.683	1.678	0.005	4075337	16.0	17.1	
2	1.805	1.808	-0.003	5442075	16.0	16.0	M
						RPD = 6.17	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.998	10.989	0.009	1909141	16.0	16.1	
2	12.184	12.180	0.004	4351607	16.0	16.1	
						RPD = 0.05	
1 Dicamba							
1	11.295	11.288	0.007	4508800	8.00	8.04	
2	12.484	12.480	0.004	8082946	8.00	7.89	
						RPD = 1.96	
4 MCPA							
1	11.828	11.819	0.009	1200039	1600.0	1818.2	
2	12.845	12.841	0.004	641208	1600.0	1490.2	
						RPD = 19.83	
9 MCPP							
1	12.127	12.119	0.008	1799667	1600.5	1825.3	
2	13.302	13.296	0.006	2054879	1600.5	1706.0	
						RPD = 6.76	
6 Dichlorprop							
1	12.803	12.796	0.007	2142784	16.0	15.7	
2	13.917	13.915	0.002	4150556	16.0	16.2	
						RPD = 2.86	
8 2,4-D							
1	13.233	13.226	0.007	2127769	16.0	15.9	
2	14.490	14.485	0.005	6729728	16.0	15.7	
						RPD = 1.05	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.367	13.359	0.008	9914548	4.00	3.96	
2	14.919	14.915	0.004	11347847	4.00	3.85	
						RPD = 2.73	
2 Silvex (2,4,5-TP)							
1	14.683	14.676	0.007	3179453	4.00	3.93	
2	15.879	15.876	0.003	4843362	4.00	4.06	
						RPD = 3.24	
5 2,4,5-T							
1	15.157	15.149	0.008	3284075	4.00	3.95	
2	16.525	16.521	0.004	4576671	4.00	3.86	
						RPD = 2.18	
7 2,4-DB							M
1	16.055	16.049	0.006	1038669	16.0	15.2	M
2	17.365	17.361	0.004	2600100	16.0	16.5	a
						RPD = 8.51	
13 Dinoseb							
1	17.632	17.628	0.004	4687199	16.0	15.7	
2	17.834	17.830	0.004	6163472	16.0	15.5	
						RPD = 1.46	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

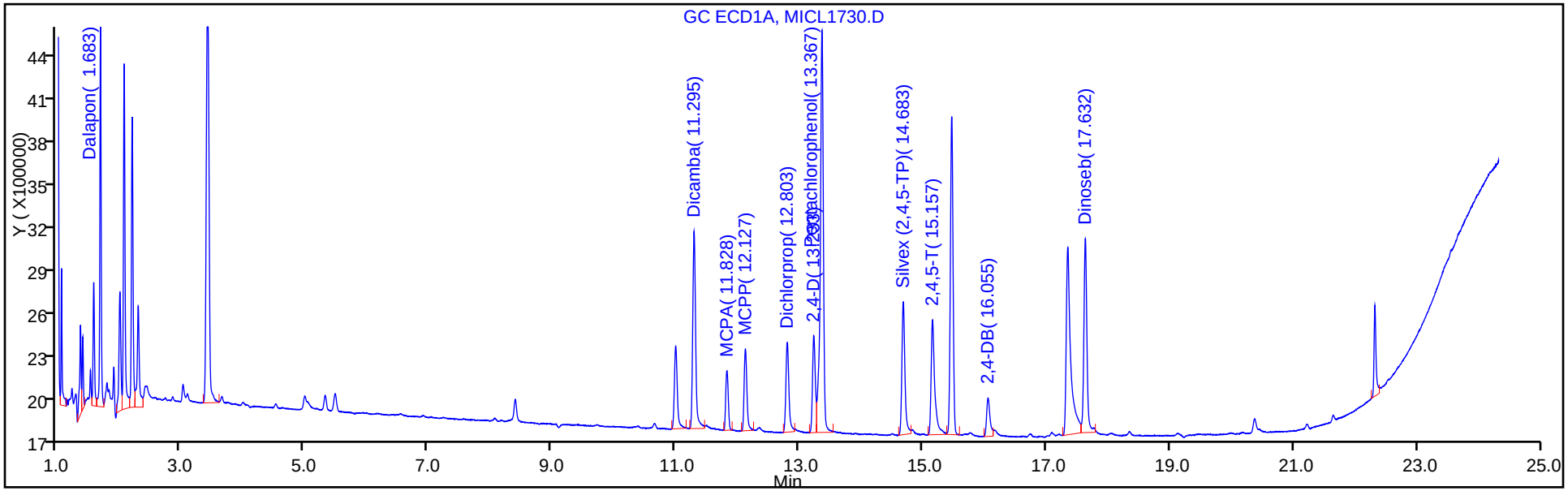
Herb Prime_00022 Amount Added: 125.00 Units: uL

Report Date: 17-Aug-2016 09:40:09 Chrom Revision: 2.2 20-Apr-2016 13:59:46

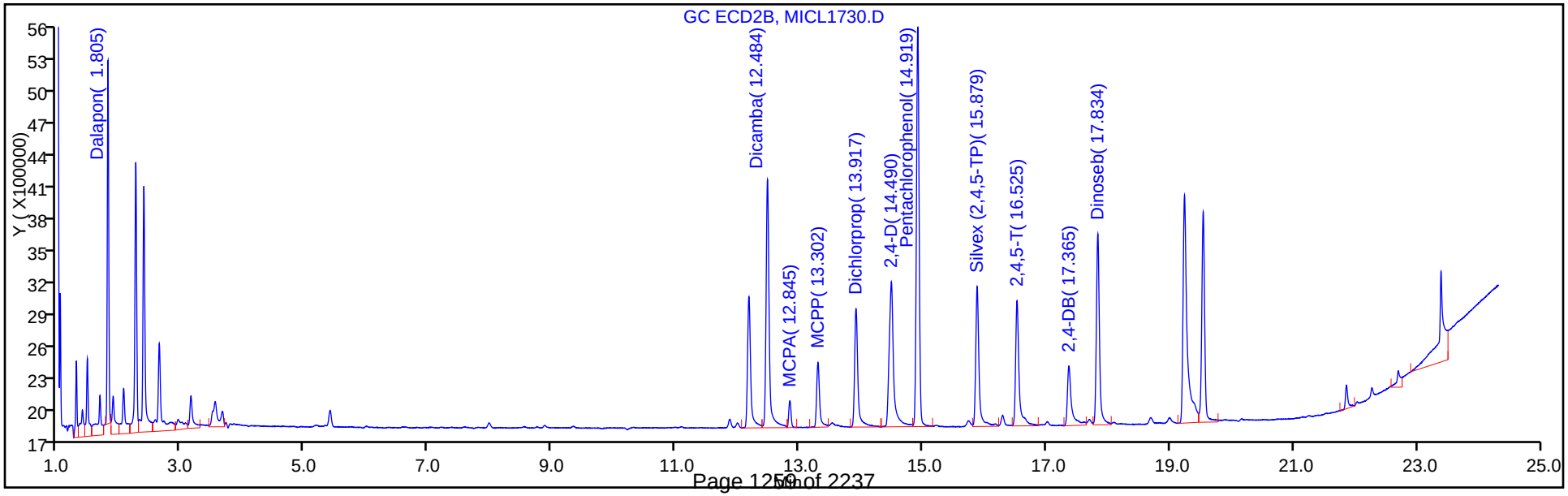
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1730.D				
Injection Date:	16-Aug-2016 11:58:00	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	6
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

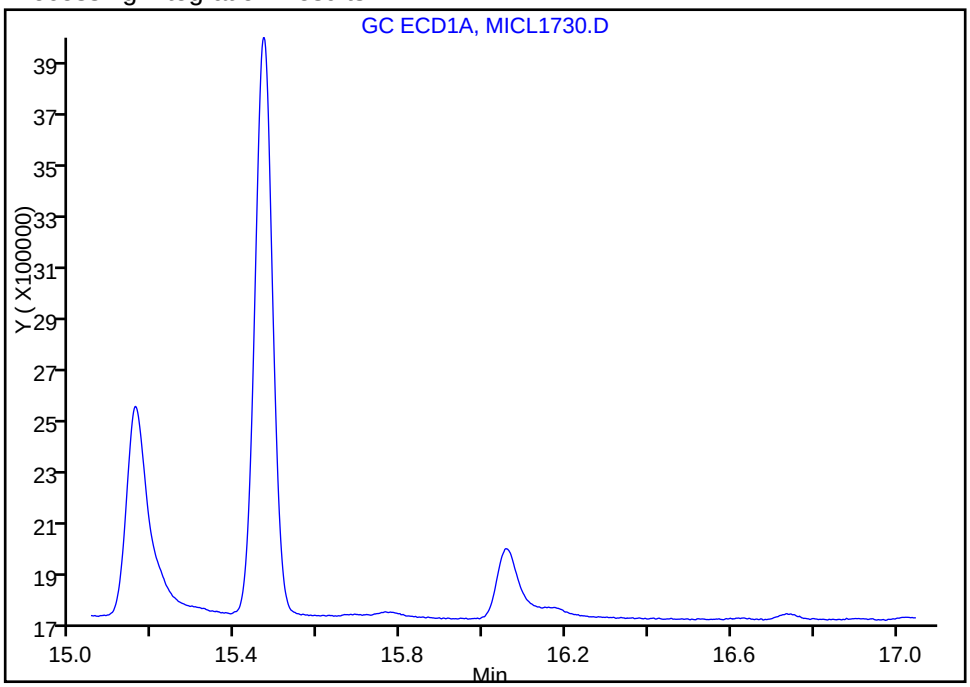
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1730.D				
Injection Date:	16-Aug-2016 11:58:00	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

7 2,4-DB, CAS: 94-82-6

Signal: 1

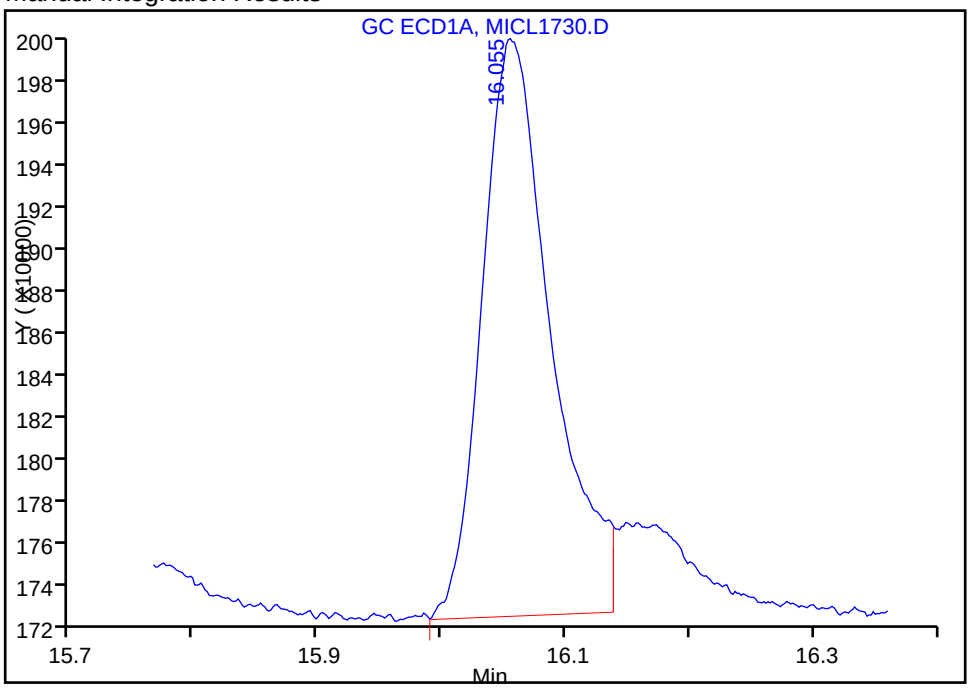
Processing Integration Results

RT: 16.05
Area: 0
Amount: 0
Amount Units: ng/ml



Manual Integration Results

RT: 16.05
Area: 1038669
Amount: 15.167894
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:32:02

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1731.D
Lims ID: ICRT
Client ID:
Sample Type: ICRT Calib Level: 5
Inject. Date: 16-Aug-2016 12:27:01 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: ICRT
Misc. Info.: 160-0008212-007
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:10 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:31:16

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.678	1.678	0.000	7083770	32.0	29.7	
2	1.808	1.808	0.000	10357801	32.0	30.5	
						RPD = 2.90	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.989	10.989	0.000	3770835	32.0	31.7	
2	12.180	12.180	0.000	8450659	32.0	31.2	
						RPD = 1.65	
1 Dicamba							
1	11.288	11.288	0.000	8879041	16.0	15.8	
2	12.480	12.480	0.000	15678517	16.0	15.3	
						RPD = 3.48	
4 MCPA							
1	11.819	11.819	0.000	2582321	3200.0	3912.5	
2	12.841	12.841	0.000	1709709	3200.0	3135.7	
						RPD = 22.04	
9 MCPP							
1	12.119	12.119	0.000	3560680	3201.0	3611.5	
2	13.296	13.296	0.000	4118618	3201.0	3419.4	
						RPD = 5.46	
6 Dichlorprop							
1	12.796	12.796	0.000	4396171	32.0	32.2	
2	13.915	13.915	0.000	8129566	32.0	31.6	
						RPD = 1.78	
8 2,4-D							
1	13.226	13.226	0.000	4389488	32.0	32.7	
2	14.485	14.485	0.000	13252033	32.0	30.9	
						RPD = 5.70	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.359	13.359	0.000	19563585	8.00	7.81	
2	14.915	14.915	0.000	22863093	8.00	7.76	
						RPD = 0.65	
2 Silvex (2,4,5-TP)							
1	14.676	14.676	0.000	6579997	8.00	8.14	
2	15.876	15.876	0.000	9657808	8.00	8.10	
						RPD = 0.47	
5 2,4,5-T							
1	15.149	15.149	0.000	6577055	8.00	7.90	
2	16.521	16.521	0.000	9402985	8.00	7.93	
						RPD = 0.38	
7 2,4-DB							
1	16.049	16.049	0.000	2271569	32.0	33.2	
2	17.361	17.361	0.000	5128623	32.0	32.6	
						RPD = 1.81	
13 Dinoseb							
1	17.628	17.628	0.000	9236649	32.0	30.9	
2	17.830	17.830	0.000	12414013	32.0	31.2	
						RPD = 0.73	

Reagents:

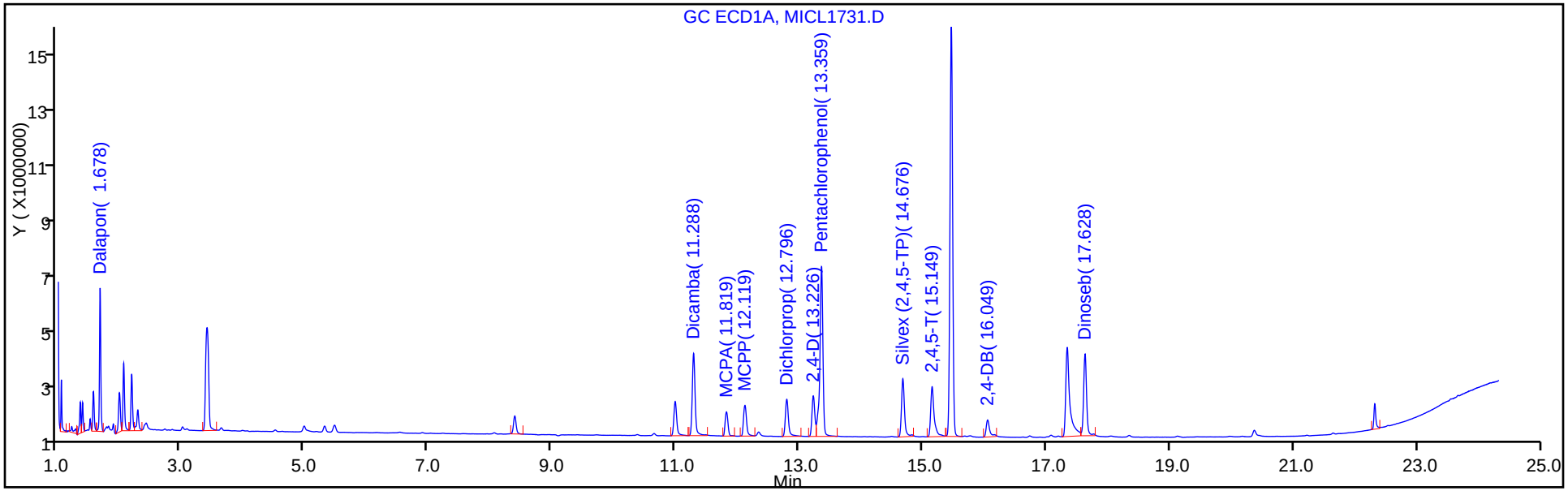
Herb Prime_00022 Amount Added: 250.00 Units: uL

Report Date: 17-Aug-2016 09:40:10 Chrom Revision: 2.2 20-Apr-2016 13:59:46

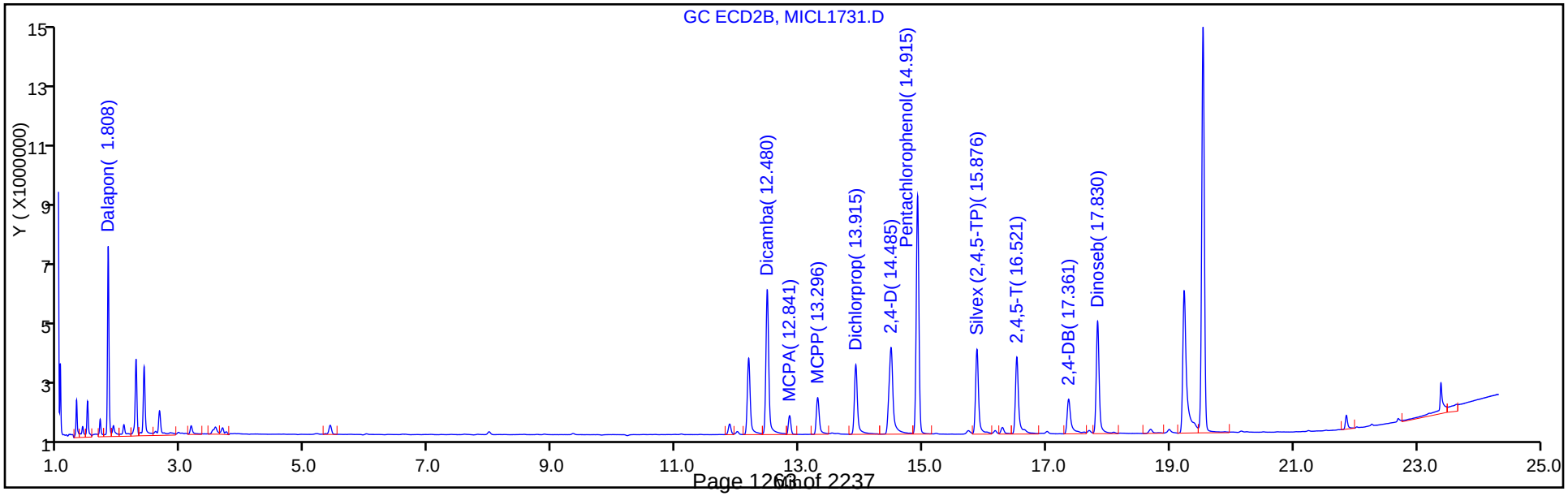
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1731.D				
Injection Date:	16-Aug-2016 12:27:01	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	ICRT			Worklist Smp#:	7
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	7
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1732.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 16-Aug-2016 13:00:00 ALS Bottle#: 8 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-008
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:11 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:31:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.682	1.678	0.004	13785411	63.9	57.7	
2	1.804	1.808	-0.004	20645158	63.9	60.8	
						RPD = 5.29	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.993	10.989	0.004	7212049	64.0	60.7	
2	12.180	12.180	0.000	16084983	64.0	59.4	
						RPD = 2.13	
1 Dicamba							
1	11.293	11.288	0.005	17115565	32.0	30.5	
2	12.480	12.480	0.000	30385692	32.0	29.6	
						RPD = 2.94	
4 MCPA							
1	11.823	11.819	0.004	4689955	6400.1	7105.7	
2	12.844	12.841	0.003	3868268	6400.1	6489.9	
						RPD = 9.06	
9 MCPP							
1	12.122	12.119	0.003	6155853	6401.9	6243.7	
2	13.299	13.296	0.003	8334848	6401.9	6919.8	
						RPD = 10.27	
6 Dichlorprop							
1	12.802	12.796	0.006	8500892	64.0	62.3	
2	13.915	13.915	0.000	15655482	64.0	60.9	
						RPD = 2.19	
8 2,4-D							
1	13.228	13.226	0.002	8644605	64.0	64.4	
2	14.487	14.485	0.002	25756922	64.0	60.1	
						RPD = 7.02	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.363	13.359	0.004	38613674	16.0	15.4	
2	14.917	14.915	0.002	46560938	16.0	15.8	
						RPD = 2.48	
2 Silvex (2,4,5-TP)							
1	14.680	14.676	0.004	12866701	16.0	15.9	
2	15.877	15.876	0.001	19547782	16.0	16.4	
						RPD = 2.98	
5 2,4,5-T							
1	15.152	15.149	0.003	13291719	16.0	16.0	
2	16.522	16.521	0.001	18707817	16.0	15.8	
						RPD = 1.19	
7 2,4-DB							
1	16.052	16.049	0.003	4579281	64.0	66.9	
2	17.360	17.361	-0.001	10000541	64.0	63.5	
						RPD = 5.13	
13 Dinoseb							
1	17.632	17.628	0.004	18043567	64.0	60.4	
2	17.832	17.830	0.002	24799067	64.0	62.2	
						RPD = 2.97	

Reagents:

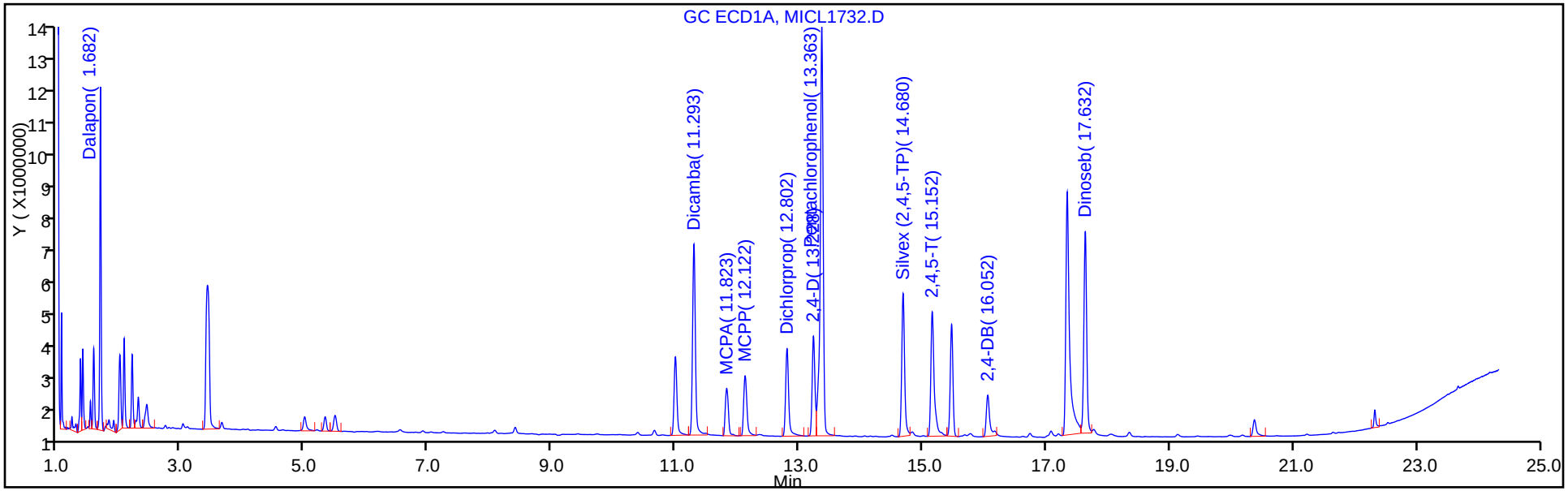
Herb Prime_00022 Amount Added: 500.00 Units: uL

Report Date: 17-Aug-2016 09:40:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

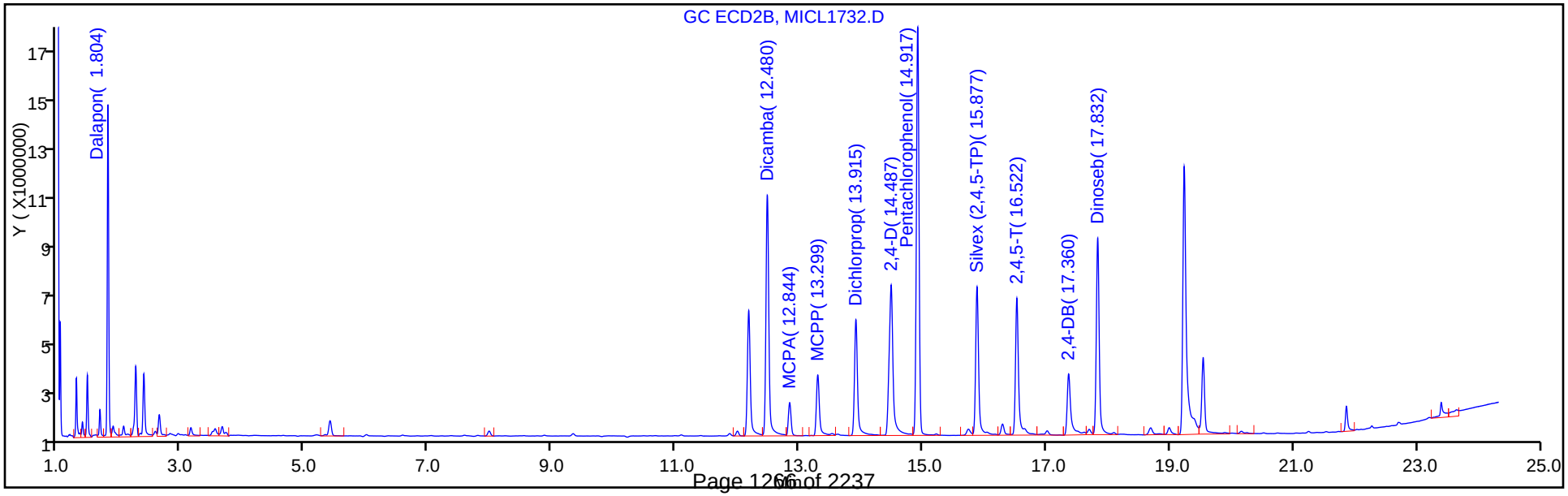
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1732.D				
Injection Date:	16-Aug-2016 13:00:00	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	8
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	8
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 16-Aug-2016 13:33:13 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-009
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:12 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:31:26

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.684	1.678	0.006	26181862	127.8	109.6	
2	1.804	1.808	-0.004	39394962	127.8	116.1	
						RPD = 5.76	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.992	10.989	0.003	13172975	128.0	110.8	
2	12.181	12.180	0.001	29789421	128.0	110.0	
						RPD = 0.74	
1 Dicamba							
1	11.292	11.288	0.004	32171004	64.0	57.4	
2	12.481	12.480	0.001	57832175	64.0	56.4	
						RPD = 1.69	
4 MCPA							
1	11.824	11.819	0.005	7583918	12800	11490	
2	12.842	12.841	0.001	7847342	12800	12783	
						RPD = 10.65	
9 MCPP							
1	12.120	12.119	0.001	9705358	12804	9843.8	
2	13.297	13.296	0.001	14502585	12804	12040	
						RPD = 20.08	
6 Dichlorprop							
1	12.799	12.796	0.003	15626857	128.0	114.5	
2	13.916	13.915	0.001	28969742	128.0	112.8	
						RPD = 1.53	
8 2,4-D							
1	13.227	13.226	0.001	16126400	128.0	120.2	
2	14.486	14.485	0.001	47601842	128.0	111.0	
						RPD = 7.95	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.364	13.359	0.005	74174581	32.0	29.6	
2	14.917	14.915	0.002	90888633	32.0	30.9	
						RPD = 4.09	
2 Silvex (2,4,5-TP)							
1	14.679	14.676	0.003	24733545	32.0	30.6	
2	15.877	15.876	0.001	36806982	32.0	30.9	
						RPD = 0.91	
5 2,4,5-T							
1	15.150	15.149	0.001	25133117	32.0	30.2	
2	16.521	16.521	0.000	34529478	32.0	29.1	
						RPD = 3.61	
7 2,4-DB							
1	16.049	16.049	0.000	8437381	128.0	123.2	
2	17.361	17.361	0.000	18002405	128.0	114.4	
						RPD = 7.46	
13 Dinoseb							
1	17.629	17.628	0.001	33756380	128.0	113.0	
2	17.832	17.830	0.002	46035533	128.0	115.5	
						RPD = 2.19	

Reagents:

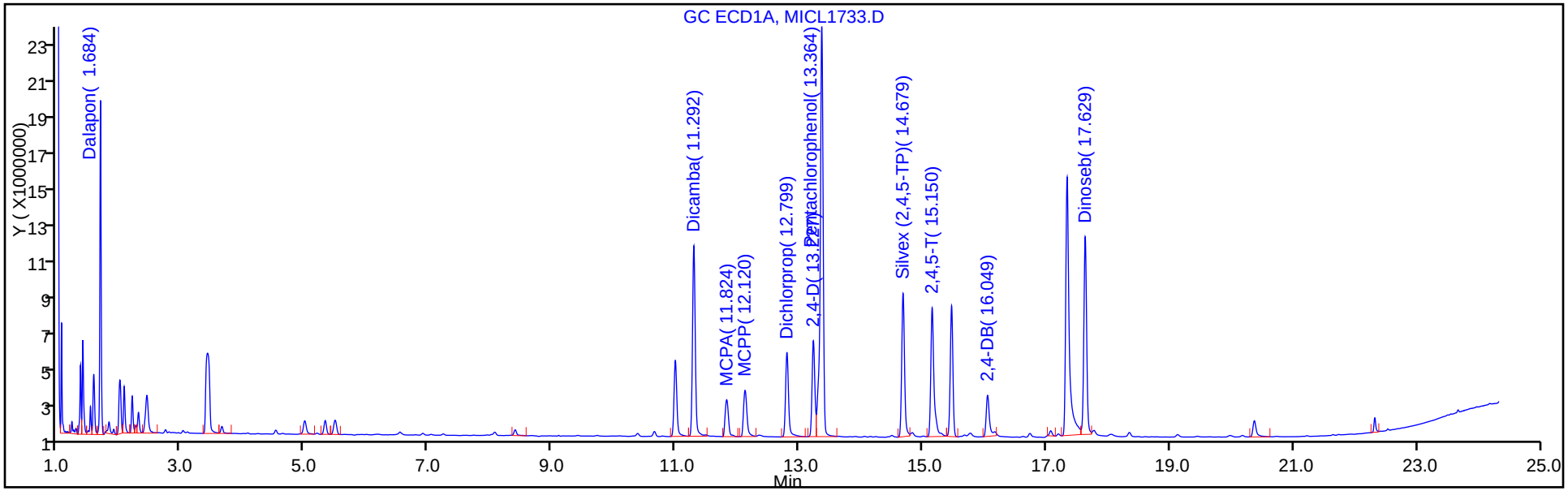
Herb Prime_00022 Amount Added: 1000.00 Units: uL

Report Date: 17-Aug-2016 09:40:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

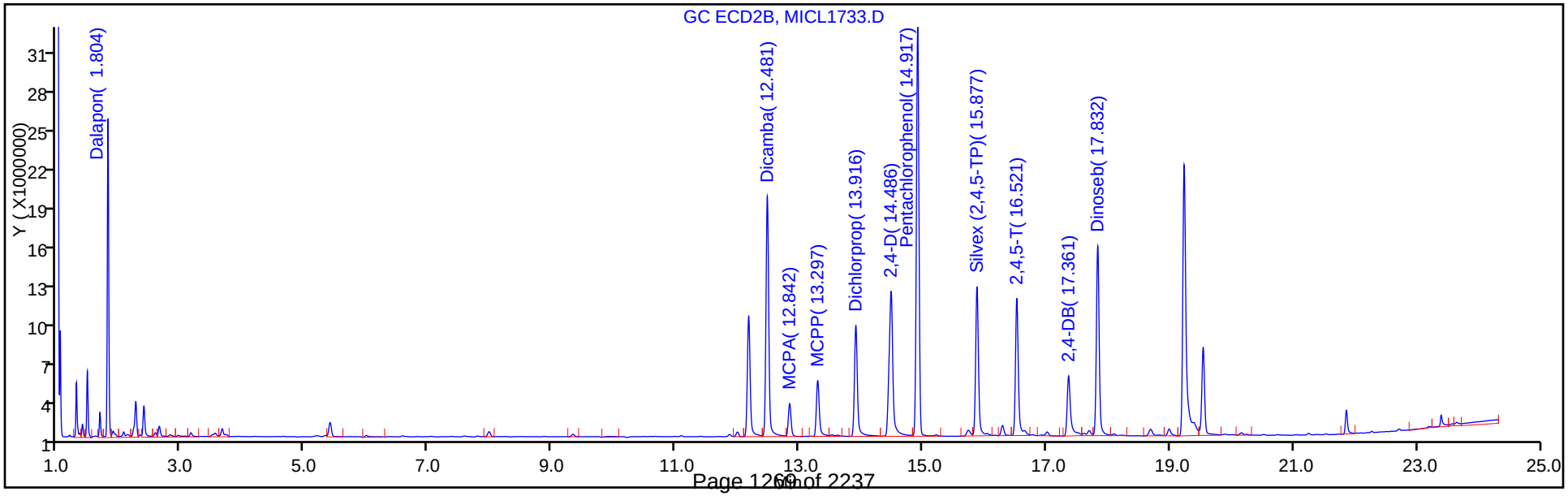
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D				
Injection Date:	16-Aug-2016 13:33:13	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	9
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	9
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



FORM VI
HERBICIDES BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264929

SDG No.: Headworks/9720-8

Instrument ID: SGCM GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/16/2016 10:17 Calibration End Date: 08/16/2016 13:33 Calibration ID: 11327

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-264929/3	MICL1727.D
Level 2	IC 160-264929/4	MICL1728.D
Level 3	IC 160-264929/5	MICL1729.D
Level 4	IC 160-264929/6	MICL1730.D
Level 5	ICRT 160-264929/7	MICL1731.D
Level 6	IC 160-264929/8	MICL1732.D
Level 7	IC 160-264929/9	MICL1733.D

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Dalapon	1.805	1.805	1.805	1.805	1.808	1.804	1.804				1.778 - 1.838	1.805
Dicamba	12.485	12.485	12.483	12.484	12.480	12.480	12.481				12.450 - 12.510	12.483
MCPA		12.847	12.845	12.845	12.841	12.844	12.842				12.811 - 12.871	12.844
MCPP		13.302	13.302	13.302	13.296	13.299	13.297				13.266 - 13.326	13.300
Dichlorprop	13.919	13.919	13.918	13.917	13.915	13.915	13.916				13.885 - 13.945	13.917
2,4-D	14.495	14.492	14.492	14.490	14.485	14.487	14.486				14.455 - 14.515	14.490
Pentachlorophenol	14.917	14.919	14.918	14.919	14.915	14.917	14.917				14.885 - 14.945	14.917
Silvex (2,4,5-TP)	15.882	15.882	15.880	15.879	15.876	15.877	15.877				15.846 - 15.906	15.879
2,4,5-T	16.529	16.527	16.527	16.525	16.521	16.522	16.521				16.491 - 16.551	16.525
2,4-DB	17.369	17.369	17.367	17.365	17.361	17.360	17.361				17.331 - 17.391	17.365
Dinoseb	17.834	17.835	17.833	17.834	17.830	17.832	17.832				17.800 - 17.860	17.833
2,4-Dichlorophenylacetic acid	12.185	12.184	12.183	12.184	12.180	12.180	12.181				12.150 - 12.210	12.182

FORM VI
HERBICIDES BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264929

SDG No.: Headworks/9720-8

Instrument ID: SGCM GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/16/2016 10:17 Calibration End Date: 08/16/2016 13:33 Calibration ID: 11327

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-264929/3	MICL1727.D
Level 2	IC 160-264929/4	MICL1728.D
Level 3	IC 160-264929/5	MICL1729.D
Level 4	IC 160-264929/6	MICL1730.D
Level 5	ICRT 160-264929/7	MICL1731.D
Level 6	IC 160-264929/8	MICL1732.D
Level 7	IC 160-264929/9	MICL1733.D

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
Dalapon	373194 324168	364587 323065	341579 308235	340641	Ave		339352.629				6.9		20.0			
Dicamba	1290661 979907	1039614 949553	1001064 903628	1010368	Ave		1024970.67				12.2		20.0			
MCPA	 534.28	55.497 604.41	206.33 613.07	400.75	Qua	-331941.30	654.766735	-0.0011669						1.0000		0.9900
MCPP	 1286.7	1092.1 1301.9	1129.6 1132.7	1283.9	Ave		1204.48440				8.0		20.0			
Dichlorprop	293718 254049	272049 244617	248297 226326	259410	Ave		256923.690				8.3		20.0			
2,4-D	523203 414126	453903 402452	415245 371889	420608	Ave		428775.208				11.2		20.0			
Pentachlorophenol	3350850 2857887	3047019 2910059	2770345 2840270	2836962	Ave		2944770.04				6.8		20.0			
Silvex (2,4,5-TP)	1310634 1207226	1166147 1221736	1076253 1150218	1210841	Ave		1191864.94				6.1		20.0			
2,4,5-T	1446554 1175373	1208403 1169239	1073851 1079046	1144168	Ave		1185233.38				10.6		20.0			
2,4-DB	164664 160269	176106 156258	141531 140644	162506	Ave		157425.619				8.1		20.0			
Dinoseb	473594 387938	428013 387485	367189 359653	385217	Ave		398441.151				9.9		20.0			
2,4-Dichlorophenylacetic acid	320268 264083	283534 251328	271570 232730	271975	Ave		270783.963				10.1		20.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
HERBICIDES BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1 Analy Batch No.: 264929

SDG No.: Headworks/9720-8

Instrument ID: SGCM GC Column: RTXCLP2 ID: 0.53(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/16/2016 10:17 Calibration End Date: 08/16/2016 13:33 Calibration ID: 11327

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-264929/3	MICL1727.D
Level 2	IC 160-264929/4	MICL1728.D
Level 3	IC 160-264929/5	MICL1729.D
Level 4	IC 160-264929/6	MICL1730.D
Level 5	ICRT 160-264929/7	MICL1731.D
Level 6	IC 160-264929/8	MICL1732.D
Level 7	IC 160-264929/9	MICL1733.D

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Dalapon	Ave	745269 20645158	1456159 39394962	2728530	5442075	10357801	2.00 63.9	3.99 128	7.99	16.0	32.0
Dicamba	Ave	1290661 30385692	2079228 57832175	4004254	8082946	15678517	1.00 32.0	2.00 64.0	4.00	8.00	16.0
MCPA	Qua	 3868268	22199 7847342	165063	641208	1709709	 6400	400 12800	800	1600	3200
MCPP	Ave	 8334848	436956 14502585	903986	2054879	4118618	 6402	400 12804	800	1600	3201
Dichlorprop	Ave	587436 15655482	1088195 28969742	1986379	4150556	8129566	2.00 64.0	4.00 128	8.00	16.0	32.0
2,4-D	Ave	1046405 25756922	1815613 47601842	3321963	6729728	13252033	2.00 64.0	4.00 128	8.00	16.0	32.0
Pentachlorophenol	Ave	1675425 46560938	3047019 90888633	5540689	11347847	22863093	0.500 16.0	1.00 32.0	2.00	4.00	8.00
Silvex (2,4,5-TP)	Ave	655317 19547782	1166147 36806982	2152505	4843362	9657808	0.500 16.0	1.00 32.0	2.00	4.00	8.00
2,4,5-T	Ave	723277 18707817	1208403 34529478	2147702	4576671	9402985	0.500 16.0	1.00 32.0	2.00	4.00	8.00
2,4-DB	Ave	329328 10000541	704424 18002405	1132251	2600100	5128623	2.00 64.0	4.00 128	8.00	16.0	32.0
Dinoseb	Ave	947187 24799067	1712050 46035533	2937513	6163472	12414013	2.00 64.0	4.00 128	8.00	16.0	32.0
2,4-Dichlorophenylacetic acid	Ave	640535 16084983	1134135 29789421	2172562	4351607	8450659	2.00 64.0	4.00 128	8.00	16.0	32.0

Curve Type Legend:

Ave = Average
Qua = Quadratic

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1727.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 16-Aug-2016 10:17:52 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-003
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:04 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:41:27

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							M
1	1.683	1.678	0.005	533989	2.00	2.24	M
2	1.805	1.808	-0.003	745269	2.00	2.20	M
						RPD = 1.76	
$ 11 2,4-Dichlorophenylacetic acid							
1	11.000	10.989	0.011	245326	2.00	2.06	
2	12.185	12.180	0.005	640535	2.00	2.37	
						RPD = 13.61	
1 Dicamba							
1	11.297	11.288	0.009	639611	1.00	1.14	
2	12.485	12.480	0.005	1290661	1.00	1.26	
						RPD = 9.86	
6 Dichlorprop							
1	12.808	12.796	0.012	305527	2.00	2.24	
2	13.919	13.915	0.004	587436	2.00	2.29	
						RPD = 2.12	
8 2,4-D							
1	13.240	13.226	0.014	299310	2.00	2.23	
2	14.495	14.485	0.010	1046405	2.00	2.44	
						RPD = 8.96	
10 Pentachlorophenol							
1	13.368	13.359	0.009	1428605	0.5000	0.5706	
2	14.917	14.915	0.002	1675425	0.5000	0.5689	
						RPD = 0.30	
2 Silvex (2,4,5-TP)							
1	14.685	14.676	0.009	434419	0.5000	0.5375	
2	15.882	15.876	0.006	655317	0.5000	0.5498	
						RPD = 2.27	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
5 2,4,5-T							
1	15.160	15.149	0.011	467890	0.5000	0.5623	
2	16.529	16.521	0.008	723277	0.5000	0.6102	
						RPD = 8.18	
7 2,4-DB							
1	16.058	16.049	0.009	156993	2.00	2.29	a
2	17.369	17.361	0.008	329328	2.00	2.09	M
						RPD = 9.15	
13 Dinoseb							
1	17.633	17.628	0.005	698111	2.00	2.34	
2	17.834	17.830	0.004	947187	2.00	2.38	a
						RPD = 1.68	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

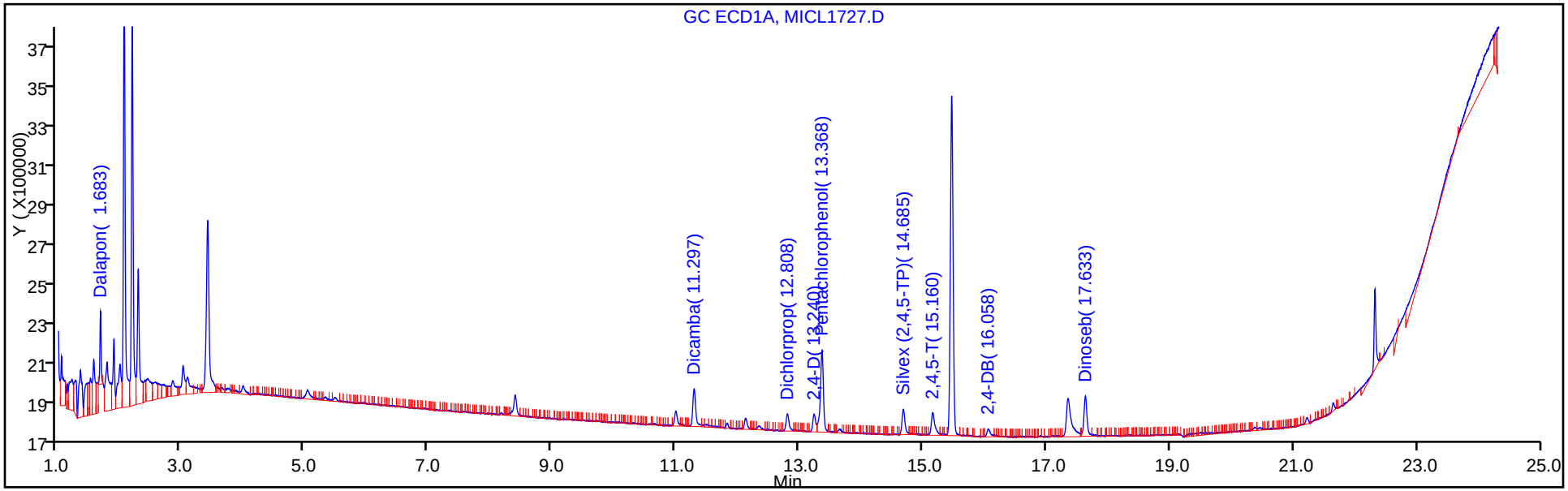
Herb Prime_00022 Amount Added: 15.63 Units: uL

Report Date: 17-Aug-2016 09:40:04 Chrom Revision: 2.2 20-Apr-2016 13:59:46

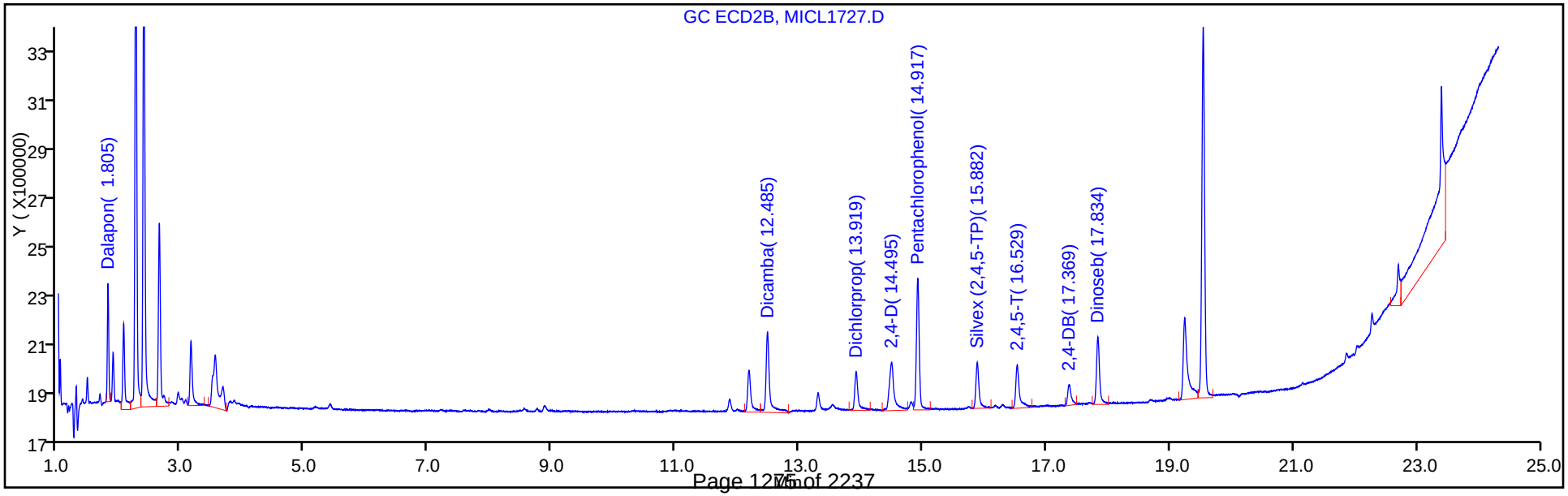
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1727.D				
Injection Date:	16-Aug-2016 10:17:52	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	3
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

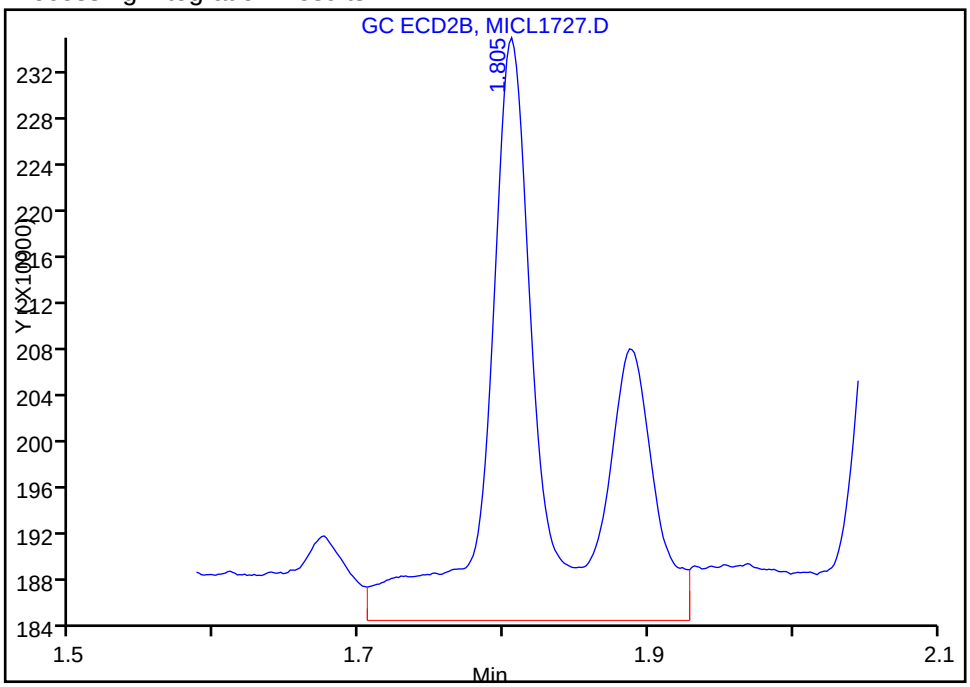
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1727.D				
Injection Date:	16-Aug-2016 10:17:52	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	3	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

12 Dalapon, CAS: 75-99-0

Signal: 2

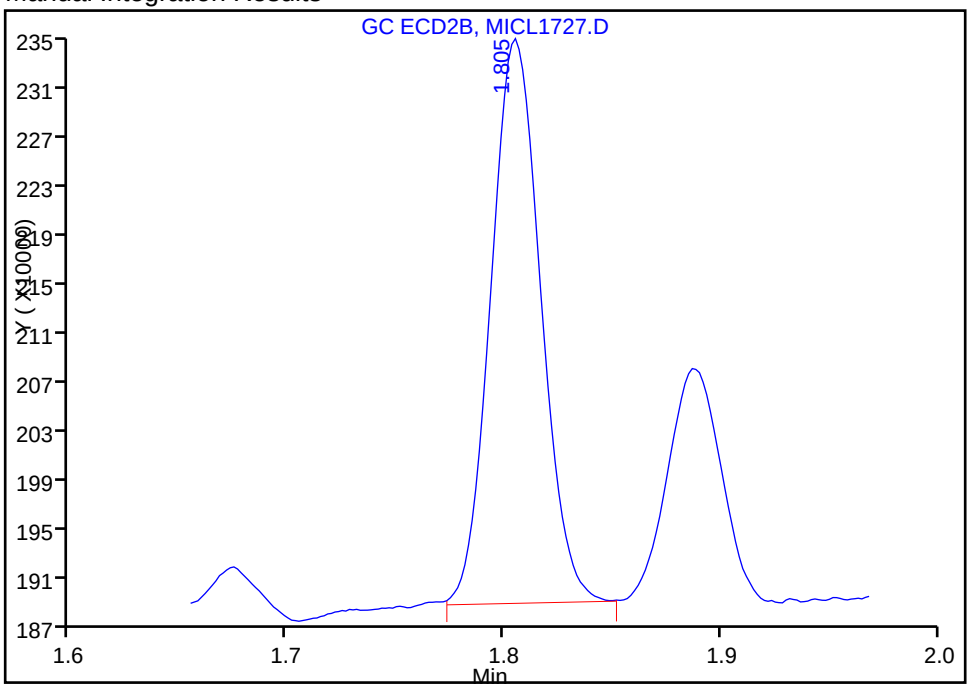
Processing Integration Results

RT: 1.81
Area: 1644957
Amount: 48.313249
Amount Units: ng/ml



Manual Integration Results

RT: 1.81
Area: 745269
Amount: 2.196149
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:41:27

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 16-Aug-2016 10:51:29 ALS Bottle#: 4 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-004
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:05 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:36:56

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							M
1	1.683	1.678	0.005	1045993	3.99	4.38	M
2	1.805	1.808	-0.003	1456159	3.99	4.29	M
						RPD = 2.01	
$ 11 2,4-Dichlorophenylacetic acid							M
1	11.000	10.989	0.011	545960	4.00	4.59	M
2	12.184	12.180	0.004	1134135	4.00	4.19	a
						RPD = 9.23	
1 Dicamba							
1	11.297	11.288	0.009	1114695	2.00	1.99	
2	12.485	12.480	0.005	2079228	2.00	2.03	
						RPD = 2.00	
4 MCPA							M
1	11.830	11.819	0.011	194200	400.0	294.2	M
2	12.847	12.841	0.006	22199	400.0	541.4	M
						RPD = 59.16	
9 MCPP							M
1	12.128	12.119	0.009	380133	400.1	385.6	M
2	13.302	13.296	0.006	436956	400.1	362.8	M
						RPD = 6.09	
6 Dichlorprop							
1	12.807	12.796	0.011	583916	4.00	4.28	M
2	13.919	13.915	0.004	1088195	4.00	4.24	a
						RPD = 1.00	
8 2,4-D							M
1	13.237	13.226	0.011	531425	4.00	3.96	M
2	14.492	14.485	0.007	1815613	4.00	4.23	a
						RPD = 6.66	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							M
1	13.367	13.359	0.008	2620296	1.00	1.05	M
2	14.919	14.915	0.004	3047019	1.00	1.03	
						RPD = 1.14	
2 Silvex (2,4,5-TP)							M
1	14.682	14.676	0.006	812121	1.00	1.00	M
2	15.882	15.876	0.006	1166147	1.00	0.9784	a
						RPD = 2.66	
5 2,4,5-T							M
1	15.160	15.149	0.011	846606	1.00	1.02	M
2	16.527	16.521	0.006	1208403	1.00	1.02	a
						RPD = 0.21	
7 2,4-DB							M
1	16.062	16.049	0.013	269433	4.00	3.93	M
2	17.369	17.361	0.008	704424	4.00	4.47	a
						RPD = 12.84	
13 Dinoseb							
1	17.633	17.628	0.005	1298462	4.00	4.35	
2	17.835	17.830	0.005	1712050	4.00	4.30	
						RPD = 1.19	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

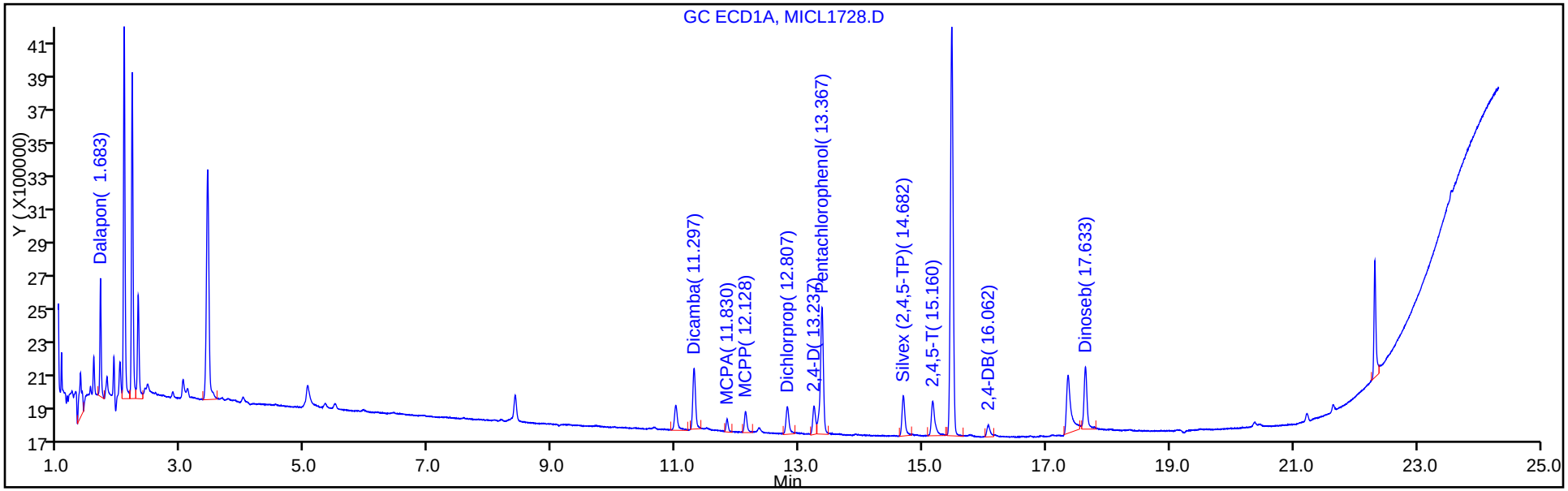
Herb Prime_00022 Amount Added: 31.25 Units: uL

Report Date: 17-Aug-2016 09:40:06 Chrom Revision: 2.2 20-Apr-2016 13:59:46

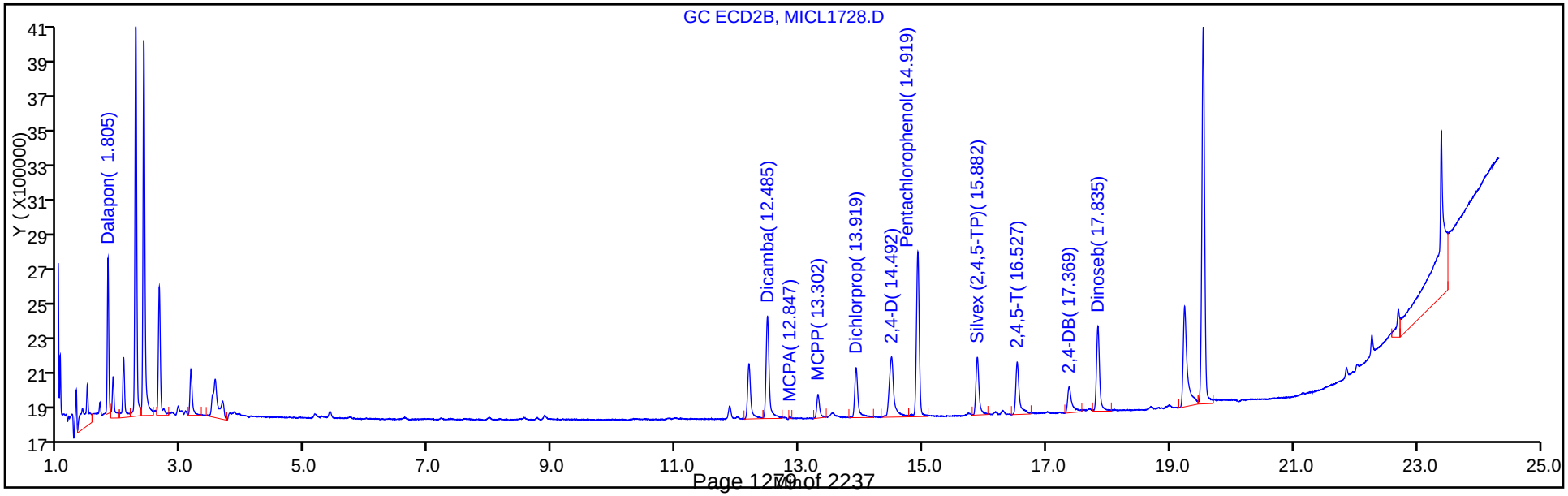
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	4
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

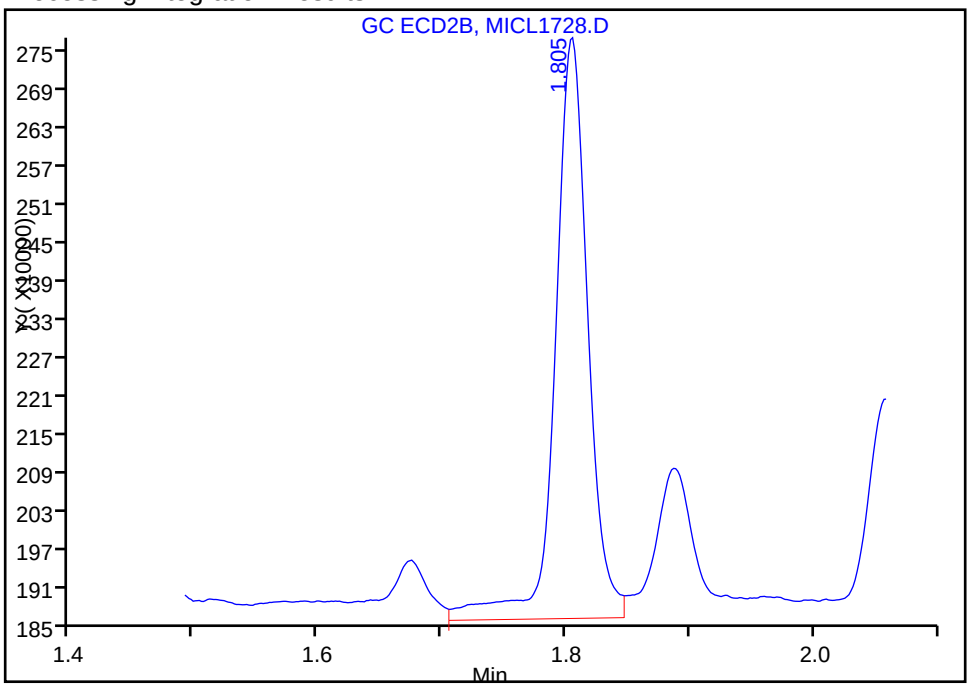
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

12 Dalapon, CAS: 75-99-0

Signal: 2

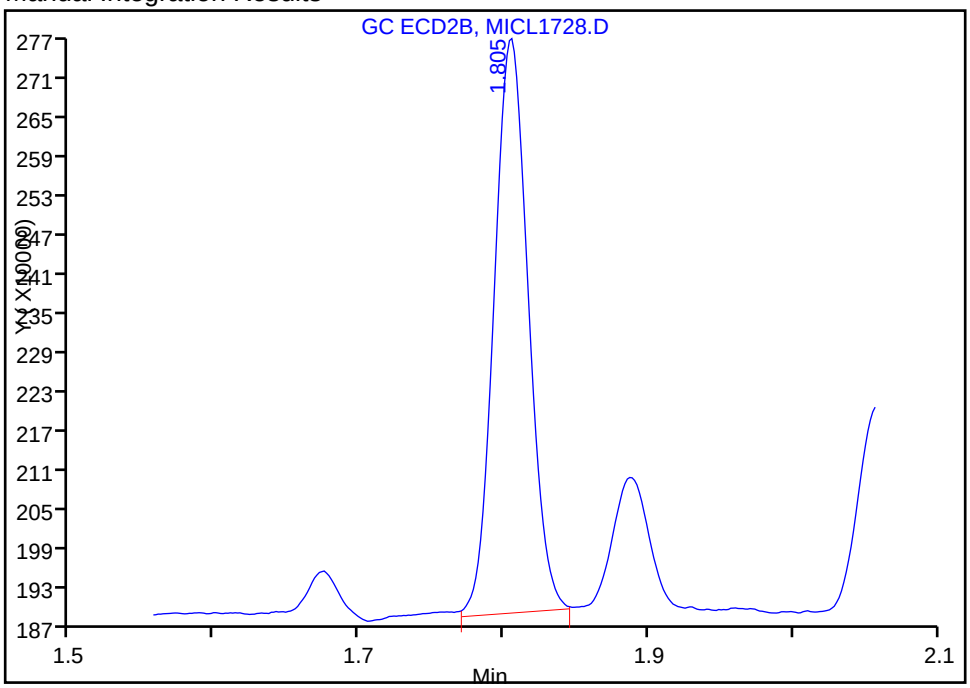
Processing Integration Results

RT: 1.81
Area: 1681669
Amount: 57.408674
Amount Units: ng/ml



Manual Integration Results

RT: 1.81
Area: 1456159
Amount: 4.290991
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:41:52

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

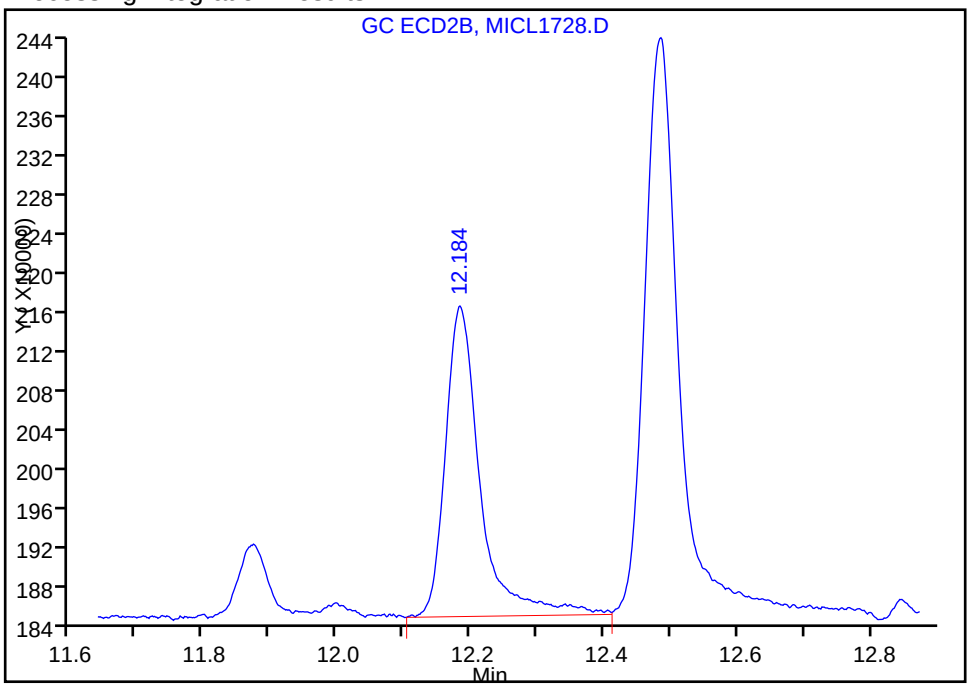
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

$ 11 2,4-Dichlorophenylacetic acid, CAS: 19719-28-9

Signal: 2

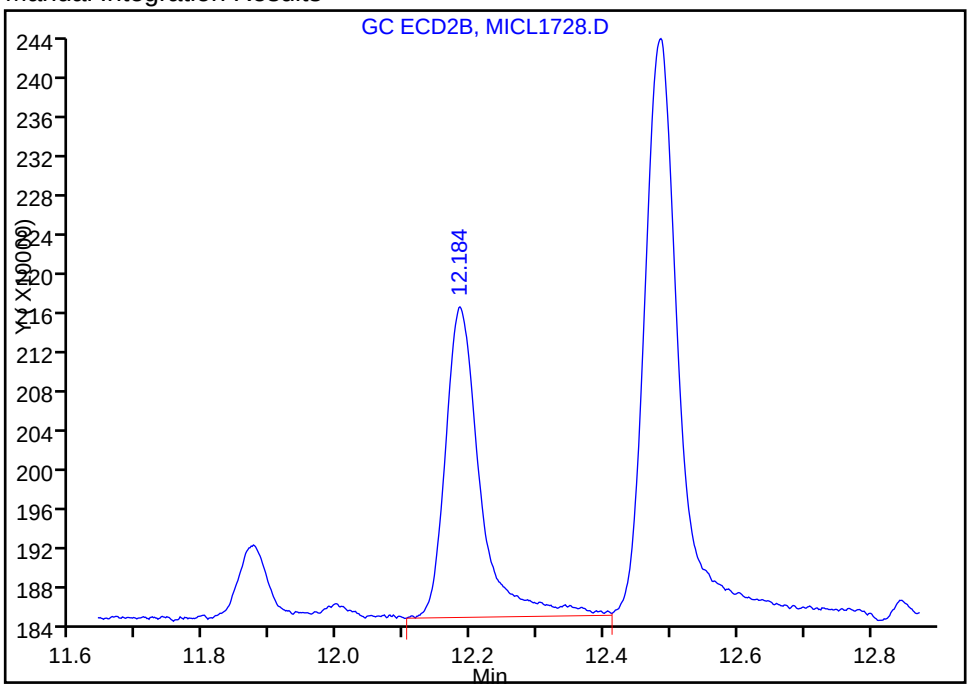
Processing Integration Results

RT: 12.18
Area: 1134135
Amount: 2.920949
Amount Units: ng/ml



Manual Integration Results

RT: 12.18
Area: 1134135
Amount: 4.188339
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

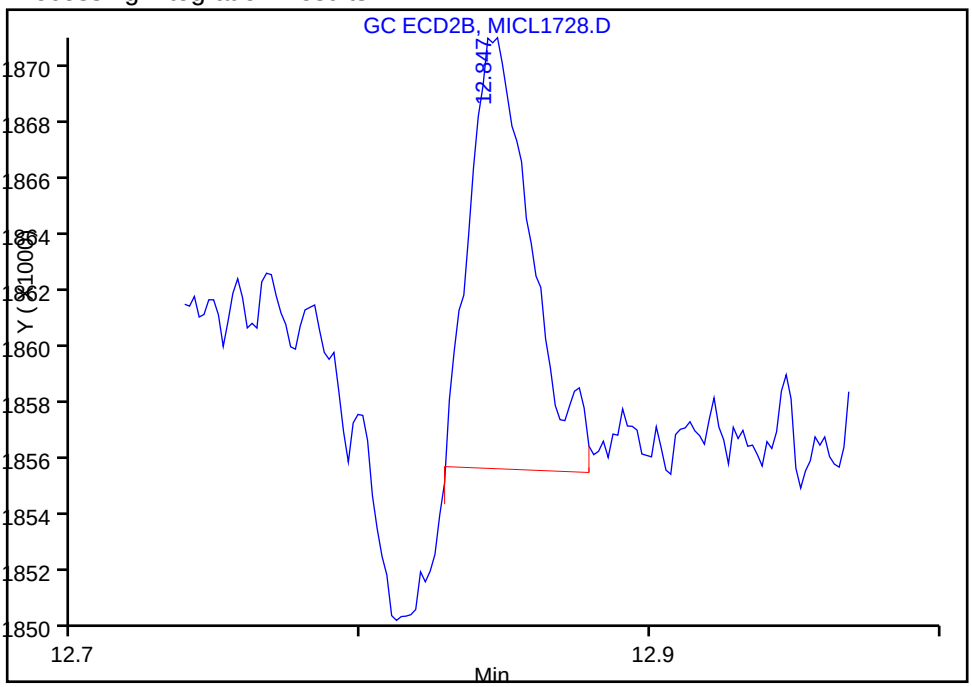
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

4 MCPA, CAS: 94-74-6

Signal: 2

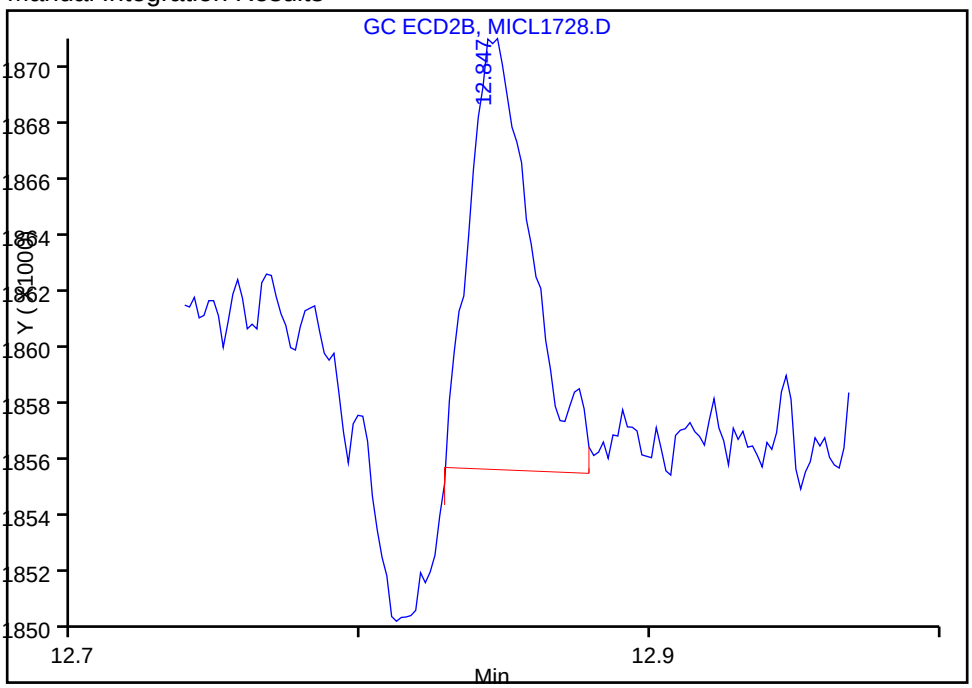
Processing Integration Results

RT: 12.85
Area: 22199
Amount: 262.9581
Amount Units: ng/ml



Manual Integration Results

RT: 12.85
Area: 22199
Amount: 541.3872
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

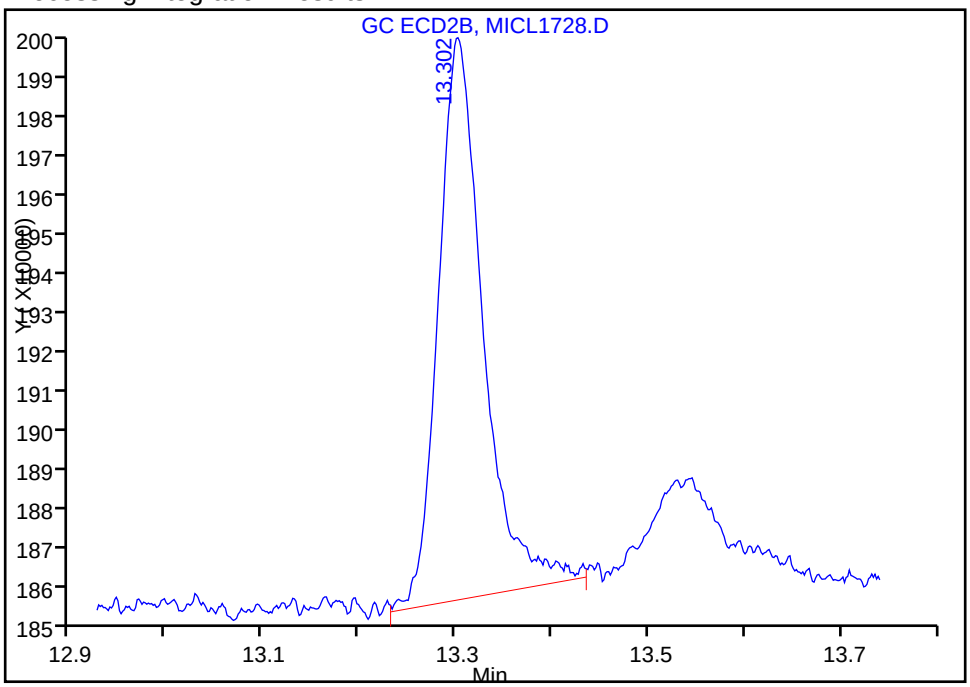
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

9 MCPP, CAS: 93-65-2

Signal: 2

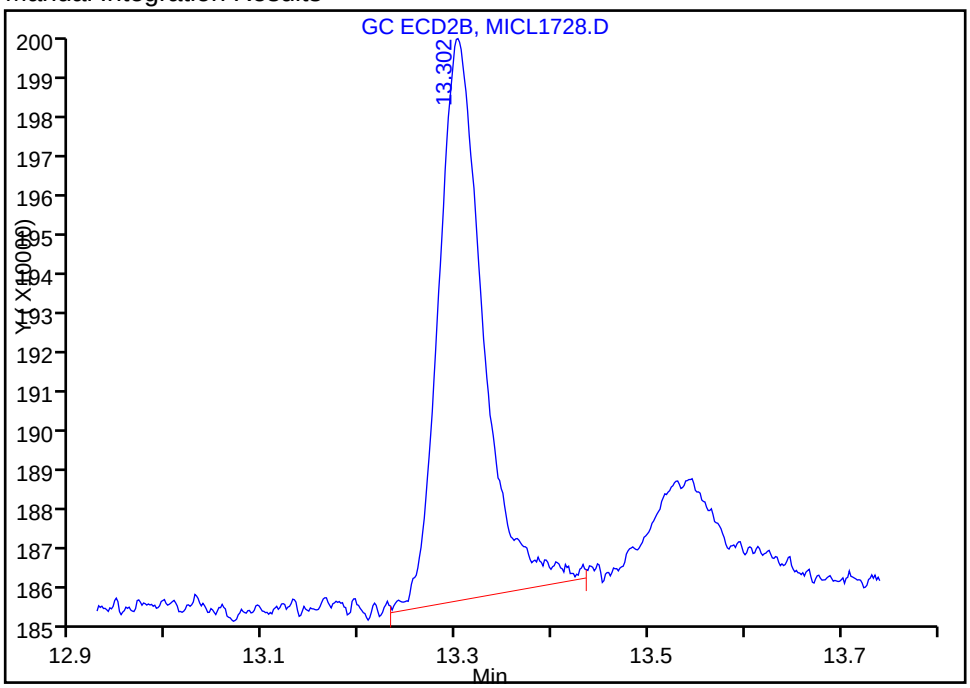
Processing Integration Results

RT: 13.30
Area: 436956
Amount: 1951.3745
Amount Units: ng/ml



Manual Integration Results

RT: 13.30
Area: 436956
Amount: 362.7743
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

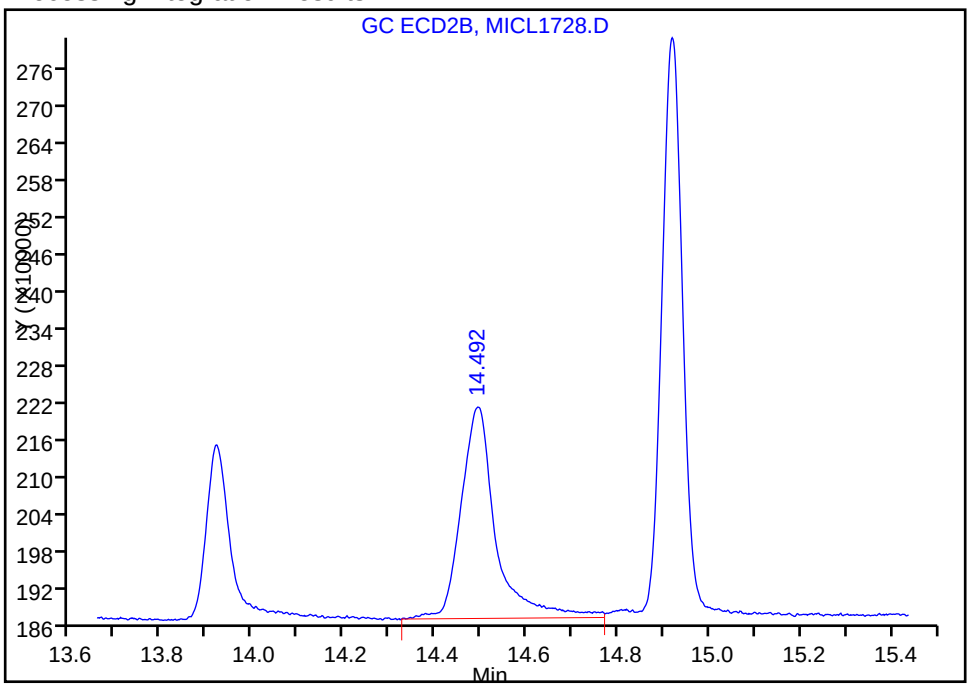
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

8 2,4-D, CAS: 94-75-7

Signal: 2

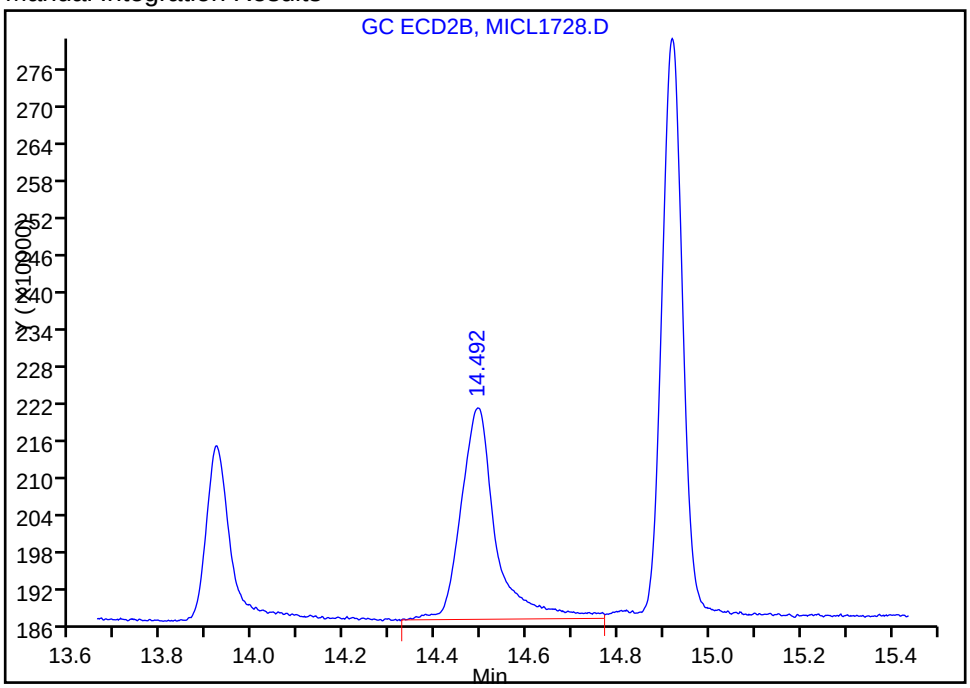
Processing Integration Results

RT: 14.49
Area: 1815613
Amount: 20.714673
Amount Units: ng/ml



Manual Integration Results

RT: 14.49
Area: 1815613
Amount: 4.234417
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

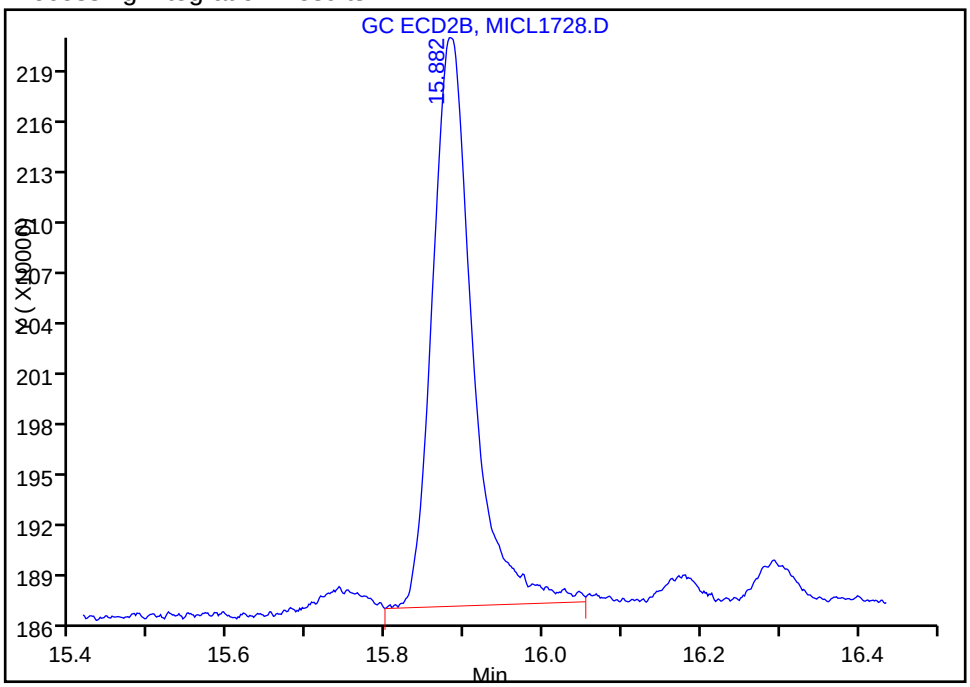
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

2 Silvex (2,4,5-TP), CAS: 93-72-1

Signal: 2

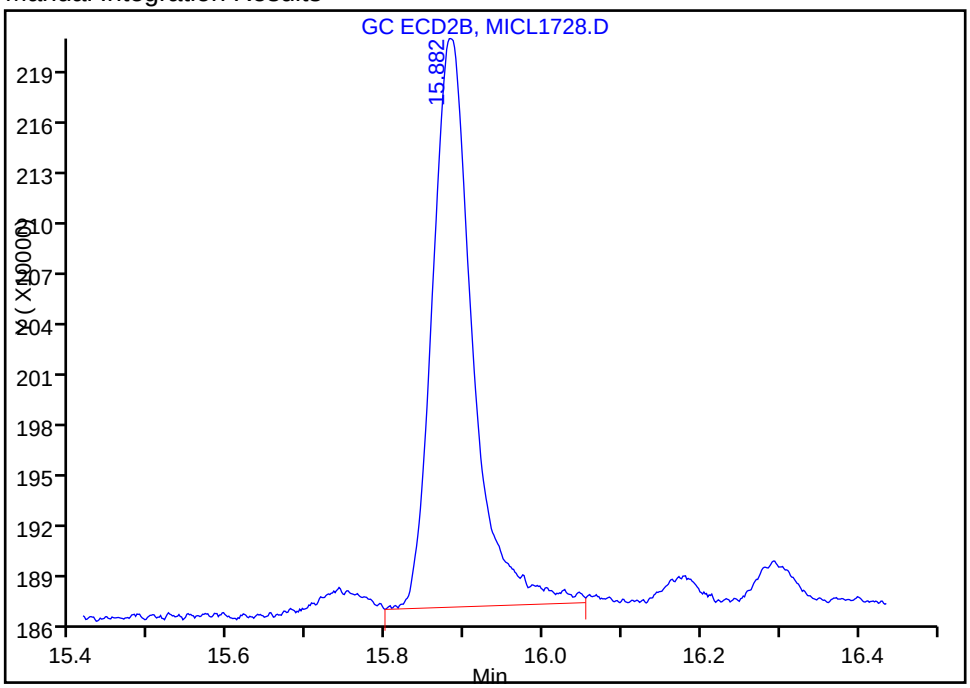
Processing Integration Results

RT: 15.88
Area: 1166147
Amount: 2.171104
Amount Units: ng/ml



Manual Integration Results

RT: 15.88
Area: 1166147
Amount: 0.978422
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56
Audit Action: Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

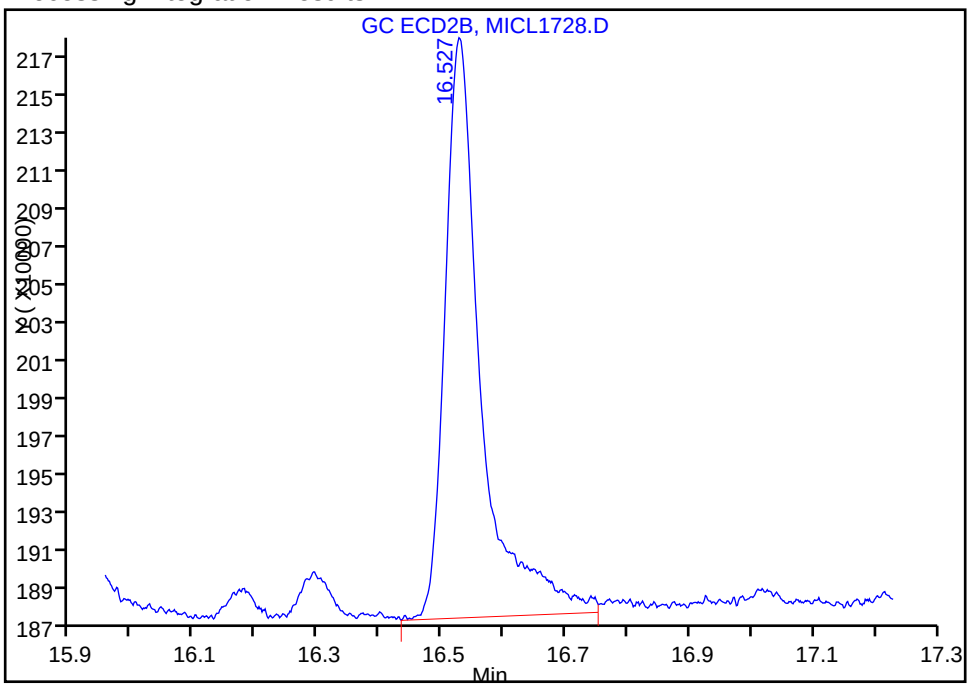
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

5 2,4,5-T, CAS: 93-76-5

Signal: 2

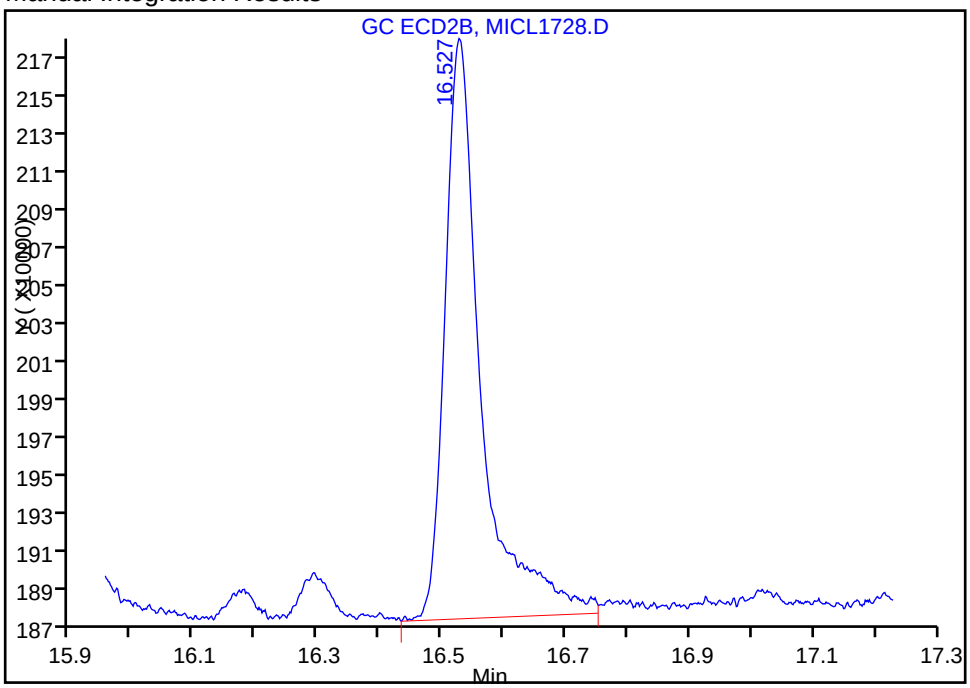
Processing Integration Results

RT: 16.53
Area: 1208403
Amount: 3.475847
Amount Units: ng/ml



Manual Integration Results

RT: 16.53
Area: 1208403
Amount: 1.019549
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

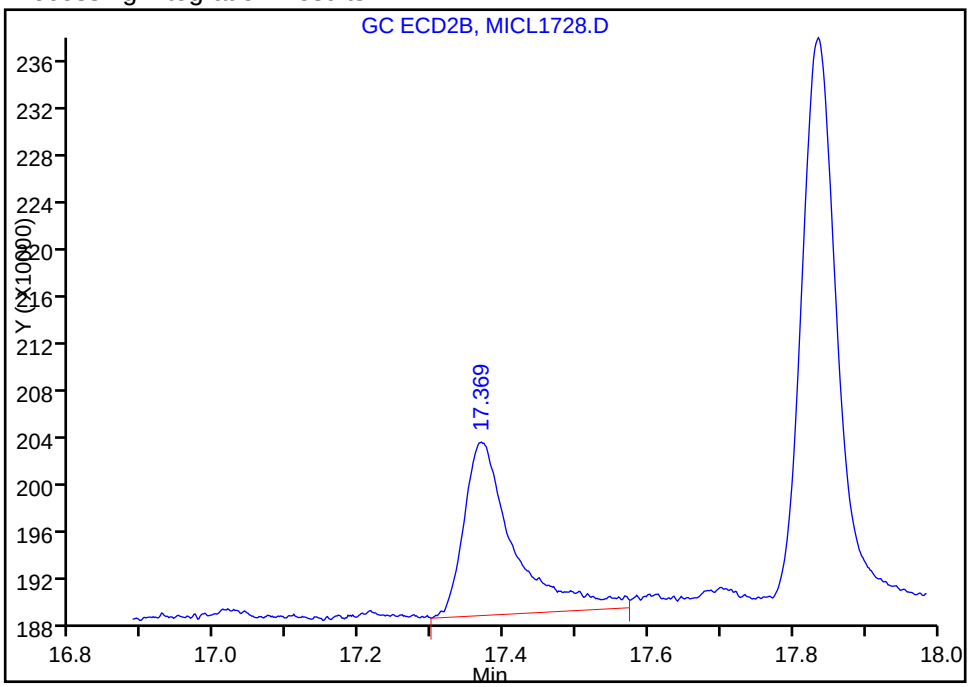
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1728.D				
Injection Date:	16-Aug-2016 10:51:29	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	4
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

7 2,4-DB, CAS: 94-82-6

Signal: 2

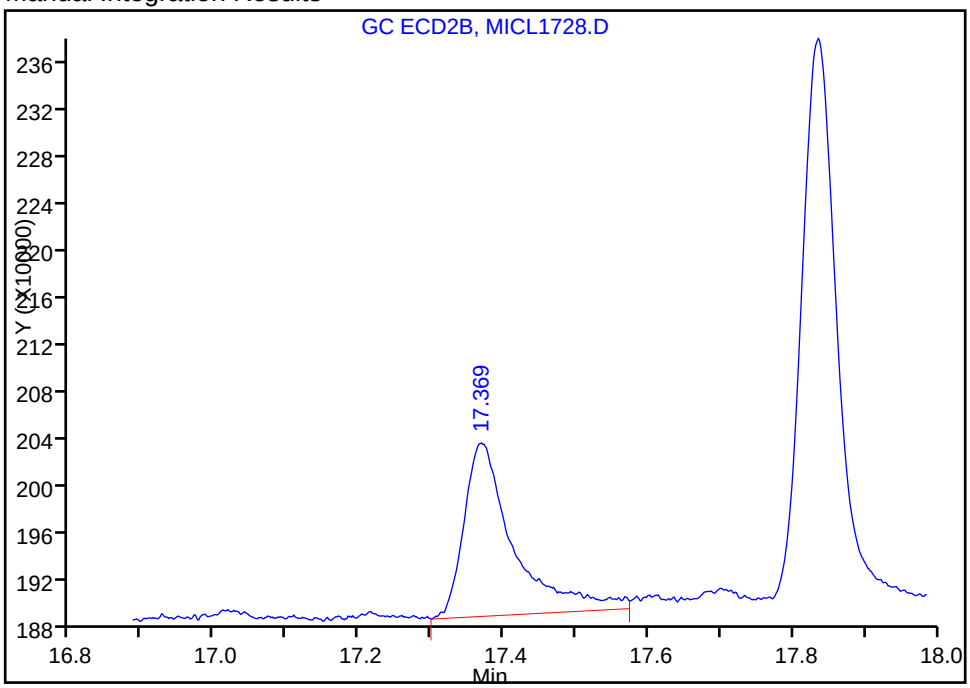
Processing Integration Results

RT: 17.37
Area: 704424
Amount: 11.362575
Amount Units: ng/ml



Manual Integration Results

RT: 17.37
Area: 704424
Amount: 4.474647
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:36:56

Audit Action: Assigned Compound ID Audit Reason: Peak not integrated

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1729.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 16-Aug-2016 11:24:55 ALS Bottle#: 5 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-005
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:07 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:33:45

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							M
1	1.683	1.678	0.005	1962943	7.99	8.22	M
2	1.805	1.808	-0.003	2728530	7.99	8.04	M
						RPD = 2.16	
$ 11 2,4-Dichlorophenylacetic acid							
1	11.000	10.989	0.011	960455	8.00	8.08	
2	12.183	12.180	0.003	2172562	8.00	8.02	
						RPD = 0.72	
1 Dicamba							
1	11.296	11.288	0.008	2285251	4.00	4.08	
2	12.483	12.480	0.003	4004254	4.00	3.91	
						RPD = 4.25	
4 MCPA							
1	11.828	11.819	0.009	473914	800.0	718.0	a
2	12.845	12.841	0.004	165063	800.0	760.1	M
						RPD = 5.69	
9 MCPP							
1	12.128	12.119	0.009	807558	800.2	819.1	
2	13.302	13.296	0.006	903986	800.2	750.5	
						RPD = 8.74	
6 Dichlorprop							
1	12.805	12.796	0.009	1043584	8.00	7.65	
2	13.918	13.915	0.003	1986379	8.00	7.73	
						RPD = 1.11	
8 2,4-D							
1	13.235	13.226	0.009	1002709	8.00	7.47	
2	14.492	14.485	0.007	3321963	8.00	7.75	
						RPD = 3.59	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.368	13.359	0.009	4783797	2.00	1.91	
2	14.918	14.915	0.003	5540689	2.00	1.88	
						RPD = 1.54	
2 Silvex (2,4,5-TP)							
1	14.686	14.676	0.010	1564106	2.00	1.94	
2	15.880	15.876	0.004	2152505	2.00	1.81	
						RPD = 6.91	
5 2,4,5-T							
1	15.160	15.149	0.011	1566674	2.00	1.88	
2	16.527	16.521	0.006	2147702	2.00	1.81	
						RPD = 3.82	
7 2,4-DB							
1	16.058	16.049	0.009	480964	8.00	7.02	
2	17.367	17.361	0.006	1132251	8.00	7.19	
						RPD = 2.37	
13 Dinoseb							
1	17.633	17.628	0.005	2315818	8.00	7.75	
2	17.833	17.830	0.003	2937513	8.00	7.37	
						RPD = 5.06	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

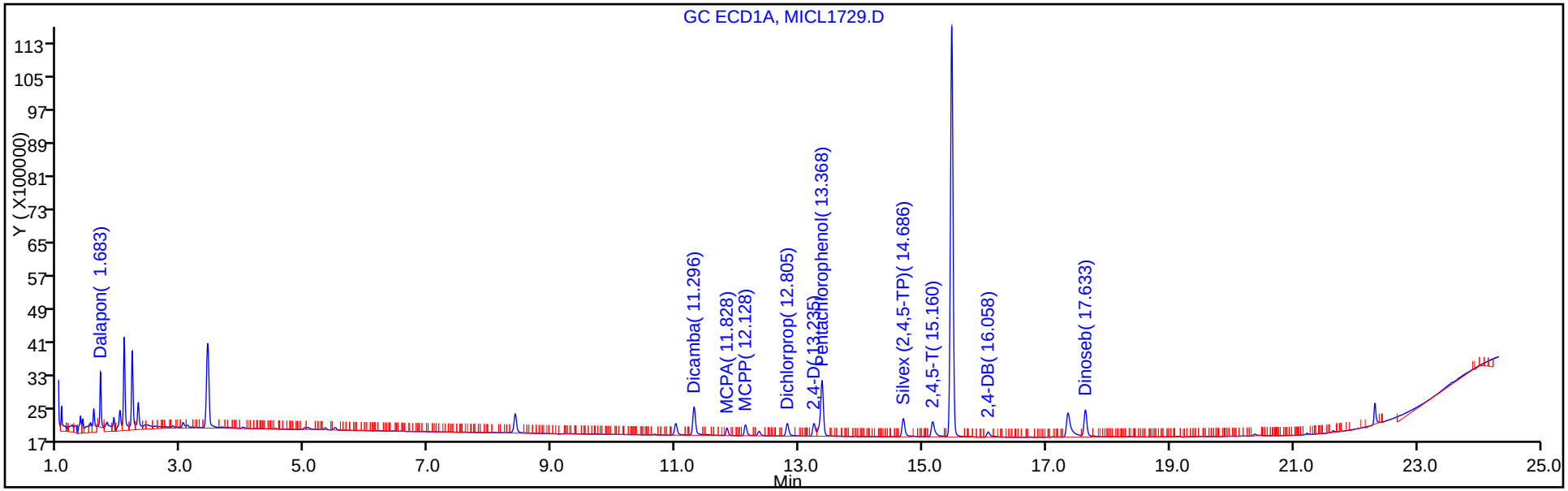
Herb Prime_00022 Amount Added: 62.50 Units: uL

Report Date: 17-Aug-2016 09:40:08 Chrom Revision: 2.2 20-Apr-2016 13:59:46

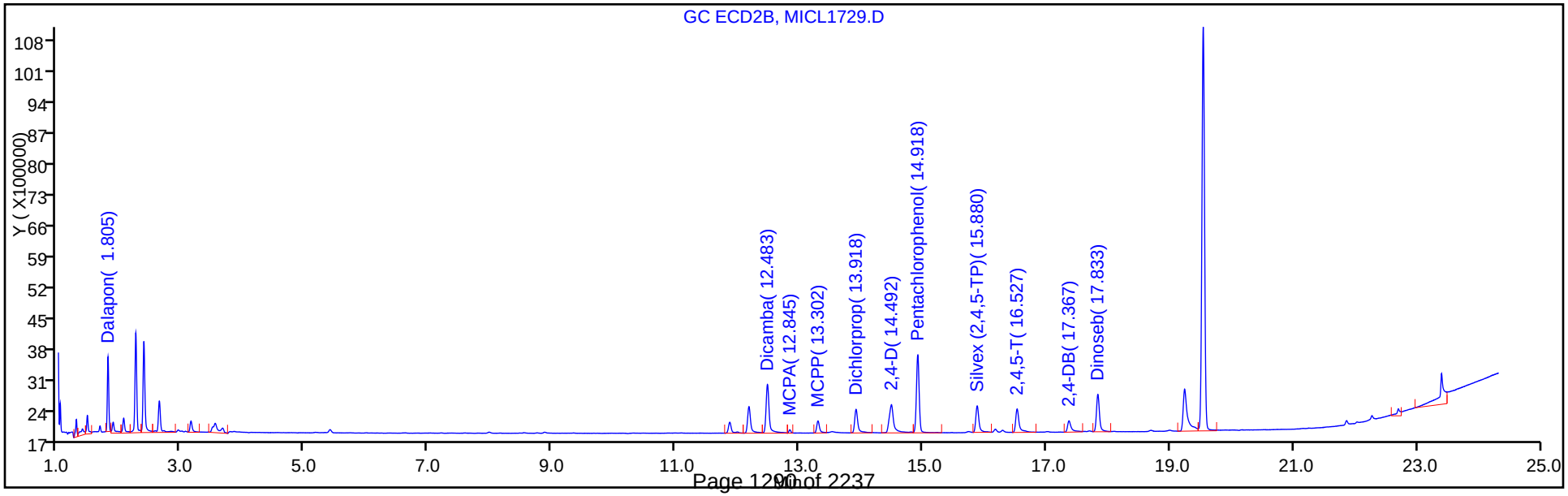
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1729.D				
Injection Date:	16-Aug-2016 11:24:55	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	5
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

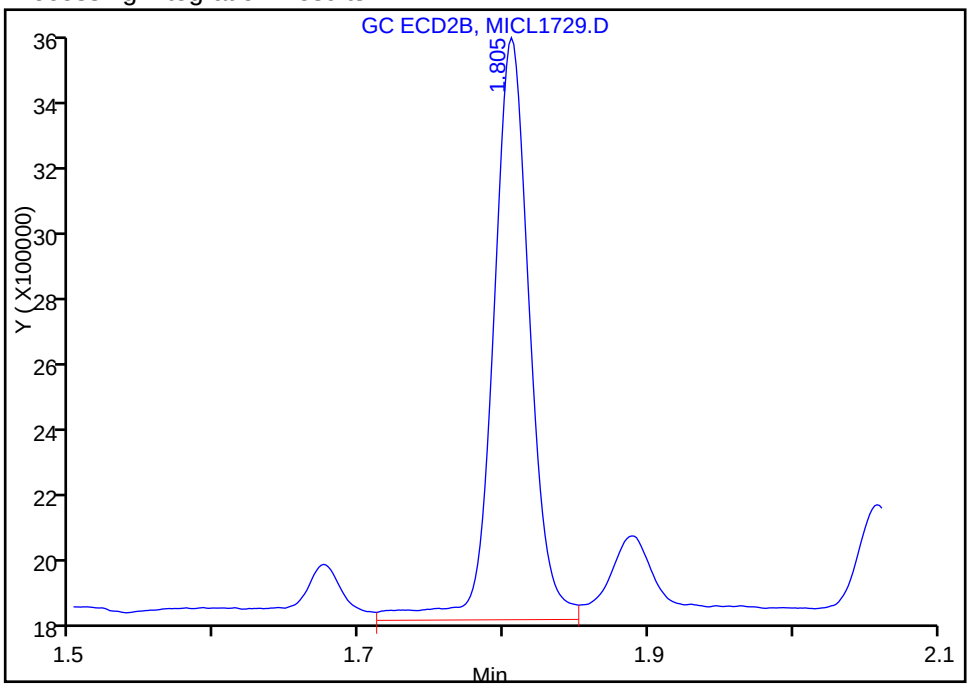
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1729.D				
Injection Date:	16-Aug-2016 11:24:55	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	5	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

12 Dalapon, CAS: 75-99-0

Signal: 2

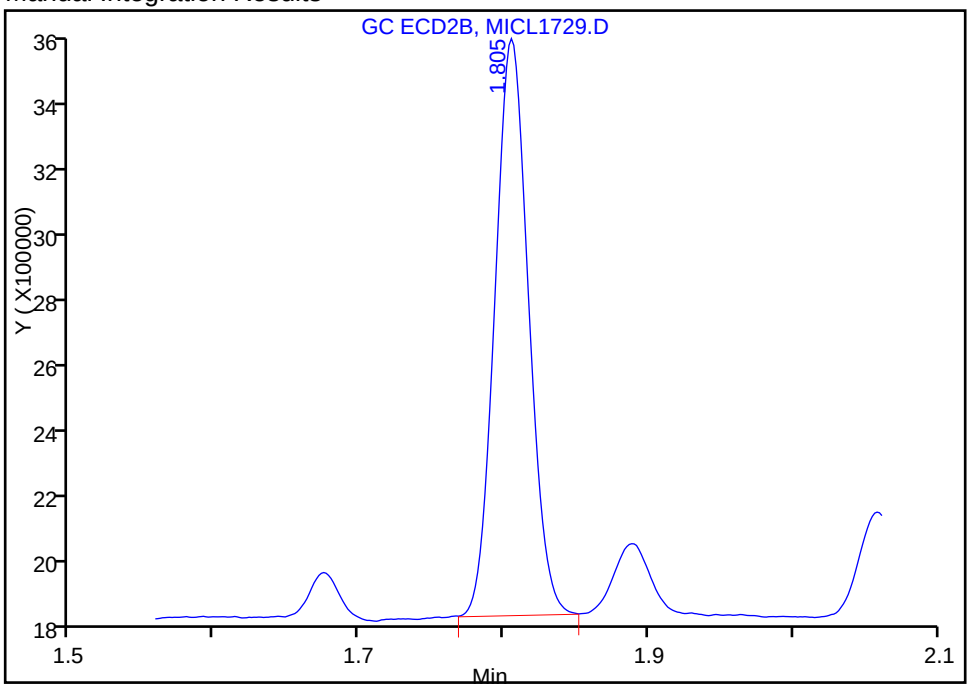
Processing Integration Results

RT: 1.81
Area: 3025168
Amount: 86.182799
Amount Units: ng/ml



Manual Integration Results

RT: 1.81
Area: 2728530
Amount: 8.040397
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:42:58

Audit Action: Manually Integrated Audit Reason: Baseline Smoothing

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1730.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 16-Aug-2016 11:58:00 ALS Bottle#: 6 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-006
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:08 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:32:02

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							M
1	1.683	1.678	0.005	4075337	16.0	17.1	
2	1.805	1.808	-0.003	5442075	16.0	16.0	M
						RPD = 6.17	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.998	10.989	0.009	1909141	16.0	16.1	
2	12.184	12.180	0.004	4351607	16.0	16.1	
						RPD = 0.05	
1 Dicamba							
1	11.295	11.288	0.007	4508800	8.00	8.04	
2	12.484	12.480	0.004	8082946	8.00	7.89	
						RPD = 1.96	
4 MCPA							
1	11.828	11.819	0.009	1200039	1600.0	1818.2	
2	12.845	12.841	0.004	641208	1600.0	1490.2	
						RPD = 19.83	
9 MCPP							
1	12.127	12.119	0.008	1799667	1600.5	1825.3	
2	13.302	13.296	0.006	2054879	1600.5	1706.0	
						RPD = 6.76	
6 Dichlorprop							
1	12.803	12.796	0.007	2142784	16.0	15.7	
2	13.917	13.915	0.002	4150556	16.0	16.2	
						RPD = 2.86	
8 2,4-D							
1	13.233	13.226	0.007	2127769	16.0	15.9	
2	14.490	14.485	0.005	6729728	16.0	15.7	
						RPD = 1.05	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.367	13.359	0.008	9914548	4.00	3.96	
2	14.919	14.915	0.004	11347847	4.00	3.85	
						RPD = 2.73	
2 Silvex (2,4,5-TP)							
1	14.683	14.676	0.007	3179453	4.00	3.93	
2	15.879	15.876	0.003	4843362	4.00	4.06	
						RPD = 3.24	
5 2,4,5-T							
1	15.157	15.149	0.008	3284075	4.00	3.95	
2	16.525	16.521	0.004	4576671	4.00	3.86	
						RPD = 2.18	
7 2,4-DB							M
1	16.055	16.049	0.006	1038669	16.0	15.2	M
2	17.365	17.361	0.004	2600100	16.0	16.5	a
						RPD = 8.51	
13 Dinoseb							
1	17.632	17.628	0.004	4687199	16.0	15.7	
2	17.834	17.830	0.004	6163472	16.0	15.5	
						RPD = 1.46	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

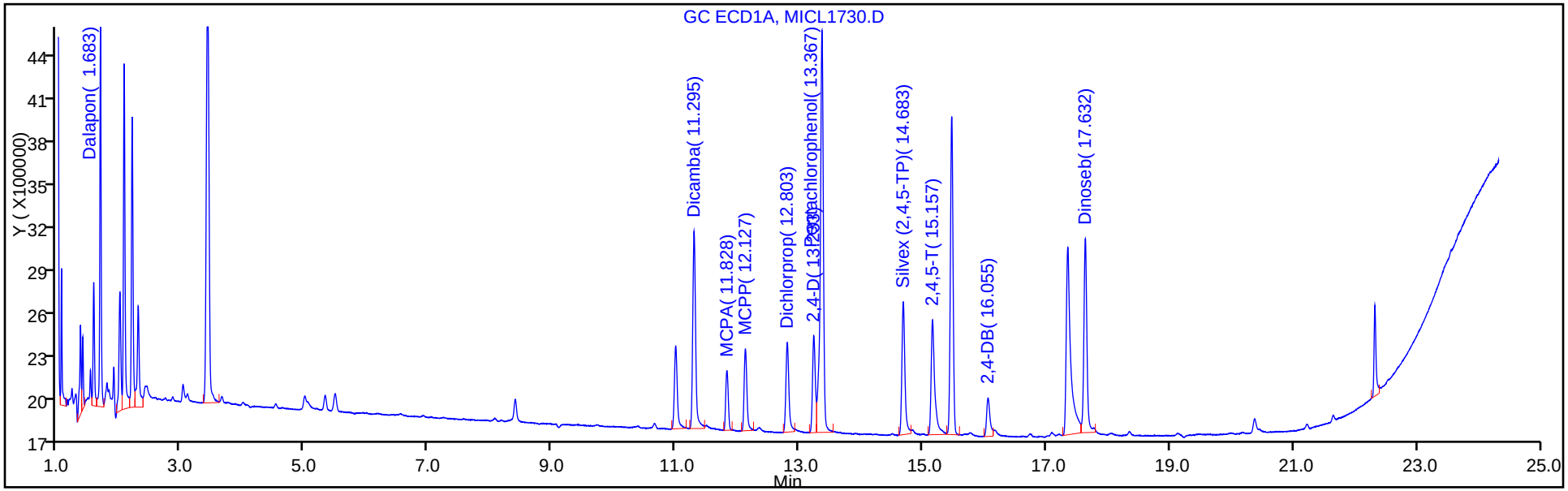
Herb Prime_00022 Amount Added: 125.00 Units: uL

Report Date: 17-Aug-2016 09:40:09 Chrom Revision: 2.2 20-Apr-2016 13:59:46

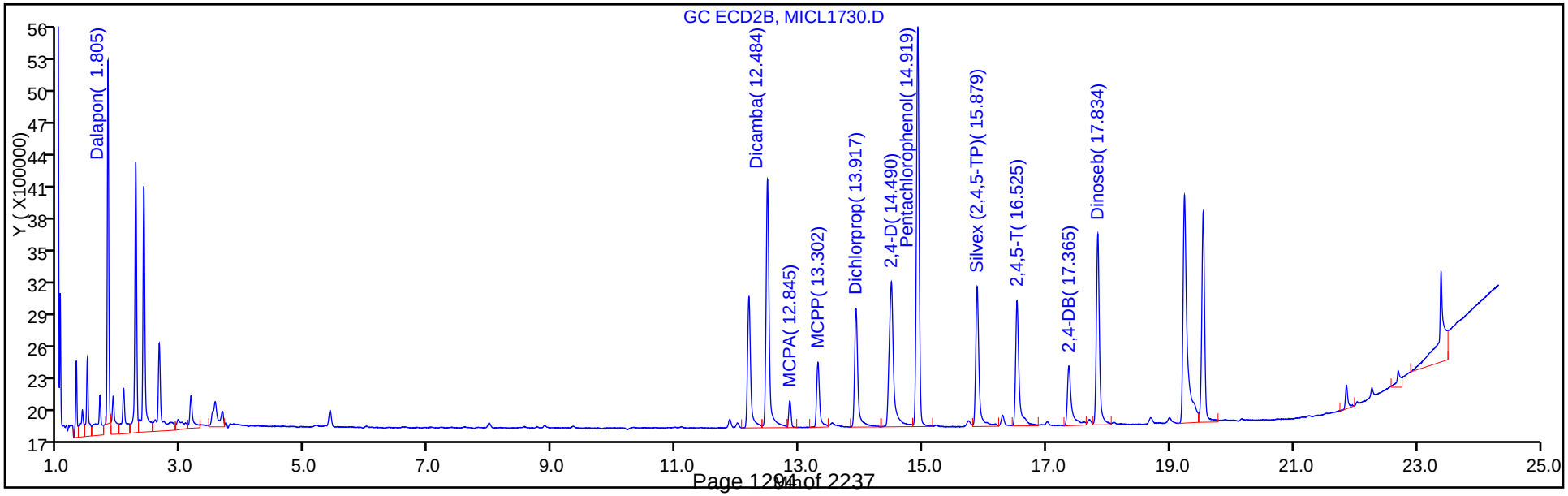
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1730.D				
Injection Date:	16-Aug-2016 11:58:00	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	6
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

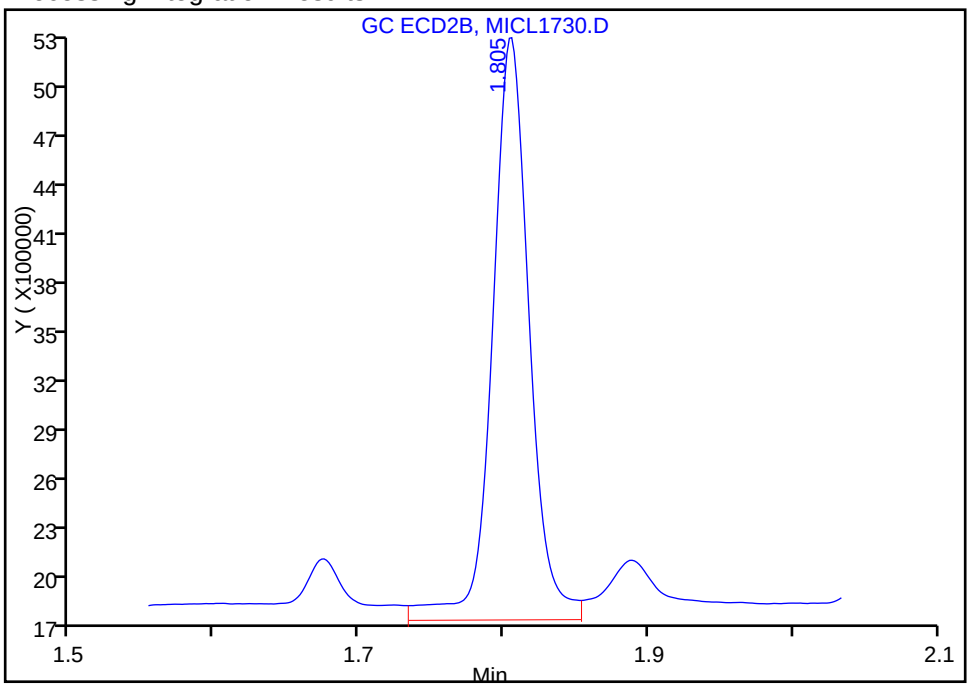
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1730.D				
Injection Date:	16-Aug-2016 11:58:00	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

12 Dalapon, CAS: 75-99-0

Signal: 2

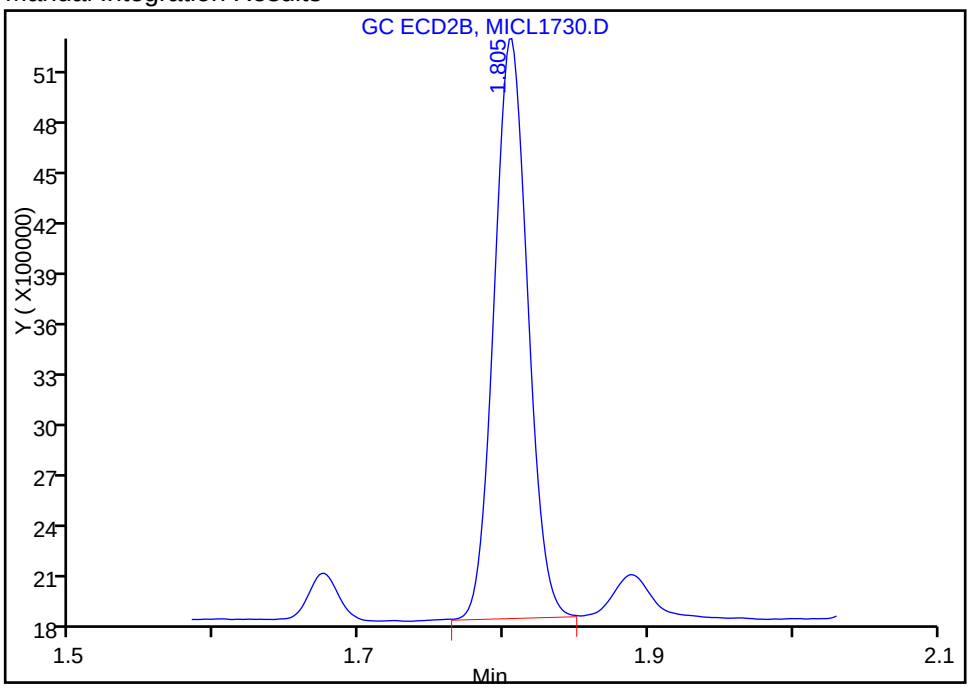
Processing Integration Results

RT: 1.81
Area: 6153317
Amount: 177.9894
Amount Units: ng/ml



Manual Integration Results

RT: 1.81
Area: 5442075
Amount: 16.036637
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:43:13

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

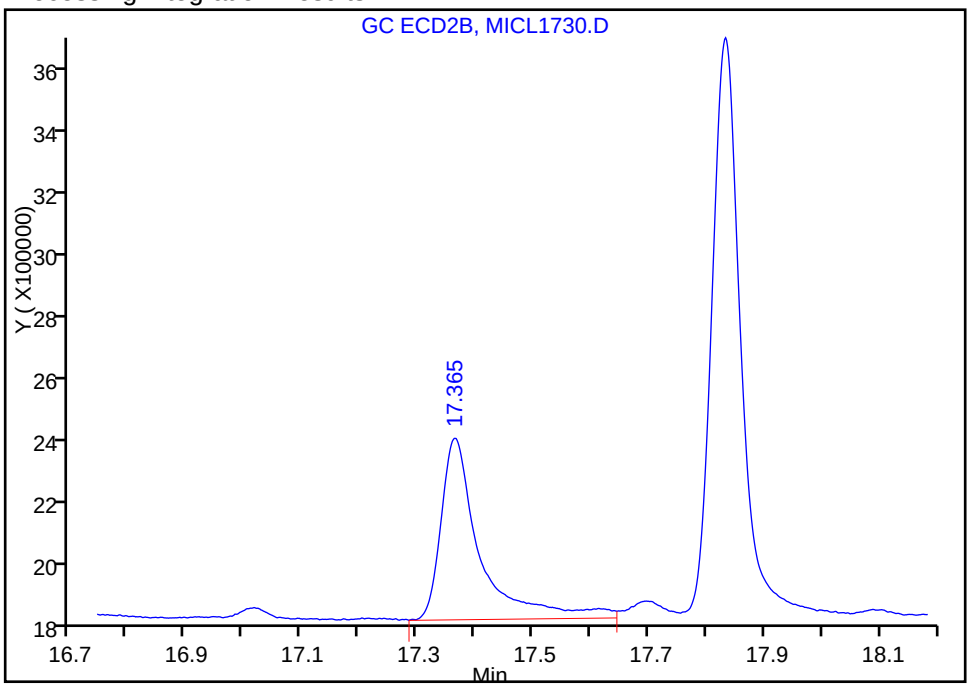
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1730.D				
Injection Date:	16-Aug-2016 11:58:00	Instrument ID:	SGCM		
Lims ID:	IC				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	6	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

7 2,4-DB, CAS: 94-82-6

Signal: 2

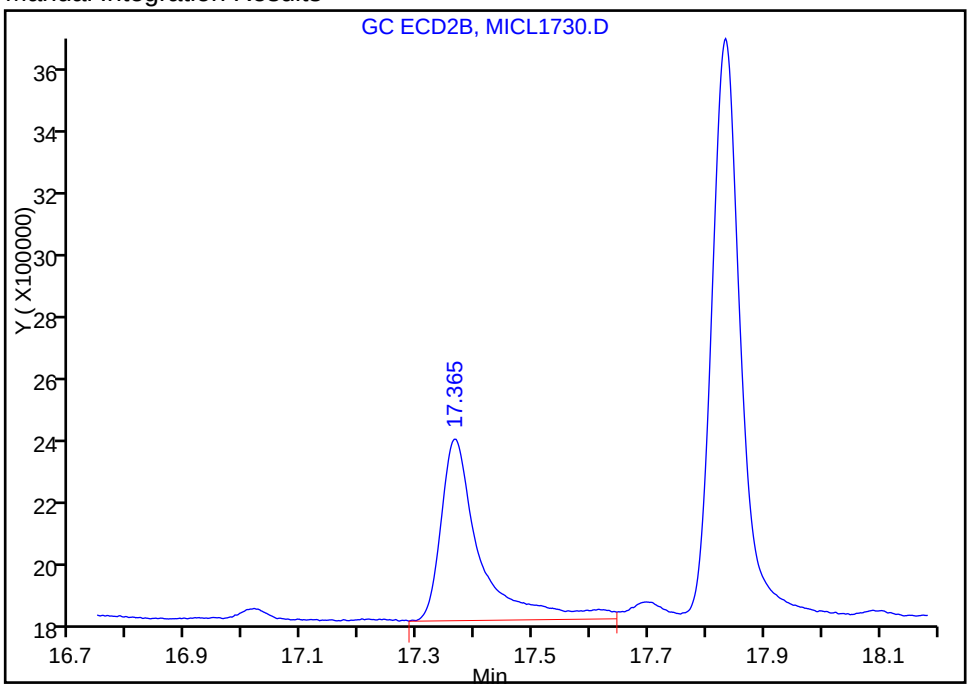
Processing Integration Results

RT: 17.37
Area: 2600100
Amount: 56.958044
Amount Units: ng/ml



Manual Integration Results

RT: 17.37
Area: 2600100
Amount: 16.516371
Amount Units: ng/ml



Reviewer: konopkad, 16-Aug-2016 14:32:02

Audit Action: Assigned Compound ID Audit Reason: Peak not integrated

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1731.D
Lims ID: ICRT
Client ID:
Sample Type: ICRT Calib Level: 5
Inject. Date: 16-Aug-2016 12:27:01 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: ICRT
Misc. Info.: 160-0008212-007
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:10 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:31:16

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.678	1.678	0.000	7083770	32.0	29.7	
2	1.808	1.808	0.000	10357801	32.0	30.5	
						RPD = 2.90	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.989	10.989	0.000	3770835	32.0	31.7	
2	12.180	12.180	0.000	8450659	32.0	31.2	
						RPD = 1.65	
1 Dicamba							
1	11.288	11.288	0.000	8879041	16.0	15.8	
2	12.480	12.480	0.000	15678517	16.0	15.3	
						RPD = 3.48	
4 MCPA							
1	11.819	11.819	0.000	2582321	3200.0	3912.5	
2	12.841	12.841	0.000	1709709	3200.0	3135.7	
						RPD = 22.04	
9 MCPP							
1	12.119	12.119	0.000	3560680	3201.0	3611.5	
2	13.296	13.296	0.000	4118618	3201.0	3419.4	
						RPD = 5.46	
6 Dichlorprop							
1	12.796	12.796	0.000	4396171	32.0	32.2	
2	13.915	13.915	0.000	8129566	32.0	31.6	
						RPD = 1.78	
8 2,4-D							
1	13.226	13.226	0.000	4389488	32.0	32.7	
2	14.485	14.485	0.000	13252033	32.0	30.9	
						RPD = 5.70	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.359	13.359	0.000	19563585	8.00	7.81	
2	14.915	14.915	0.000	22863093	8.00	7.76	
						RPD = 0.65	
2 Silvex (2,4,5-TP)							
1	14.676	14.676	0.000	6579997	8.00	8.14	
2	15.876	15.876	0.000	9657808	8.00	8.10	
						RPD = 0.47	
5 2,4,5-T							
1	15.149	15.149	0.000	6577055	8.00	7.90	
2	16.521	16.521	0.000	9402985	8.00	7.93	
						RPD = 0.38	
7 2,4-DB							
1	16.049	16.049	0.000	2271569	32.0	33.2	
2	17.361	17.361	0.000	5128623	32.0	32.6	
						RPD = 1.81	
13 Dinoseb							
1	17.628	17.628	0.000	9236649	32.0	30.9	
2	17.830	17.830	0.000	12414013	32.0	31.2	
						RPD = 0.73	

Reagents:

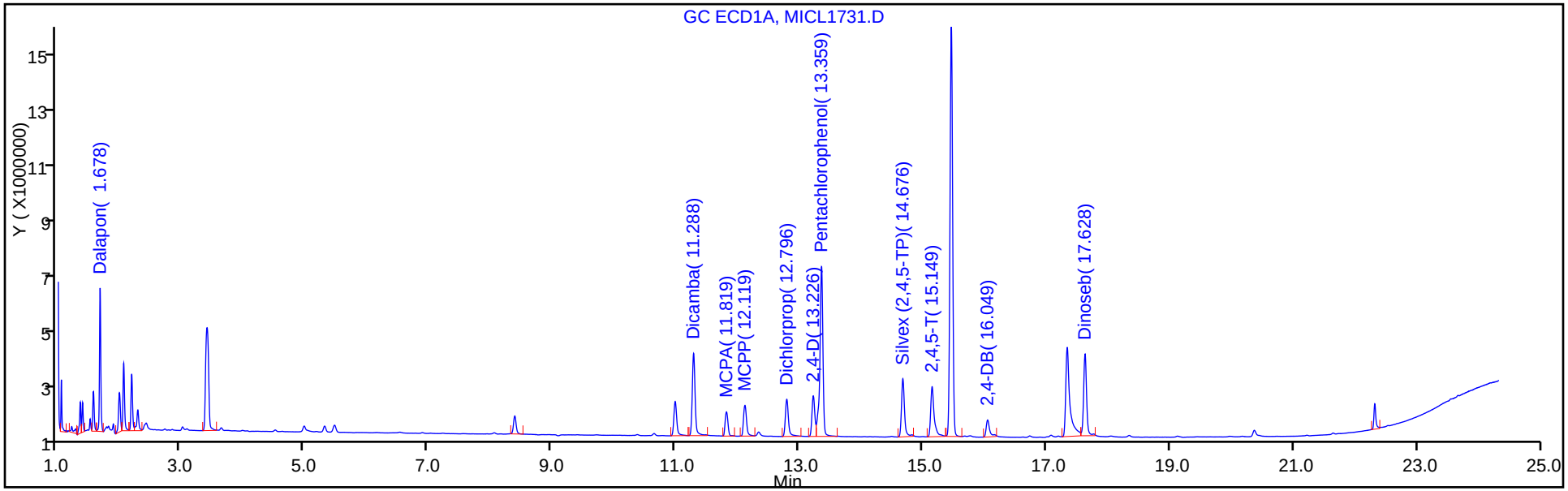
Herb Prime_00022 Amount Added: 250.00 Units: uL

Report Date: 17-Aug-2016 09:40:10 Chrom Revision: 2.2 20-Apr-2016 13:59:46

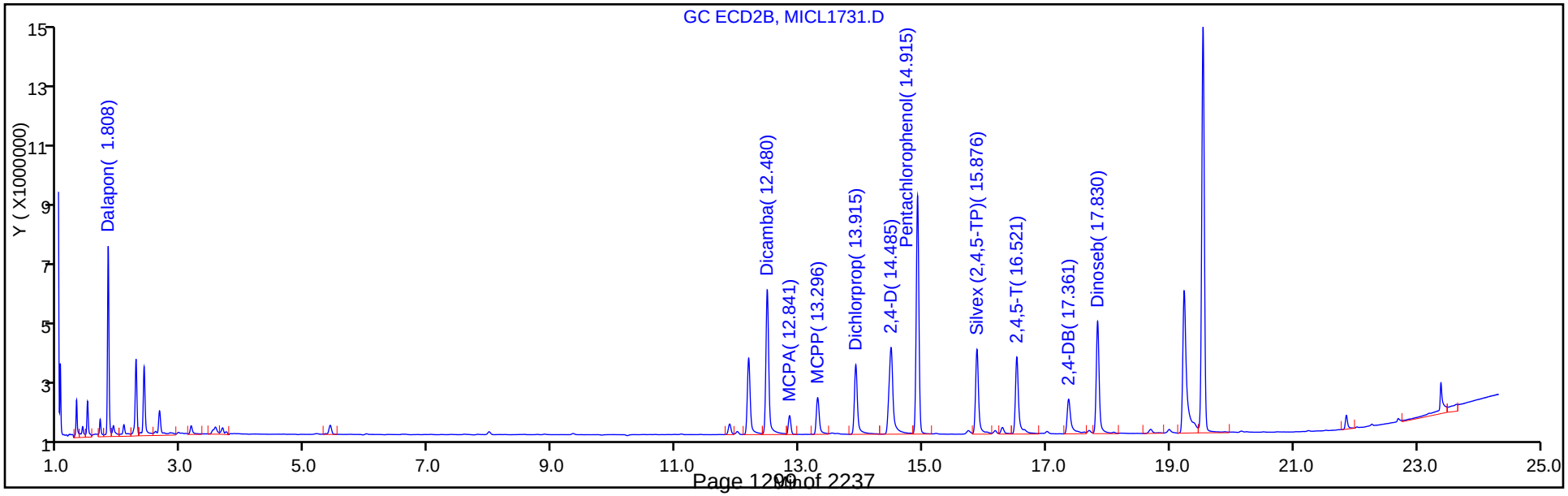
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1731.D				
Injection Date:	16-Aug-2016 12:27:01	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	ICRT			Worklist Smp#:	7
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	7
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1732.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 16-Aug-2016 13:00:00 ALS Bottle#: 8 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-008
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:11 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:31:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.682	1.678	0.004	13785411	63.9	57.7	
2	1.804	1.808	-0.004	20645158	63.9	60.8	
						RPD = 5.29	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.993	10.989	0.004	7212049	64.0	60.7	
2	12.180	12.180	0.000	16084983	64.0	59.4	
						RPD = 2.13	
1 Dicamba							
1	11.293	11.288	0.005	17115565	32.0	30.5	
2	12.480	12.480	0.000	30385692	32.0	29.6	
						RPD = 2.94	
4 MCPA							
1	11.823	11.819	0.004	4689955	6400.1	7105.7	
2	12.844	12.841	0.003	3868268	6400.1	6489.9	
						RPD = 9.06	
9 MCPP							
1	12.122	12.119	0.003	6155853	6401.9	6243.7	
2	13.299	13.296	0.003	8334848	6401.9	6919.8	
						RPD = 10.27	
6 Dichlorprop							
1	12.802	12.796	0.006	8500892	64.0	62.3	
2	13.915	13.915	0.000	15655482	64.0	60.9	
						RPD = 2.19	
8 2,4-D							
1	13.228	13.226	0.002	8644605	64.0	64.4	
2	14.487	14.485	0.002	25756922	64.0	60.1	
						RPD = 7.02	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.363	13.359	0.004	38613674	16.0	15.4	
2	14.917	14.915	0.002	46560938	16.0	15.8	
						RPD = 2.48	
2 Silvex (2,4,5-TP)							
1	14.680	14.676	0.004	12866701	16.0	15.9	
2	15.877	15.876	0.001	19547782	16.0	16.4	
						RPD = 2.98	
5 2,4,5-T							
1	15.152	15.149	0.003	13291719	16.0	16.0	
2	16.522	16.521	0.001	18707817	16.0	15.8	
						RPD = 1.19	
7 2,4-DB							
1	16.052	16.049	0.003	4579281	64.0	66.9	
2	17.360	17.361	-0.001	10000541	64.0	63.5	
						RPD = 5.13	
13 Dinoseb							
1	17.632	17.628	0.004	18043567	64.0	60.4	
2	17.832	17.830	0.002	24799067	64.0	62.2	
						RPD = 2.97	

Reagents:

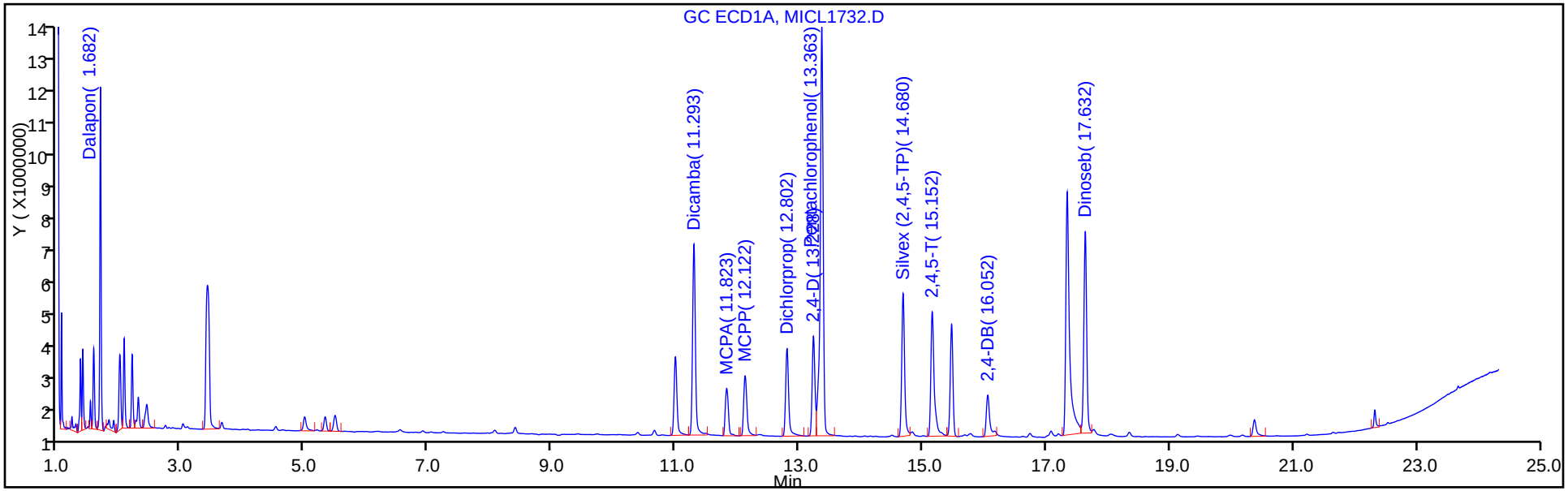
Herb Prime_00022 Amount Added: 500.00 Units: uL

Report Date: 17-Aug-2016 09:40:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

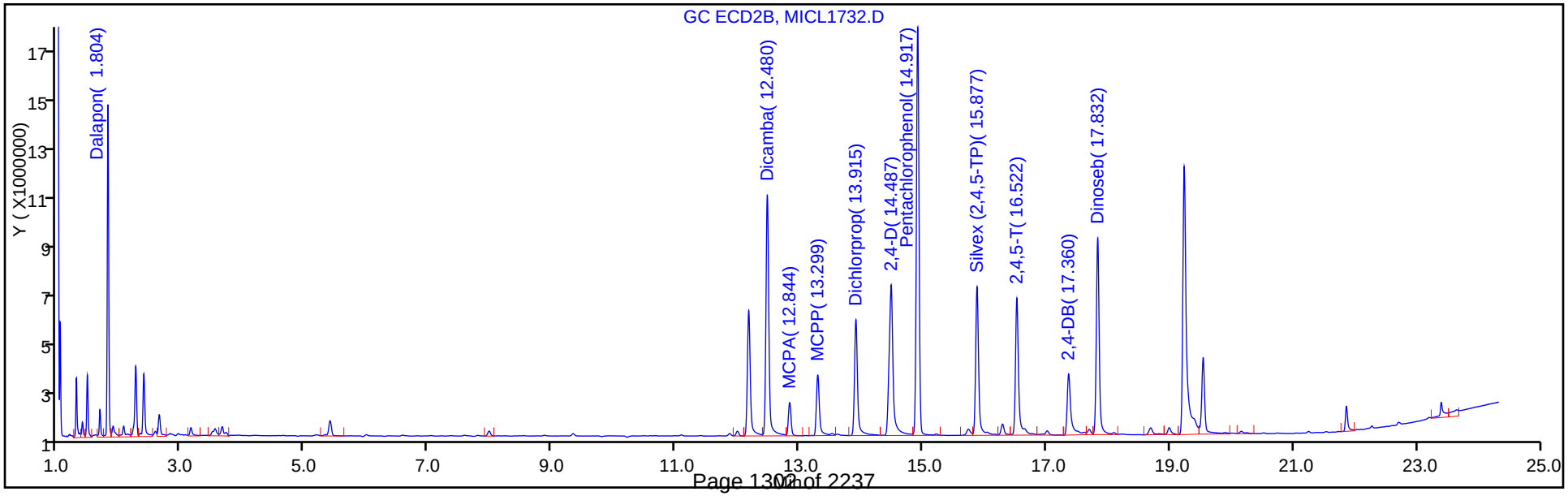
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1732.D				
Injection Date:	16-Aug-2016 13:00:00	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	8
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	8
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 16-Aug-2016 13:33:13 ALS Bottle#: 9 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC
Misc. Info.: 160-0008212-009
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:12 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 14:31:26

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.684	1.678	0.006	26181862	127.8	109.6	
2	1.804	1.808	-0.004	39394962	127.8	116.1	
						RPD = 5.76	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.992	10.989	0.003	13172975	128.0	110.8	
2	12.181	12.180	0.001	29789421	128.0	110.0	
						RPD = 0.74	
1 Dicamba							
1	11.292	11.288	0.004	32171004	64.0	57.4	
2	12.481	12.480	0.001	57832175	64.0	56.4	
						RPD = 1.69	
4 MCPA							
1	11.824	11.819	0.005	7583918	12800	11490	
2	12.842	12.841	0.001	7847342	12800	12783	
						RPD = 10.65	
9 MCPP							
1	12.120	12.119	0.001	9705358	12804	9843.8	
2	13.297	13.296	0.001	14502585	12804	12040	
						RPD = 20.08	
6 Dichlorprop							
1	12.799	12.796	0.003	15626857	128.0	114.5	
2	13.916	13.915	0.001	28969742	128.0	112.8	
						RPD = 1.53	
8 2,4-D							
1	13.227	13.226	0.001	16126400	128.0	120.2	
2	14.486	14.485	0.001	47601842	128.0	111.0	
						RPD = 7.95	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.364	13.359	0.005	74174581	32.0	29.6	
2	14.917	14.915	0.002	90888633	32.0	30.9	
						RPD = 4.09	
2 Silvex (2,4,5-TP)							
1	14.679	14.676	0.003	24733545	32.0	30.6	
2	15.877	15.876	0.001	36806982	32.0	30.9	
						RPD = 0.91	
5 2,4,5-T							
1	15.150	15.149	0.001	25133117	32.0	30.2	
2	16.521	16.521	0.000	34529478	32.0	29.1	
						RPD = 3.61	
7 2,4-DB							
1	16.049	16.049	0.000	8437381	128.0	123.2	
2	17.361	17.361	0.000	18002405	128.0	114.4	
						RPD = 7.46	
13 Dinoseb							
1	17.629	17.628	0.001	33756380	128.0	113.0	
2	17.832	17.830	0.002	46035533	128.0	115.5	
						RPD = 2.19	

Reagents:

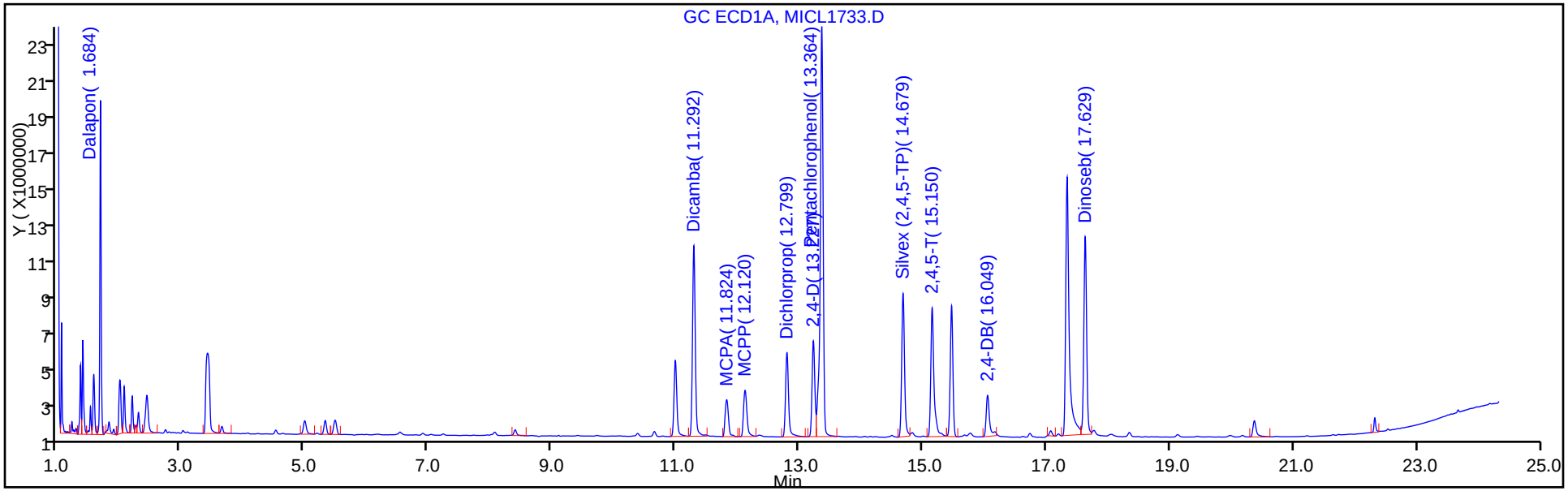
Herb Prime_00022 Amount Added: 1000.00 Units: uL

Report Date: 17-Aug-2016 09:40:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

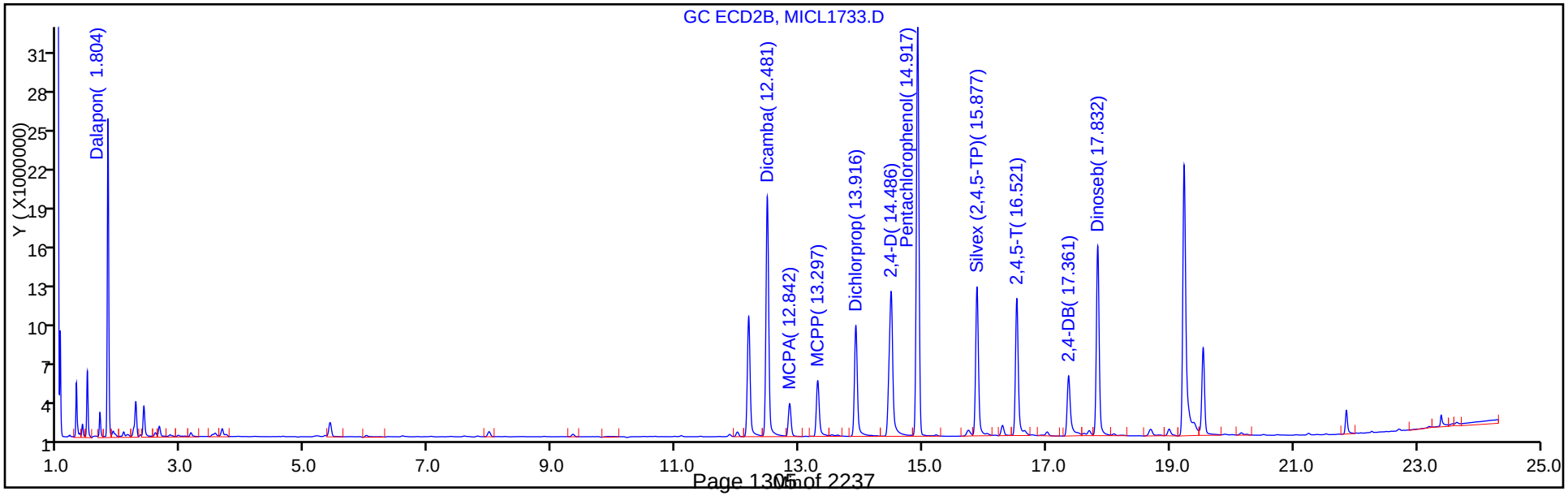
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D				
Injection Date:	16-Aug-2016 13:33:13	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	IC			Worklist Smp#:	9
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	9
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



FORM VII
HERBICIDES CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-264929/10 Calibration Date: 08/16/2016 14:06

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MICV1734.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dalapon	Ave	238913	233113		31.2	32.0	-2.4	30.0
Dicamba	Ave	560621	549110		15.7	16.0	-2.1	30.0
MCPA	Ave	660.0	781.4		3790	3200	18.4	30.0
MCPP	Ave	985.9	1095		3560	3200	11.1	30.0
Dichlorprop	Ave	136487	135396		31.7	32.0	-0.8	30.0
2,4-D	Ave	134152	135227		32.3	32.0	0.8	30.0
Pentachlorophenol	Ave	2503543	2438842		7.79	8.00	-2.6	30.0
Silvex (2,4,5-TP)	Ave	808210	800696		7.93	8.00	-0.9	30.0
2,4,5-T	Ave	832145	834333		8.02	8.00	0.3	30.0
2,4-DB	Ave	68478	71246		33.3	32.0	4.0	30.0
Dinoseb	Ave	298628	297481		31.9	32.0	-0.4	30.0
2,4-Dichlorophenylacetic acid	Ave	118853	118310		31.9	32.0	-0.5	30.0

FORM VII
HERBICIDES CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-264929/10 Calibration Date: 08/16/2016 14:06

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MICV1734.D

Analyte	RT	RT WINDOW	
		FROM	TO
Dalapon	1.68	1.65	1.71
Dicamba	11.30	11.26	11.32
MCPA	11.83	11.79	11.85
MCPP	12.13	12.09	12.15
Dichlorprop	12.80	12.77	12.83
2,4-D	13.23	13.20	13.26
Pentachlorophenol	13.37	13.33	13.39
Silvex (2,4,5-TP)	14.68	14.65	14.71
2,4,5-T	15.16	15.12	15.18
2,4-DB	16.05	16.02	16.08
Dinoseb	17.63	17.60	17.66
2,4-Dichlorophenylacetic acid	11.00	10.96	11.02

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICV1734.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 16-Aug-2016 14:06:23 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: 160-0008212-010
Operator ID: DEK Instrument ID: SGCM
Sublist:

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:12 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 15:45:19

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.683	1.678	0.005	7448414	32.0	31.2	
2	1.805	1.808	-0.003	12068130	32.0	35.6	
						RPD = 13.14	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.996	10.989	0.007	3785933	32.0	31.9	
2	12.182	12.180	0.002	8449708	32.0	31.2	
						RPD = 2.06	
1 Dicamba							
1	11.295	11.288	0.007	8785767	16.0	15.7	
2	12.483	12.480	0.003	15745166	16.0	15.4	
						RPD = 2.00	
4 MCPA							
1	11.826	11.819	0.007	2500643	3200.0	3788.7	
2	12.845	12.841	0.004	1702528	3200.0	3124.6	
						RPD = 19.21	
9 MCPP							
1	12.125	12.119	0.006	3505545	3201.0	3555.6	
2	13.300	13.296	0.004	3894734	3201.0	3233.5	
						RPD = 9.49	
6 Dichlorprop							
1	12.801	12.796	0.005	4332675	32.0	31.7	
2	13.917	13.915	0.002	7918357	32.0	30.8	
						RPD = 2.96	
8 2,4-D							
1	13.231	13.226	0.005	4327276	32.0	32.3	
2	14.488	14.485	0.003	13281444	32.0	31.0	
						RPD = 4.05	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.365	13.359	0.006	19510735	8.00	7.79	
2	14.917	14.915	0.002	23127951	8.00	7.85	
						RPD = 0.78	
2 Silvex (2,4,5-TP)							
1	14.681	14.676	0.005	6405566	8.00	7.93	
2	15.878	15.876	0.002	9959803	8.00	8.36	
						RPD = 5.29	
5 2,4,5-T							
1	15.155	15.149	0.006	6674663	8.00	8.02	
2	16.523	16.521	0.002	9369483	8.00	7.91	
						RPD = 1.45	
7 2,4-DB							
1	16.051	16.049	0.002	2279866	32.0	33.3	
2	17.363	17.361	0.002	5138197	32.0	32.6	
						RPD = 1.99	
13 Dinoseb							
1	17.630	17.628	0.002	9519399	32.0	31.9	
2	17.832	17.830	0.002	12659838	32.0	31.8	
						RPD = 0.33	

Reagents:

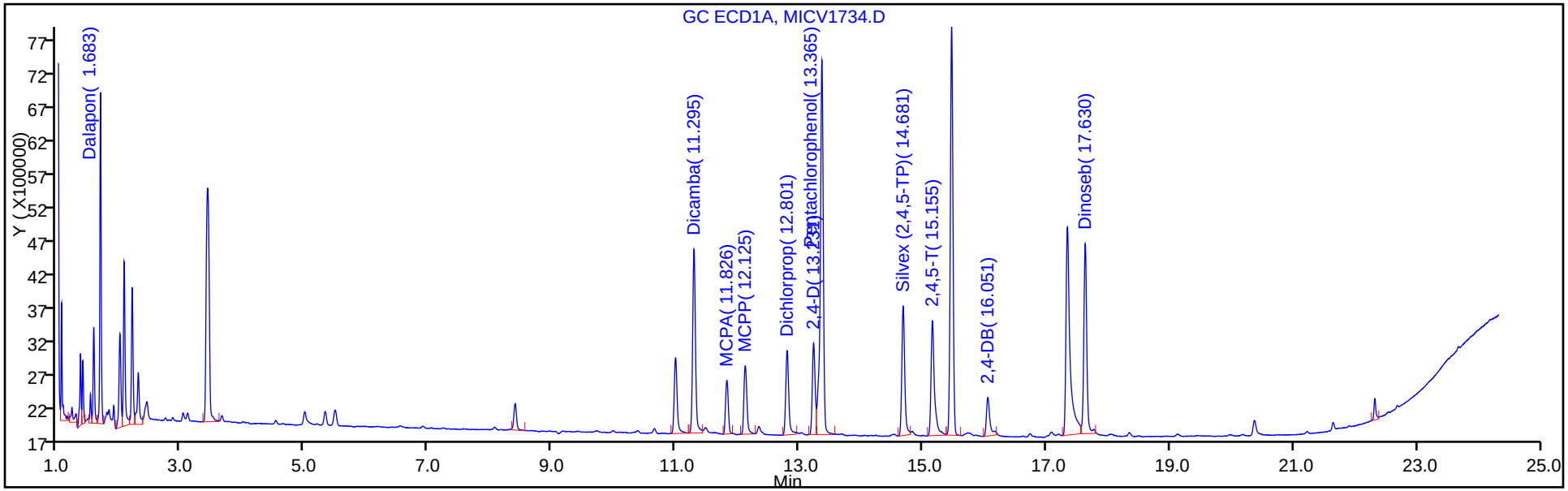
Derv Herb ICV_00002 Amount Added: 250.00 Units: uL

Report Date: 17-Aug-2016 09:40:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

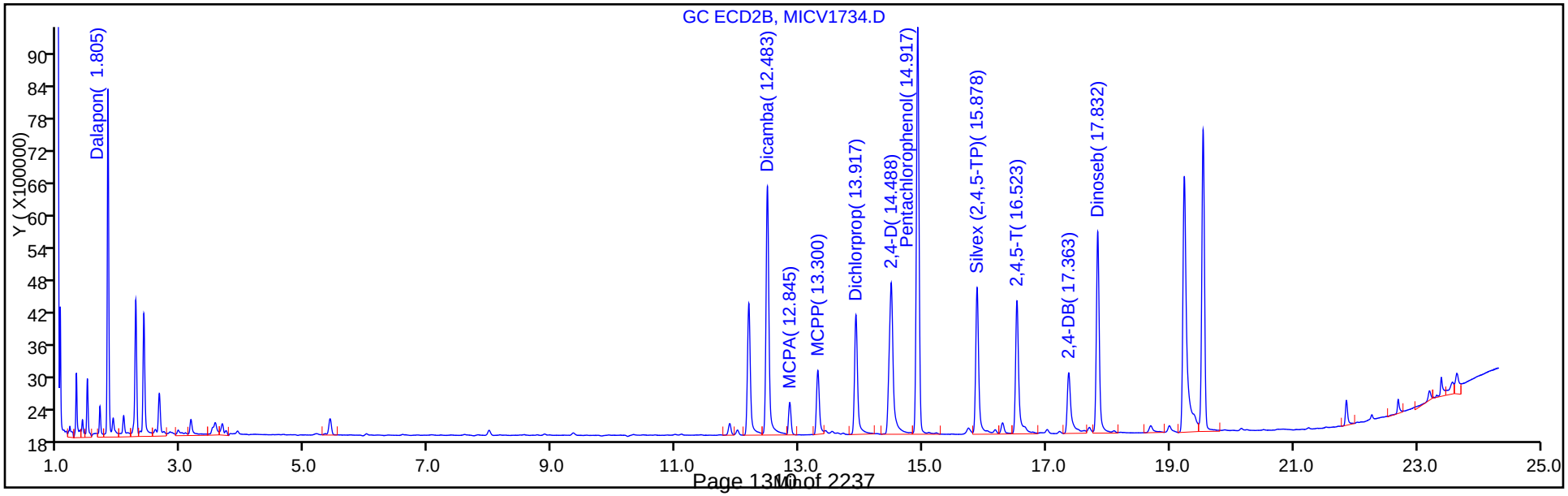
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICV1734.D				
Injection Date:	16-Aug-2016 14:06:23	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	ICV			Worklist Smp#:	10
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	10
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



FORM VII
HERBICIDES CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-264929/10 Calibration Date: 08/16/2016 14:06

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MICV1734.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dalapon	Ave	339353	377696		35.6	32.0	11.3	30.0
Dicamba	Ave	1024971	984073		15.4	16.0	-4.0	30.0
MCPA	Qua		532.0		3120	3200	-2.4	30.0
MCPP	Ave	1204	1217		3230	3200	1.0	30.0
Dichlorprop	Ave	256924	247449		30.8	32.0	-3.7	30.0
2,4-D	Ave	428775	415045		31.0	32.0	-3.2	30.0
Pentachlorophenol	Ave	2944770	2890994		7.85	8.00	-1.8	30.0
Silvex (2,4,5-TP)	Ave	1191865	1244975		8.36	8.00	4.5	30.0
2,4,5-T	Ave	1185233	1171185		7.91	8.00	-1.2	30.0
2,4-DB	Ave	157426	160569		32.6	32.0	2.0	30.0
Dinoseb	Ave	398441	395620		31.8	32.0	-0.7	30.0
2,4-Dichlorophenylacetic acid	Ave	270784	264053		31.2	32.0	-2.5	30.0

FORM VII
HERBICIDES CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICV 160-264929/10 Calibration Date: 08/16/2016 14:06

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MICV1734.D

Analyte	RT	RT WINDOW	
		FROM	TO
Dalapon	1.81	1.78	1.84
Dicamba	12.48	12.45	12.51
MCPA	12.85	12.81	12.87
MCPP	13.30	13.27	13.33
Dichlorprop	13.92	13.89	13.95
2,4-D	14.49	14.46	14.52
Pentachlorophenol	14.92	14.89	14.95
Silvex (2,4,5-TP)	15.88	15.85	15.91
2,4,5-T	16.52	16.49	16.55
2,4-DB	17.36	17.33	17.39
Dinoseb	17.83	17.80	17.86
2,4-Dichlorophenylacetic acid	12.18	12.15	12.21

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICV1734.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 16-Aug-2016 14:06:23 ALS Bottle#: 10 Worklist Smp#: 10
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: 160-0008212-010
Operator ID: DEK Instrument ID: SGCM
Sublist:

Method: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 17-Aug-2016 09:40:12 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK015

First Level Reviewer: konopkad Date: 16-Aug-2016 15:45:19

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.683	1.678	0.005	7448414	32.0	31.2	
2	1.805	1.808	-0.003	12068130	32.0	35.6	
						RPD = 13.14	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.996	10.989	0.007	3785933	32.0	31.9	
2	12.182	12.180	0.002	8449708	32.0	31.2	
						RPD = 2.06	
1 Dicamba							
1	11.295	11.288	0.007	8785767	16.0	15.7	
2	12.483	12.480	0.003	15745166	16.0	15.4	
						RPD = 2.00	
4 MCPA							
1	11.826	11.819	0.007	2500643	3200.0	3788.7	
2	12.845	12.841	0.004	1702528	3200.0	3124.6	
						RPD = 19.21	
9 MCPP							
1	12.125	12.119	0.006	3505545	3201.0	3555.6	
2	13.300	13.296	0.004	3894734	3201.0	3233.5	
						RPD = 9.49	
6 Dichlorprop							
1	12.801	12.796	0.005	4332675	32.0	31.7	
2	13.917	13.915	0.002	7918357	32.0	30.8	
						RPD = 2.96	
8 2,4-D							
1	13.231	13.226	0.005	4327276	32.0	32.3	
2	14.488	14.485	0.003	13281444	32.0	31.0	
						RPD = 4.05	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.365	13.359	0.006	19510735	8.00	7.79	
2	14.917	14.915	0.002	23127951	8.00	7.85	
						RPD = 0.78	
2 Silvex (2,4,5-TP)							
1	14.681	14.676	0.005	6405566	8.00	7.93	
2	15.878	15.876	0.002	9959803	8.00	8.36	
						RPD = 5.29	
5 2,4,5-T							
1	15.155	15.149	0.006	6674663	8.00	8.02	
2	16.523	16.521	0.002	9369483	8.00	7.91	
						RPD = 1.45	
7 2,4-DB							
1	16.051	16.049	0.002	2279866	32.0	33.3	
2	17.363	17.361	0.002	5138197	32.0	32.6	
						RPD = 1.99	
13 Dinoseb							
1	17.630	17.628	0.002	9519399	32.0	31.9	
2	17.832	17.830	0.002	12659838	32.0	31.8	
						RPD = 0.33	

Reagents:

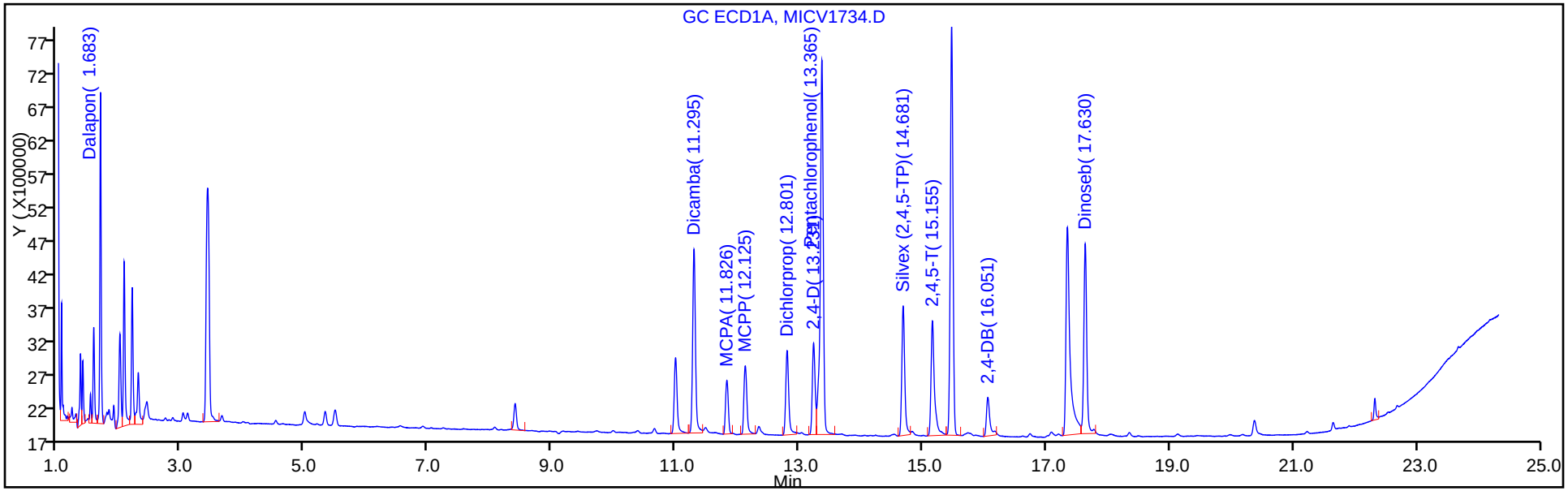
Derv Herb ICV_00002 Amount Added: 250.00 Units: uL

Report Date: 17-Aug-2016 09:40:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

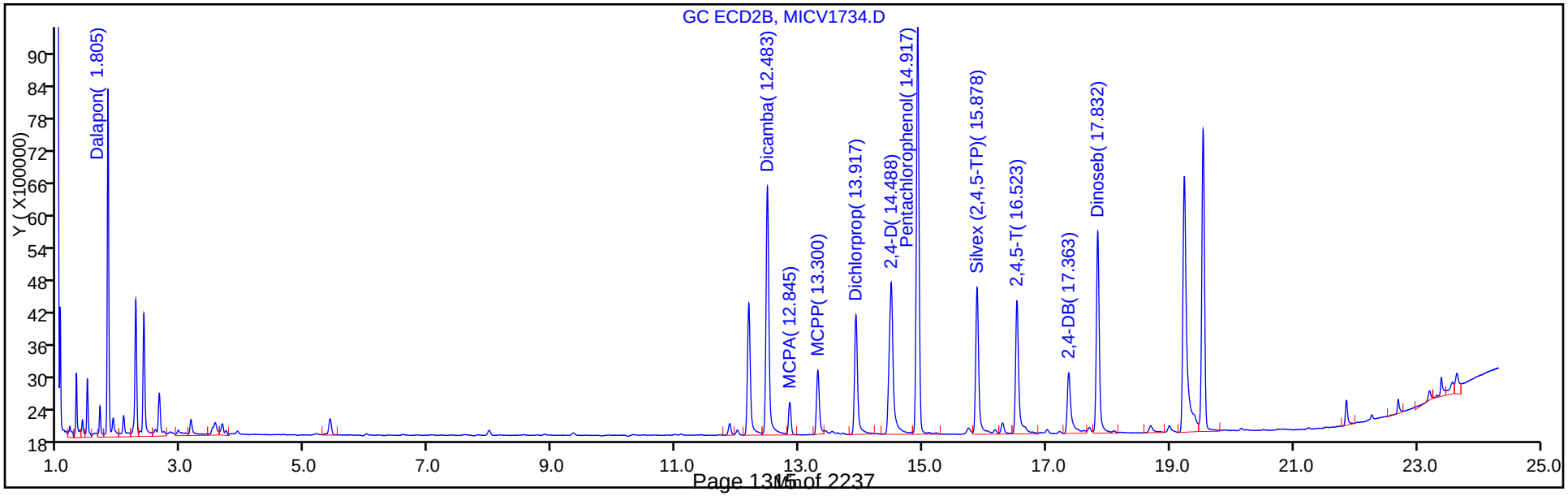
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICV1734.D				
Injection Date:	16-Aug-2016 14:06:23	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	ICV			Worklist Smp#:	10
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	10
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



FORM VII
HERBICIDES CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/3 Calibration Date: 08/18/2016 14:07

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1796.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dalapon	Ave	238913	257181		34.4	32.0	7.6	20.0
Dicamba	Ave	560621	572808		16.3	16.0	2.2	20.0
MCPA	Ave	660.0	813.7		3940	3200	23.3*	20.0
MCPP	Ave	985.9	1139		3700	3200	15.6	20.0
Dichlorprop	Ave	136487	147081		34.5	32.0	7.8	20.0
2,4-D	Ave	134152	151195		36.1	32.0	12.7	20.0
Pentachlorophenol	Ave	2503543	2561106		8.18	8.00	2.3	20.0
Silvex (2,4,5-TP)	Ave	808210	877427		8.69	8.00	8.6	20.0
2,4,5-T	Ave	832145	856931		8.24	8.00	3.0	20.0
2,4-DB	Ave	68478	77202		36.1	32.0	12.7	20.0
Dinoseb	Ave	298628	300647		32.2	32.0	0.7	20.0
2,4-Dichlorophenylacetic acid	Ave	118853	124171		33.4	32.0	4.5	20.0

FORM VII
HERBICIDES CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/3 Calibration Date: 08/18/2016 14:07

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1796.D

Analyte	RT	RT WINDOW	
		FROM	TO
Dalapon	1.68	1.66	1.72
Dicamba	11.30	11.28	11.34
MCPA	11.83	11.82	11.88
MCPP	12.13	12.11	12.17
Dichlorprop	12.80	12.79	12.85
2,4-D	13.23	13.22	13.28
Pentachlorophenol	13.37	13.36	13.42
Silvex (2,4,5-TP)	14.68	14.67	14.73
2,4,5-T	15.15	15.14	15.20
2,4-DB	16.05	16.04	16.10
Dinoseb	17.63	17.62	17.68
2,4-Dichlorophenylacetic acid	11.00	10.99	11.05

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1796.D
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Aug-2016 14:07:39 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: HEXANE
Misc. Info.: 160-0008237-003
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 19-Aug-2016 09:19:00 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK010

First Level Reviewer: konopkad Date: 18-Aug-2016 15:36:47

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.683	1.694	-0.011	8217450	32.0	34.4	
2	1.805	1.811	-0.006	11564886	32.0	34.1	
						RPD = 0.92	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.996	11.017	-0.021	3973466	32.0	33.4	
2	12.182	12.196	-0.014	8791093	32.0	32.5	
						RPD = 2.93	
1 Dicamba							
1	11.295	11.314	-0.019	9164927	16.0	16.3	
2	12.483	12.496	-0.013	16097412	16.0	15.7	
						RPD = 4.01	
4 MCPA							M
1	11.825	11.847	-0.022	2603755	3200.0	3944.9	M
2	12.845	12.859	-0.014	1763909	3200.0	3219.4	
						RPD = 20.25	
9 MCPP							
1	12.125	12.144	-0.019	3647238	3201.0	3699.3	
2	13.300	13.312	-0.012	4480532	3201.0	3719.9	
						RPD = 0.56	
6 Dichlorprop							
1	12.803	12.822	-0.019	4706577	32.0	34.5	
2	13.917	13.931	-0.014	8595755	32.0	33.5	
						RPD = 3.02	
8 2,4-D							
1	13.231	13.249	-0.018	4838253	32.0	36.1	
2	14.488	14.501	-0.013	13934285	32.0	32.5	
						RPD = 10.41	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.365	13.387	-0.022	20488847	8.00	8.18	
2	14.917	14.932	-0.015	23778493	8.00	8.07	
						RPD = 1.34	
2 Silvex (2,4,5-TP)							
1	14.681	14.699	-0.018	7019412	8.00	8.69	
2	15.878	15.892	-0.014	10170637	8.00	8.53	
						RPD = 1.76	
5 2,4,5-T							M
1	15.153	15.172	-0.019	6855446	8.00	8.24	M
2	16.523	16.536	-0.013	9584908	8.00	8.09	
						RPD = 1.85	
7 2,4-DB							M
1	16.051	16.069	-0.018	2470478	32.0	36.1	
2	17.362	17.376	-0.014	4997821	32.0	31.7	M
						RPD = 12.77	
13 Dinoseb							
1	17.630	17.649	-0.019	9620719	32.0	32.2	
2	17.832	17.846	-0.014	12713419	32.0	31.9	
						RPD = 0.96	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

Herb Prime_00022 Amount Added: 250.00 Units: uL

Report Date: 19-Aug-2016 09:19:01 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1796.D

Injection Date: 18-Aug-2016 14:07:39 Instrument ID: SGCM Operator ID: DEK

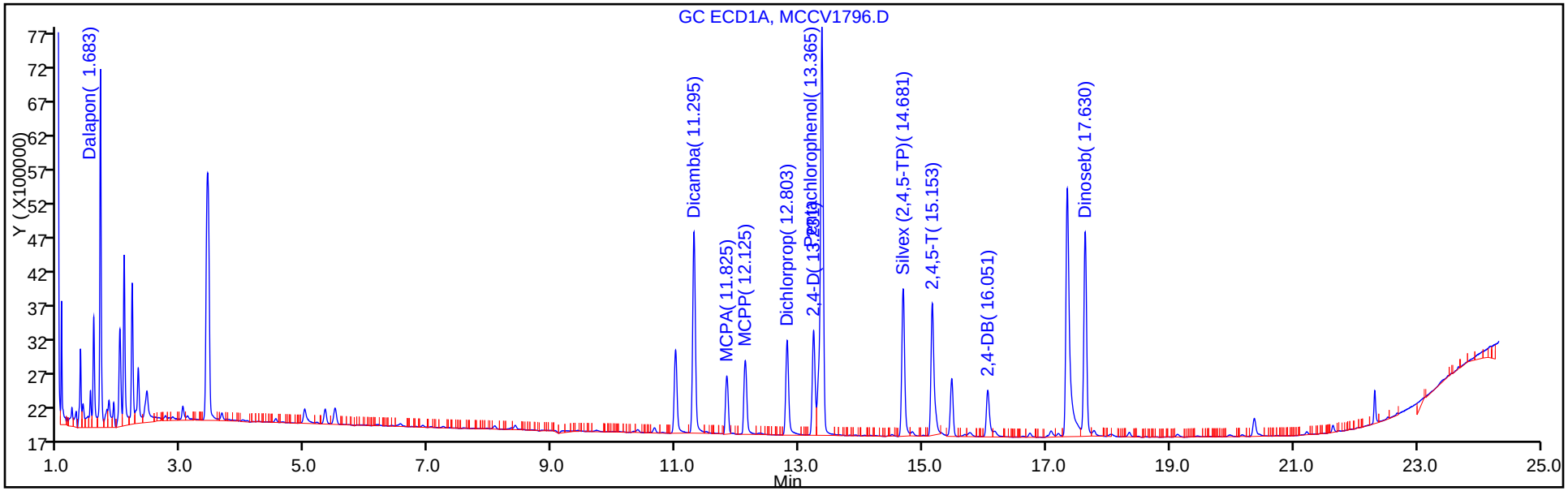
Lims ID: CCV Worklist Smp#: 3

Client ID:

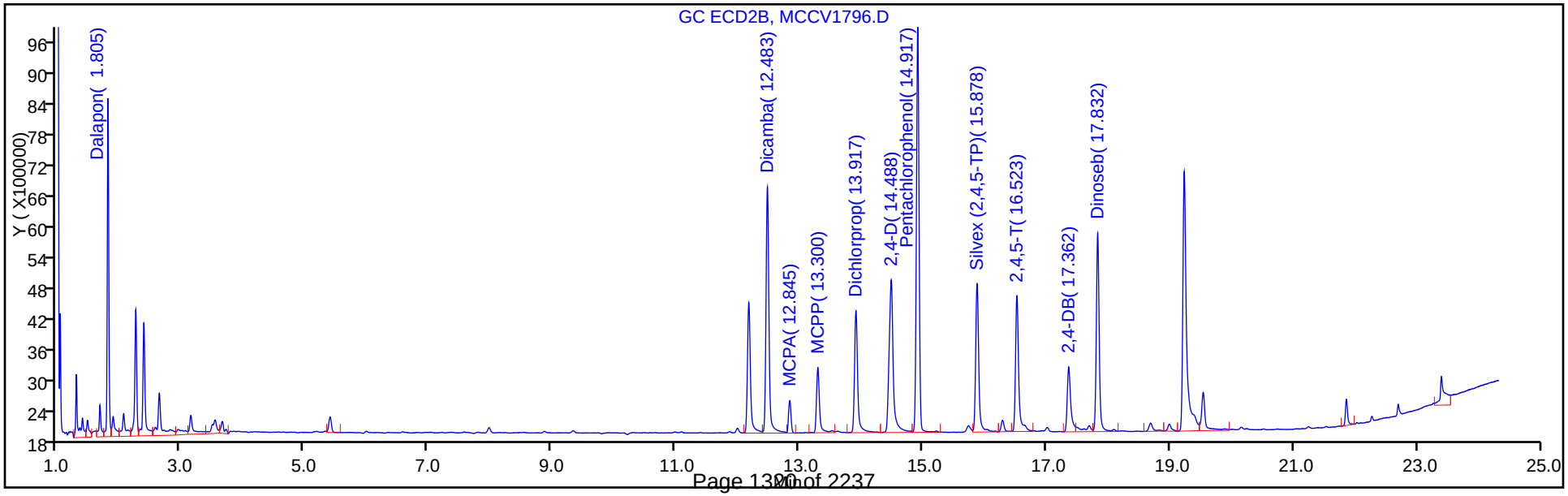
Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 3

Method: 8151_SGCM Limit Group: GC 8151 DOD ICAL

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

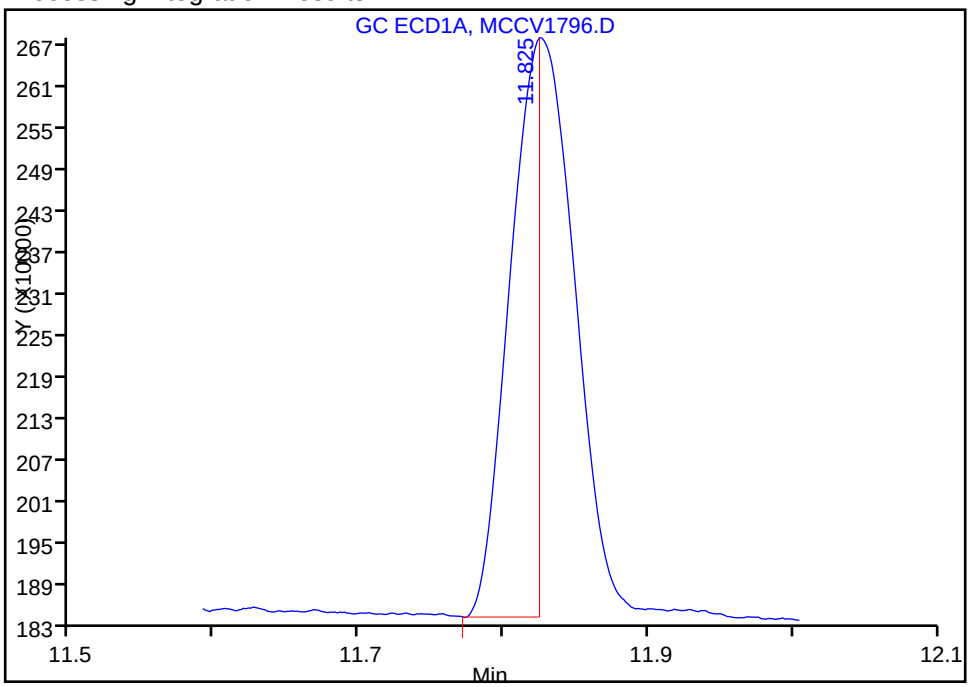
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1796.D				
Injection Date:	18-Aug-2016 14:07:39	Instrument ID:	SGCM		
Lims ID:	CCV				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	3	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

4 MCPA, CAS: 94-74-6

Signal: 1

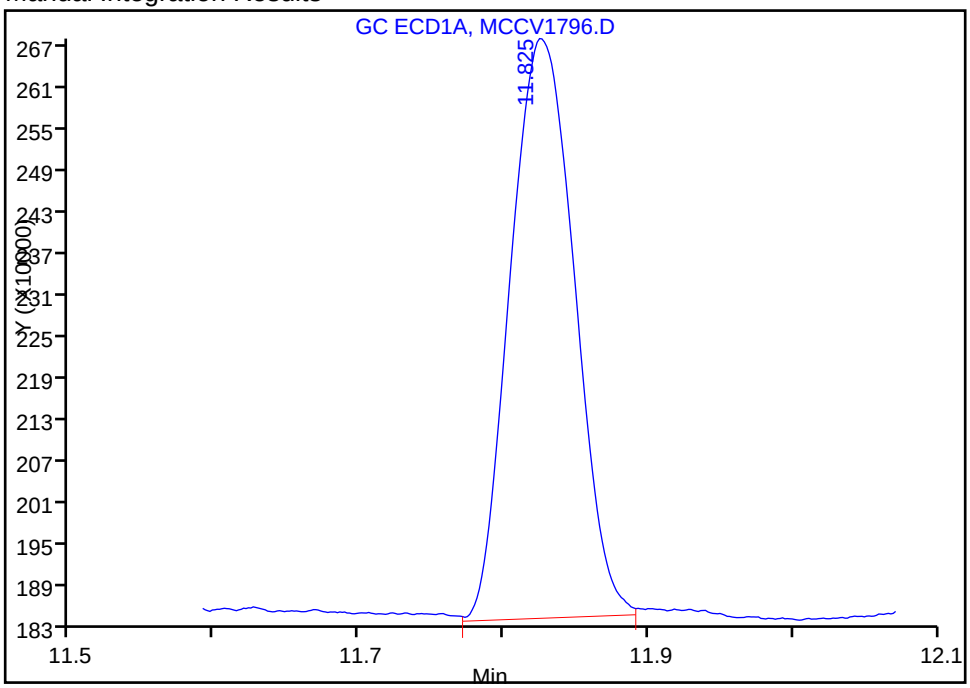
Processing Integration Results

RT: 11.82
Area: 1169129
Amount: 1771.3397
Amount Units: ng/ml



Manual Integration Results

RT: 11.82
Area: 2603755
Amount: 3944.9323
Amount Units: ng/ml



Reviewer: konopkad, 18-Aug-2016 15:36:47

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

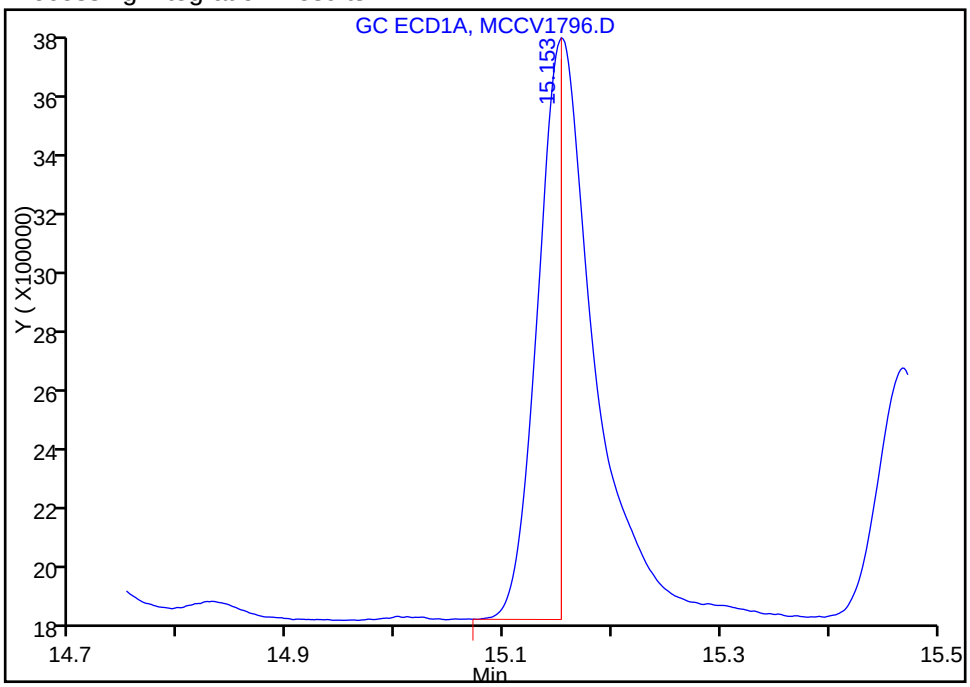
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1796.D				
Injection Date:	18-Aug-2016 14:07:39	Instrument ID:	SGCM		
Lims ID:	CCV				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	3	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

5 2,4,5-T, CAS: 93-76-5

Signal: 1

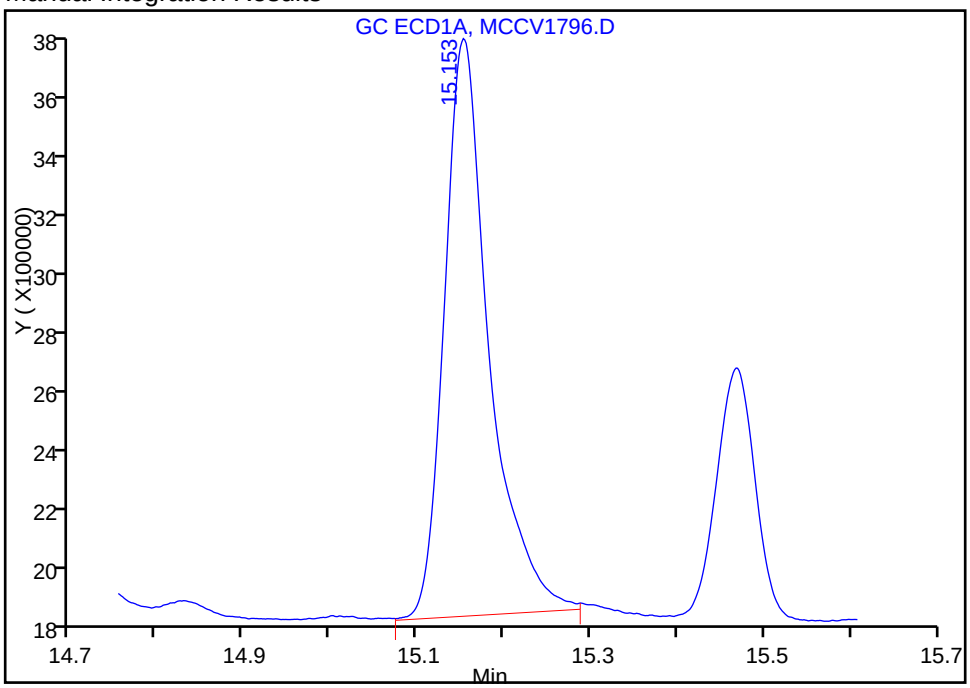
Processing Integration Results

RT: 15.15
Area: 2831550
Amount: 3.402712
Amount Units: ng/ml



Manual Integration Results

RT: 15.15
Area: 6855446
Amount: 8.238282
Amount Units: ng/ml



Reviewer: konopkad, 18-Aug-2016 15:36:47

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM VII
HERBICIDES CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/3 Calibration Date: 08/18/2016 14:07

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1796.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dalapon	Ave	339353	361946		34.1	32.0	6.7	20.0
Dicamba	Ave	1024971	1006088		15.7	16.0	-1.8	20.0
MCPA	Qua		551.2		3220	3200	0.6	20.0
MCPP	Ave	1204	1400		3720	3200	16.2	20.0
Dichlorprop	Ave	256924	268617		33.5	32.0	4.6	20.0
2,4-D	Ave	428775	435446		32.5	32.0	1.6	20.0
Pentachlorophenol	Ave	2944770	2972312		8.07	8.00	0.9	20.0
Silvex (2,4,5-TP)	Ave	1191865	1271330		8.53	8.00	6.7	20.0
2,4,5-T	Ave	1185233	1198114		8.09	8.00	1.1	20.0
2,4-DB	Ave	157426	156182		31.7	32.0	-0.8	20.0
Dinoseb	Ave	398441	397294		31.9	32.0	-0.3	20.0
2,4-Dichlorophenylacetic acid	Ave	270784	274722		32.5	32.0	1.5	20.0

FORM VII
HERBICIDES CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/3 Calibration Date: 08/18/2016 14:07

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1796.D

Analyte	RT	RT WINDOW	
		FROM	TO
Dalapon	1.81	1.78	1.84
Dicamba	12.48	12.47	12.53
MCPA	12.85	12.83	12.89
MCPP	13.30	13.28	13.34
Dichlorprop	13.92	13.90	13.96
2,4-D	14.49	14.47	14.53
Pentachlorophenol	14.92	14.90	14.96
Silvex (2,4,5-TP)	15.88	15.86	15.92
2,4,5-T	16.52	16.51	16.57
2,4-DB	17.36	17.35	17.41
Dinoseb	17.83	17.82	17.88
2,4-Dichlorophenylacetic acid	12.18	12.17	12.23

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1796.D
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Aug-2016 14:07:39 ALS Bottle#: 3 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: HEXANE
Misc. Info.: 160-0008237-003
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 19-Aug-2016 09:19:00 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK010

First Level Reviewer: konopkad Date: 18-Aug-2016 15:36:47

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.683	1.694	-0.011	8217450	32.0	34.4	
2	1.805	1.811	-0.006	11564886	32.0	34.1	
						RPD = 0.92	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.996	11.017	-0.021	3973466	32.0	33.4	
2	12.182	12.196	-0.014	8791093	32.0	32.5	
						RPD = 2.93	
1 Dicamba							
1	11.295	11.314	-0.019	9164927	16.0	16.3	
2	12.483	12.496	-0.013	16097412	16.0	15.7	
						RPD = 4.01	
4 MCPA							M
1	11.825	11.847	-0.022	2603755	3200.0	3944.9	M
2	12.845	12.859	-0.014	1763909	3200.0	3219.4	
						RPD = 20.25	
9 MCPP							
1	12.125	12.144	-0.019	3647238	3201.0	3699.3	
2	13.300	13.312	-0.012	4480532	3201.0	3719.9	
						RPD = 0.56	
6 Dichlorprop							
1	12.803	12.822	-0.019	4706577	32.0	34.5	
2	13.917	13.931	-0.014	8595755	32.0	33.5	
						RPD = 3.02	
8 2,4-D							
1	13.231	13.249	-0.018	4838253	32.0	36.1	
2	14.488	14.501	-0.013	13934285	32.0	32.5	
						RPD = 10.41	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.365	13.387	-0.022	20488847	8.00	8.18	
2	14.917	14.932	-0.015	23778493	8.00	8.07	
						RPD = 1.34	
2 Silvex (2,4,5-TP)							
1	14.681	14.699	-0.018	7019412	8.00	8.69	
2	15.878	15.892	-0.014	10170637	8.00	8.53	
						RPD = 1.76	
5 2,4,5-T							M
1	15.153	15.172	-0.019	6855446	8.00	8.24	M
2	16.523	16.536	-0.013	9584908	8.00	8.09	
						RPD = 1.85	
7 2,4-DB							M
1	16.051	16.069	-0.018	2470478	32.0	36.1	
2	17.362	17.376	-0.014	4997821	32.0	31.7	M
						RPD = 12.77	
13 Dinoseb							
1	17.630	17.649	-0.019	9620719	32.0	32.2	
2	17.832	17.846	-0.014	12713419	32.0	31.9	
						RPD = 0.96	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

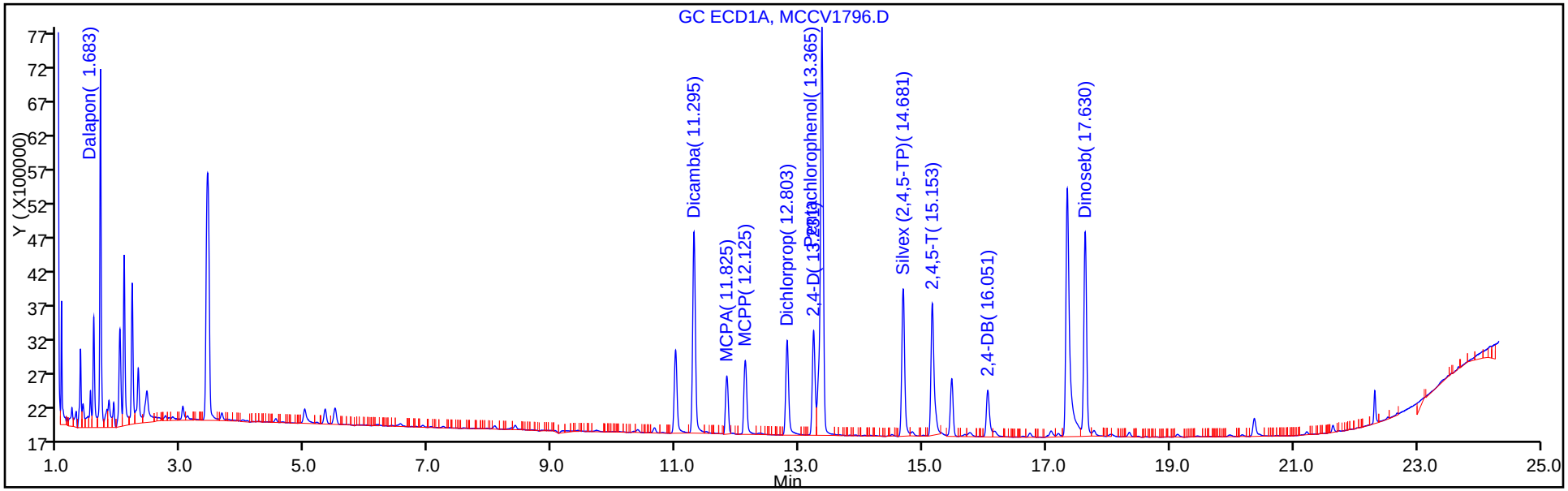
Herb Prime_00022 Amount Added: 250.00 Units: uL

Report Date: 19-Aug-2016 09:19:01 Chrom Revision: 2.2 20-Apr-2016 13:59:46

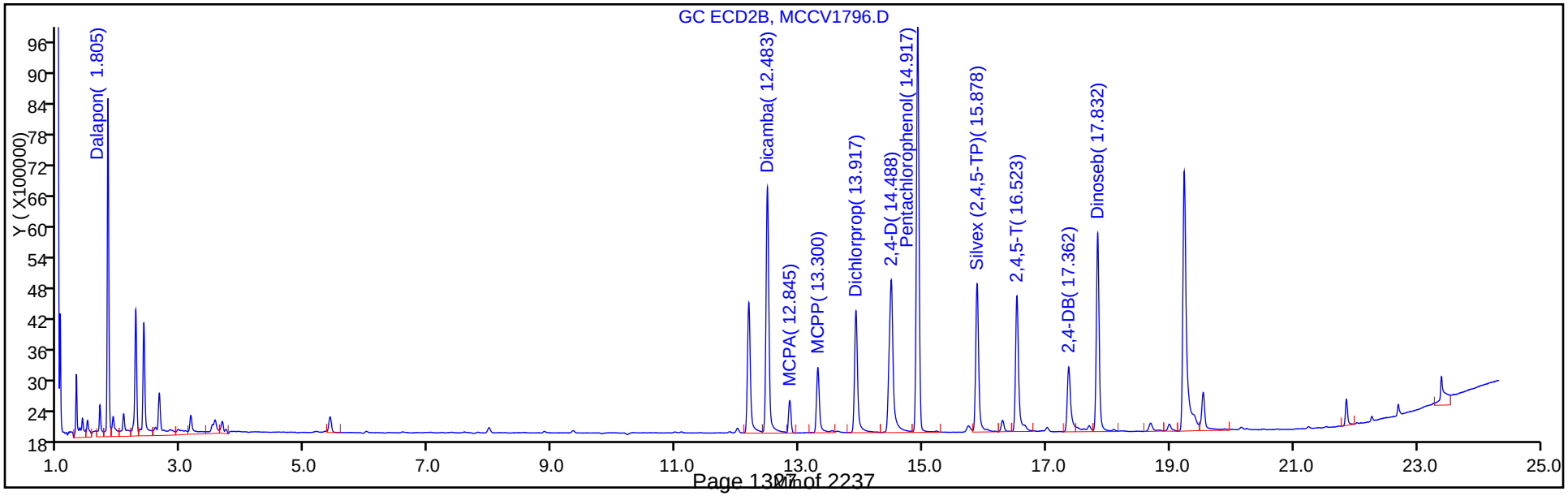
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1796.D				
Injection Date:	18-Aug-2016 14:07:39	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	CCV			Worklist Smp#:	3
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

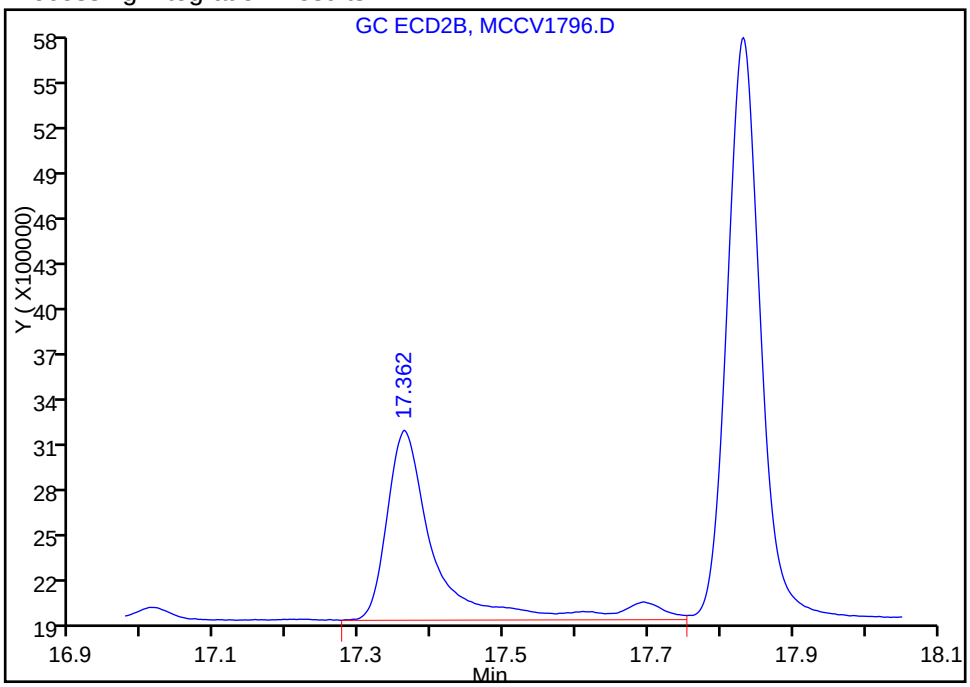
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1796.D				
Injection Date:	18-Aug-2016 14:07:39	Instrument ID:	SGCM		
Lims ID:	CCV				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	3	Worklist Smp#:	3
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

7 2,4-DB, CAS: 94-82-6

Signal: 2

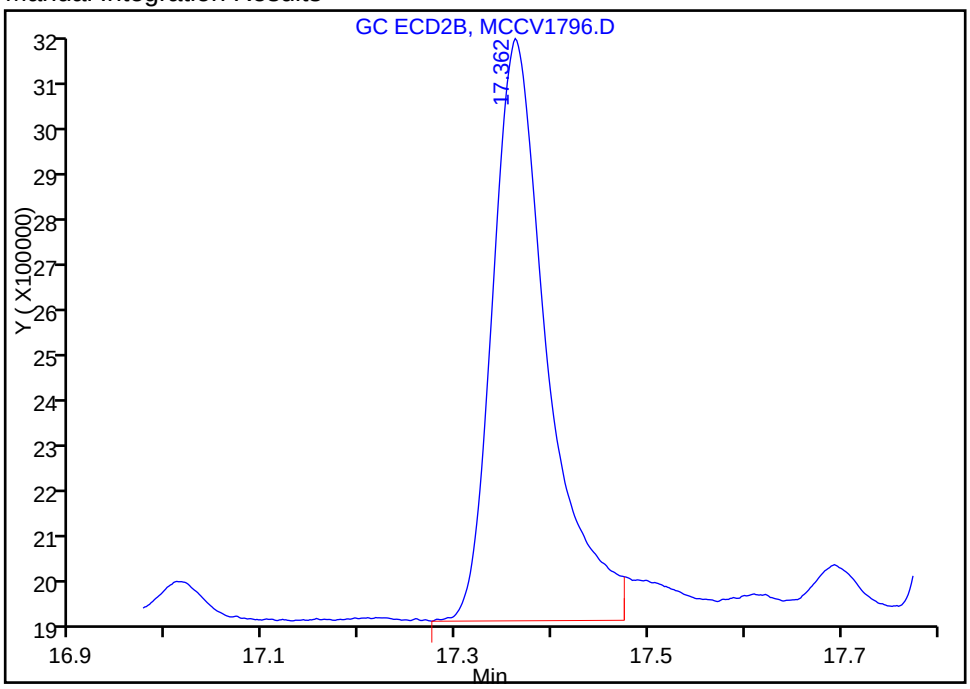
Processing Integration Results

RT: 17.36
Area: 6046935
Amount: 38.411378
Amount Units: ng/ml



Manual Integration Results

RT: 17.36
Area: 4997821
Amount: 31.747190
Amount Units: ng/ml



Reviewer: konopkad, 18-Aug-2016 15:36:47

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM VII
HERBICIDES CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/15 Calibration Date: 08/18/2016 19:55

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1807.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dalapon	Ave	238913	254536		34.0	32.0	6.5	20.0
Dicamba	Ave	560621	599014		17.1	16.0	6.8	20.0
MCPA	Ave	660.0	858.0		4160	3200	30.0*	20.0
MCPP	Ave	985.9	1198		3890	3200	21.5*	20.0
Dichlorprop	Ave	136487	154966		36.3	32.0	13.5	20.0
2,4-D	Ave	134152	161960		38.6	32.0	20.7*	20.0
Pentachlorophenol	Ave	2503543	2690292		8.60	8.00	7.5	20.0
Silvex (2,4,5-TP)	Ave	808210	933099		9.24	8.00	15.5	20.0
2,4,5-T	Ave	832145	956059		9.19	8.00	14.9	20.0
2,4-DB	Ave	68478	82785		38.7	32.0	20.9*	20.0
Dinoseb	Ave	298628	339447		36.4	32.0	13.7	20.0
2,4-Dichlorophenylacetic acid	Ave	118853	129564		34.9	32.0	9.0	20.0

FORM VII
HERBICIDES CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/15 Calibration Date: 08/18/2016 19:55

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1807.D

Analyte	RT	RT WINDOW	
		FROM	TO
Dalapon	1.68	1.66	1.72
Dicamba	11.29	11.28	11.34
MCPA	11.82	11.82	11.88
MCPP	12.12	12.11	12.17
Dichlorprop	12.80	12.79	12.85
2,4-D	13.23	13.22	13.28
Pentachlorophenol	13.36	13.36	13.42
Silvex (2,4,5-TP)	14.68	14.67	14.73
2,4,5-T	15.15	15.14	15.20
2,4-DB	16.05	16.04	16.10
Dinoseb	17.62	17.62	17.68
2,4-Dichlorophenylacetic acid	10.99	10.99	11.05

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1807.D
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Aug-2016 19:55:47 ALS Bottle#: 14 Worklist Smp#: 15
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008237-015
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 19-Aug-2016 09:19:36 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK010

First Level Reviewer: konopkad Date: 18-Aug-2016 21:15:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.678	1.694	-0.016	8132947	32.0	34.0	
2	1.809	1.811	-0.002	11208120	32.0	33.0	
						RPD = 3.02	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.988	11.017	-0.029	4146055	32.0	34.9	
2	12.179	12.196	-0.017	9133906	32.0	33.7	
						RPD = 3.36	
1 Dicamba							
1	11.287	11.314	-0.027	9584220	16.0	17.1	
2	12.480	12.496	-0.016	16628017	16.0	16.2	
						RPD = 5.24	
4 MCPA							
1	11.818	11.847	-0.029	2745744	3200.0	4160.1	
2	12.840	12.859	-0.019	1822334	3200.0	3309.7	
						RPD = 22.77	
9 MCPP							
1	12.117	12.144	-0.027	3835012	3201.0	3889.7	
2	13.295	13.312	-0.017	4439805	3201.0	3686.1	
						RPD = 5.38	
6 Dichlorprop							
1	12.797	12.822	-0.025	4958905	32.0	36.3	
2	13.914	13.931	-0.017	8861037	32.0	34.5	
						RPD = 5.21	
8 2,4-D							
1	13.225	13.249	-0.024	5182704	32.0	38.6	
2	14.485	14.501	-0.016	14712045	32.0	34.3	
						RPD = 11.85	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.360	13.387	-0.027	21522333	8.00	8.60	
2	14.914	14.932	-0.018	24763360	8.00	8.41	
						RPD = 2.20	
2 Silvex (2,4,5-TP)							
1	14.675	14.699	-0.024	7464791	8.00	9.24	
2	15.875	15.892	-0.017	10957083	8.00	9.19	
						RPD = 0.47	
5 2,4,5-T							
1	15.148	15.172	-0.024	7648474	8.00	9.19	
2	16.520	16.536	-0.016	10663734	8.00	9.00	
						RPD = 2.13	
7 2,4-DB							M
1	16.045	16.069	-0.024	2649132	32.0	38.7	M
2	17.360	17.376	-0.016	6473111	32.0	41.1	M
						RPD = 6.10	
13 Dinoseb							
1	17.623	17.649	-0.026	10862289	32.0	36.4	
2	17.829	17.846	-0.017	13873215	32.0	34.8	
						RPD = 4.37	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

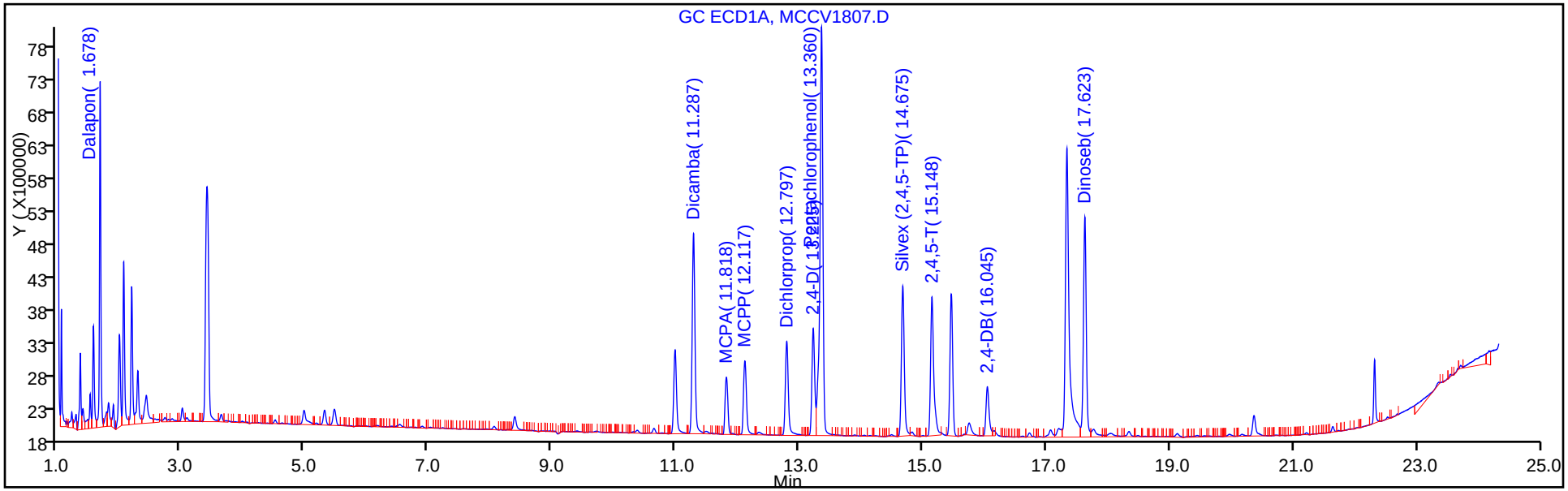
Herb Prime_00022 Amount Added: 250.00 Units: uL

Report Date: 19-Aug-2016 09:19:37 Chrom Revision: 2.2 20-Apr-2016 13:59:46

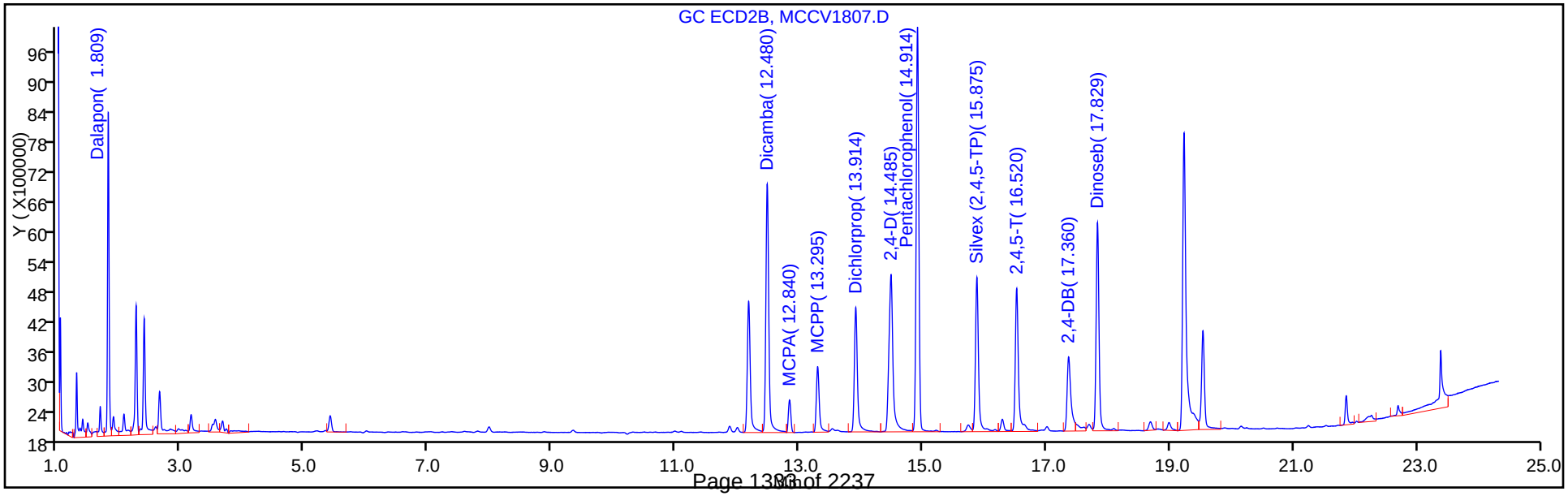
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1807.D				
Injection Date:	18-Aug-2016 19:55:47	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	CCV			Worklist Smp#:	15
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	14
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

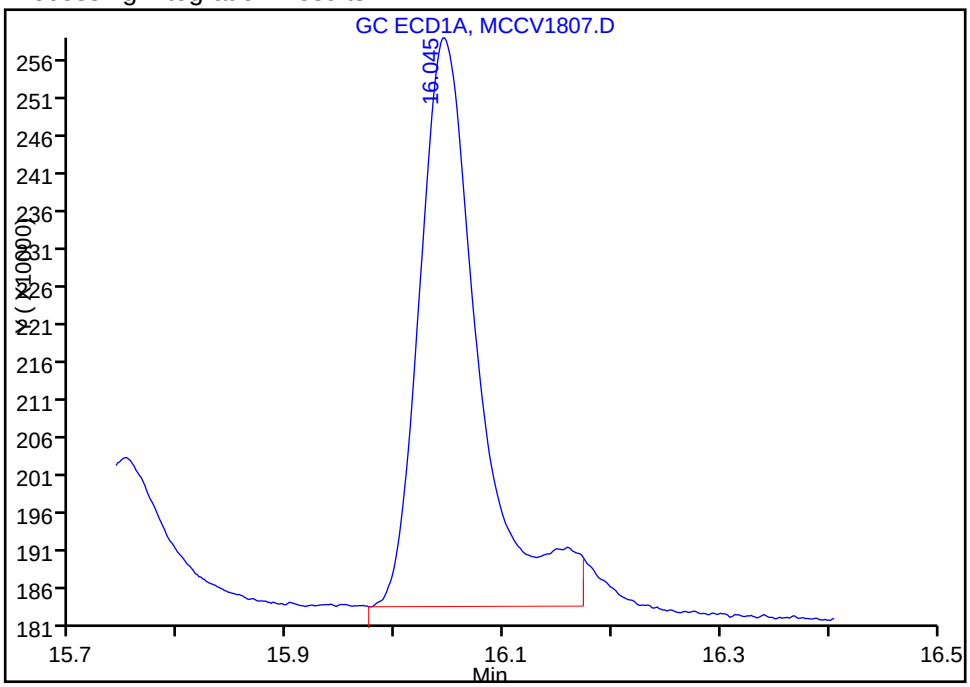
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1807.D				
Injection Date:	18-Aug-2016 19:55:47	Instrument ID:	SGCM		
Lims ID:	CCV				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	14	Worklist Smp#:	15
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides (0.53 mm)	Detector	GC ECD1A		

7 2,4-DB, CAS: 94-82-6

Signal: 1

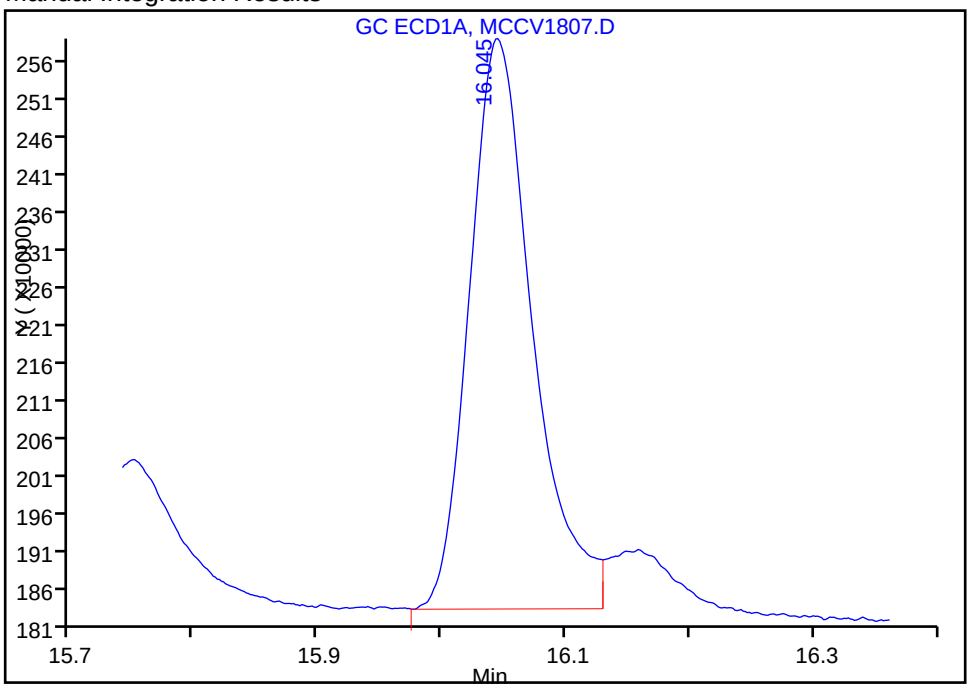
Processing Integration Results

RT: 16.04
Area: 2833179
Amount: 41.373488
Amount Units: ng/ml



Manual Integration Results

RT: 16.04
Area: 2649132
Amount: 38.685812
Amount Units: ng/ml



Reviewer: konopkad, 18-Aug-2016 21:15:20

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM VII
HERBICIDES CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/15 Calibration Date: 08/18/2016 19:55

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1807.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dalapon	Ave	339353	350780		33.0	32.0	3.4	20.0
Dicamba	Ave	1024971	1039251		16.2	16.0	1.4	20.0
MCPA	Qua		569.5		3310	3200	3.4	20.0
MCPP	Ave	1204	1387		3690	3200	15.2	20.0
Dichlorprop	Ave	256924	276907		34.5	32.0	7.8	20.0
2,4-D	Ave	428775	459751		34.3	32.0	7.2	20.0
Pentachlorophenol	Ave	2944770	3095420		8.41	8.00	5.1	20.0
Silvex (2,4,5-TP)	Ave	1191865	1369635		9.19	8.00	14.9	20.0
2,4,5-T	Ave	1185233	1332967		9.00	8.00	12.5	20.0
2,4-DB	Ave	157426	202285		41.1	32.0	28.5*	20.0
Dinoseb	Ave	398441	433538		34.8	32.0	8.8	20.0
2,4-Dichlorophenylacetic acid	Ave	270784	285435		33.7	32.0	5.4	20.0

FORM VII
HERBICIDES CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/15 Calibration Date: 08/18/2016 19:55

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1807.D

Analyte	RT	RT WINDOW	
		FROM	TO
Dalapon	1.81	1.78	1.84
Dicamba	12.48	12.47	12.53
MCPA	12.84	12.83	12.89
MCPP	13.30	13.28	13.34
Dichlorprop	13.91	13.90	13.96
2,4-D	14.49	14.47	14.53
Pentachlorophenol	14.91	14.90	14.96
Silvex (2,4,5-TP)	15.88	15.86	15.92
2,4,5-T	16.52	16.51	16.57
2,4-DB	17.36	17.35	17.41
Dinoseb	17.83	17.82	17.88
2,4-Dichlorophenylacetic acid	12.18	12.17	12.23

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1807.D
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Aug-2016 19:55:47 ALS Bottle#: 14 Worklist Smp#: 15
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008237-015
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 19-Aug-2016 09:19:36 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK010

First Level Reviewer: konopkad Date: 18-Aug-2016 21:15:20

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.678	1.694	-0.016	8132947	32.0	34.0	
2	1.809	1.811	-0.002	11208120	32.0	33.0	
						RPD = 3.02	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.988	11.017	-0.029	4146055	32.0	34.9	
2	12.179	12.196	-0.017	9133906	32.0	33.7	
						RPD = 3.36	
1 Dicamba							
1	11.287	11.314	-0.027	9584220	16.0	17.1	
2	12.480	12.496	-0.016	16628017	16.0	16.2	
						RPD = 5.24	
4 MCPA							
1	11.818	11.847	-0.029	2745744	3200.0	4160.1	
2	12.840	12.859	-0.019	1822334	3200.0	3309.7	
						RPD = 22.77	
9 MCPP							
1	12.117	12.144	-0.027	3835012	3201.0	3889.7	
2	13.295	13.312	-0.017	4439805	3201.0	3686.1	
						RPD = 5.38	
6 Dichlorprop							
1	12.797	12.822	-0.025	4958905	32.0	36.3	
2	13.914	13.931	-0.017	8861037	32.0	34.5	
						RPD = 5.21	
8 2,4-D							
1	13.225	13.249	-0.024	5182704	32.0	38.6	
2	14.485	14.501	-0.016	14712045	32.0	34.3	
						RPD = 11.85	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.360	13.387	-0.027	21522333	8.00	8.60	
2	14.914	14.932	-0.018	24763360	8.00	8.41	
						RPD = 2.20	
2 Silvex (2,4,5-TP)							
1	14.675	14.699	-0.024	7464791	8.00	9.24	
2	15.875	15.892	-0.017	10957083	8.00	9.19	
						RPD = 0.47	
5 2,4,5-T							
1	15.148	15.172	-0.024	7648474	8.00	9.19	
2	16.520	16.536	-0.016	10663734	8.00	9.00	
						RPD = 2.13	
7 2,4-DB							M
1	16.045	16.069	-0.024	2649132	32.0	38.7	M
2	17.360	17.376	-0.016	6473111	32.0	41.1	M
						RPD = 6.10	
13 Dinoseb							
1	17.623	17.649	-0.026	10862289	32.0	36.4	
2	17.829	17.846	-0.017	13873215	32.0	34.8	
						RPD = 4.37	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

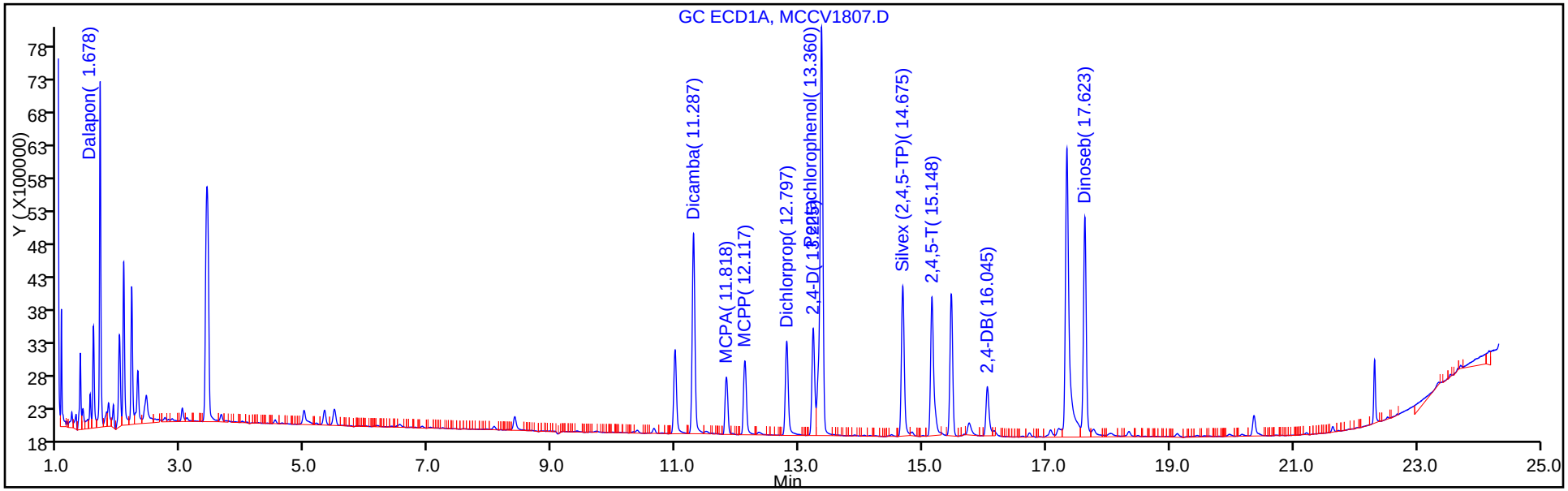
Herb Prime_00022 Amount Added: 250.00 Units: uL

Report Date: 19-Aug-2016 09:19:37 Chrom Revision: 2.2 20-Apr-2016 13:59:46

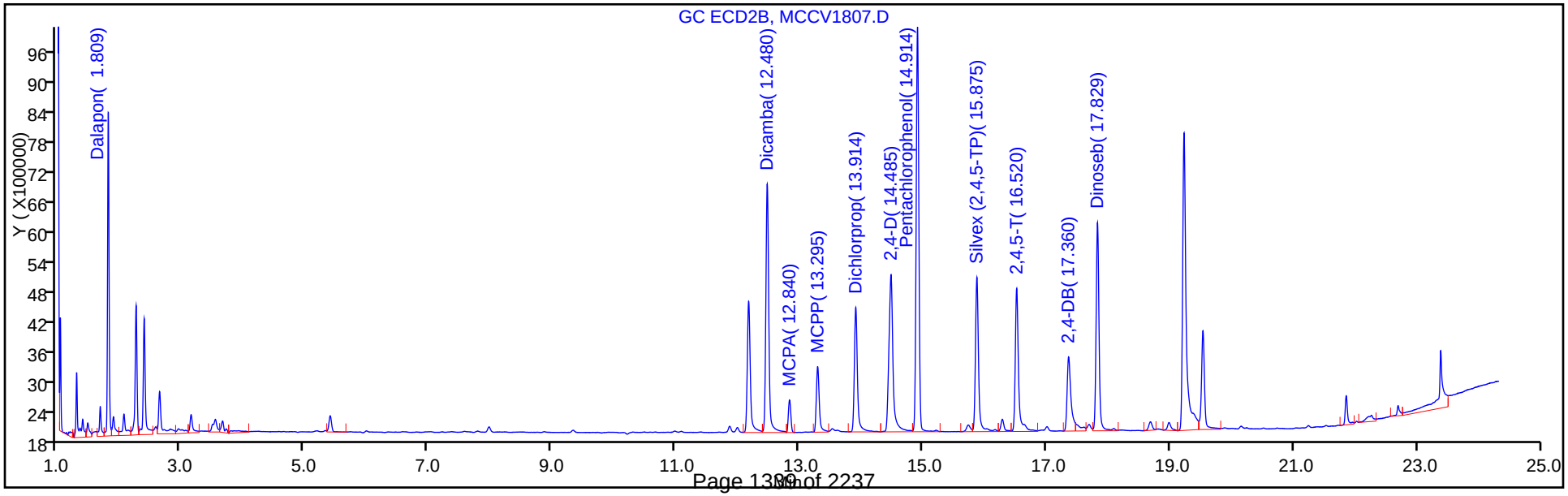
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1807.D				
Injection Date:	18-Aug-2016 19:55:47	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	CCV			Worklist Smp#:	15
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	14
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

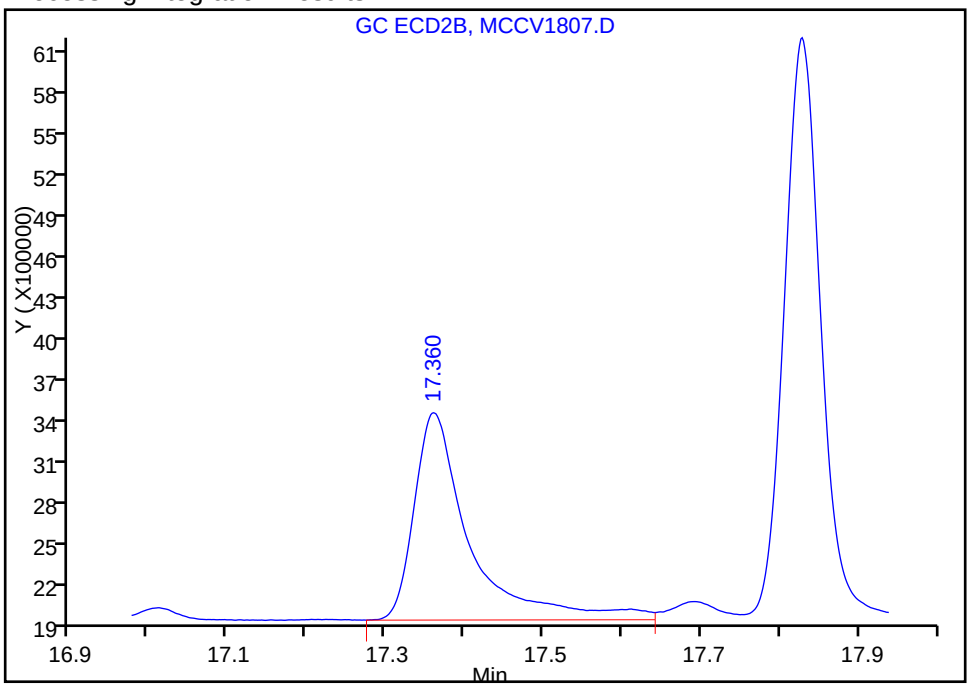
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1807.D				
Injection Date:	18-Aug-2016 19:55:47	Instrument ID:	SGCM		
Lims ID:	CCV				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	14	Worklist Smp#:	15
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

7 2,4-DB, CAS: 94-82-6

Signal: 2

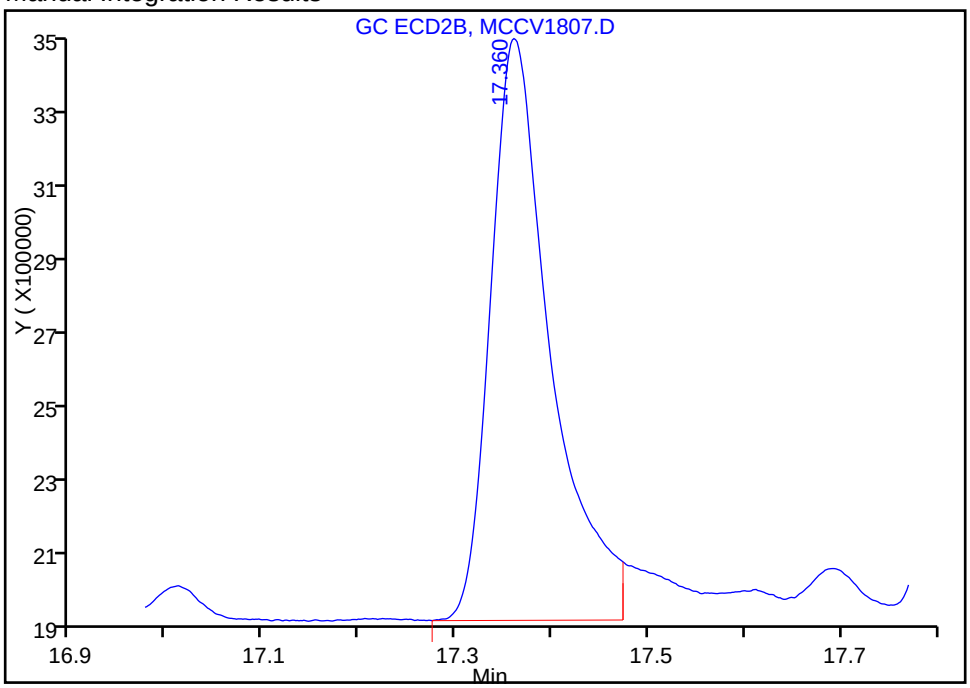
Processing Integration Results

RT: 17.36
Area: 7350602
Amount: 46.692540
Amount Units: ng/ml



Manual Integration Results

RT: 17.36
Area: 6473111
Amount: 41.118536
Amount Units: ng/ml



Reviewer: konopkad, 18-Aug-2016 21:15:20

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM VII
HERBICIDES CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/20 Calibration Date: 08/18/2016 22:20

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1812.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dalapon	Ave	238913	251070		33.6	32.0	5.1	20.0
Dicamba	Ave	560621	583718		16.7	16.0	4.1	20.0
MCPA	Ave	660.0	854.4		4140	3200	29.5*	20.0
MCPP	Ave	985.9	1156		3750	3200	17.3	20.0
Dichlorprop	Ave	136487	149317		35.0	32.0	9.4	20.0
2,4-D	Ave	134152	154282		36.8	32.0	15.0	20.0
Pentachlorophenol	Ave	2503543	2609265		8.34	8.00	4.2	20.0
Silvex (2,4,5-TP)	Ave	808210	904856		8.96	8.00	12.0	20.0
2,4,5-T	Ave	832145	936665		9.00	8.00	12.6	20.0
2,4-DB	Ave	68478	80770		37.7	32.0	18.0	20.0
Dinoseb	Ave	298628	316574		33.9	32.0	6.0	20.0
2,4-Dichlorophenylacetic acid	Ave	118853	126453		34.0	32.0	6.4	20.0

FORM VII
HERBICIDES CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/20 Calibration Date: 08/18/2016 22:20

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP1 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1812.D

Analyte	RT	RT WINDOW	
		FROM	TO
Dalapon	1.68	1.66	1.72
Dicamba	11.29	11.28	11.34
MCPA	11.82	11.82	11.88
MCPP	12.12	12.11	12.17
Dichlorprop	12.80	12.79	12.85
2,4-D	13.22	13.22	13.28
Pentachlorophenol	13.36	13.36	13.42
Silvex (2,4,5-TP)	14.67	14.67	14.73
2,4,5-T	15.15	15.14	15.20
2,4-DB	16.04	16.04	16.10
Dinoseb	17.62	17.62	17.68
2,4-Dichlorophenylacetic acid	10.99	10.99	11.05

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1812.D
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Aug-2016 22:20:58 ALS Bottle#: 19 Worklist Smp#: 20
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008237-020
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 19-Aug-2016 09:19:51 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK010

First Level Reviewer: konopkad Date: 19-Aug-2016 08:56:30

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.677	1.694	-0.017	8022174	32.0	33.6	
2	1.809	1.811	-0.002	10581771	32.0	31.2	
						RPD = 7.40	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.988	11.017	-0.029	4046495	32.0	34.0	
2	12.179	12.196	-0.017	8827184	32.0	32.6	
						RPD = 4.34	
1 Dicamba							
1	11.287	11.314	-0.027	9339485	16.0	16.7	
2	12.480	12.496	-0.016	16136568	16.0	15.7	
						RPD = 5.65	
4 MCPA							
1	11.818	11.847	-0.029	2734238	3200.0	4142.6	
2	12.842	12.859	-0.017	1752654	3200.0	3202.0	
						RPD = 25.61	
9 MCPP							
1	12.117	12.144	-0.027	3700670	3201.0	3753.5	
2	13.295	13.312	-0.017	4283852	3201.0	3556.6	
						RPD = 5.39	
6 Dichlorprop							
1	12.795	12.822	-0.027	4778138	32.0	35.0	
2	13.914	13.931	-0.017	8591377	32.0	33.4	
						RPD = 4.58	
8 2,4-D							
1	13.223	13.249	-0.026	4937018	32.0	36.8	
2	14.484	14.501	-0.017	13999261	32.0	32.6	
						RPD = 11.96	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.360	13.387	-0.027	20874117	8.00	8.34	
2	14.914	14.932	-0.018	23739075	8.00	8.06	
						RPD = 3.37	
2 Silvex (2,4,5-TP)							
1	14.673	14.699	-0.026	7238845	8.00	8.96	
2	15.874	15.892	-0.018	10535323	8.00	8.84	
						RPD = 1.32	
5 2,4,5-T							
1	15.147	15.172	-0.025	7493318	8.00	9.00	
2	16.520	16.536	-0.016	10129240	8.00	8.55	
						RPD = 5.23	
7 2,4-DB							M
1	16.043	16.069	-0.026	2584652	32.0	37.7	
2	17.359	17.376	-0.017	5206103	32.0	33.1	M
						RPD = 13.20	
13 Dinoseb							
1	17.623	17.649	-0.026	10130366	32.0	33.9	
2	17.827	17.846	-0.019	13169986	32.0	33.1	
						RPD = 2.60	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

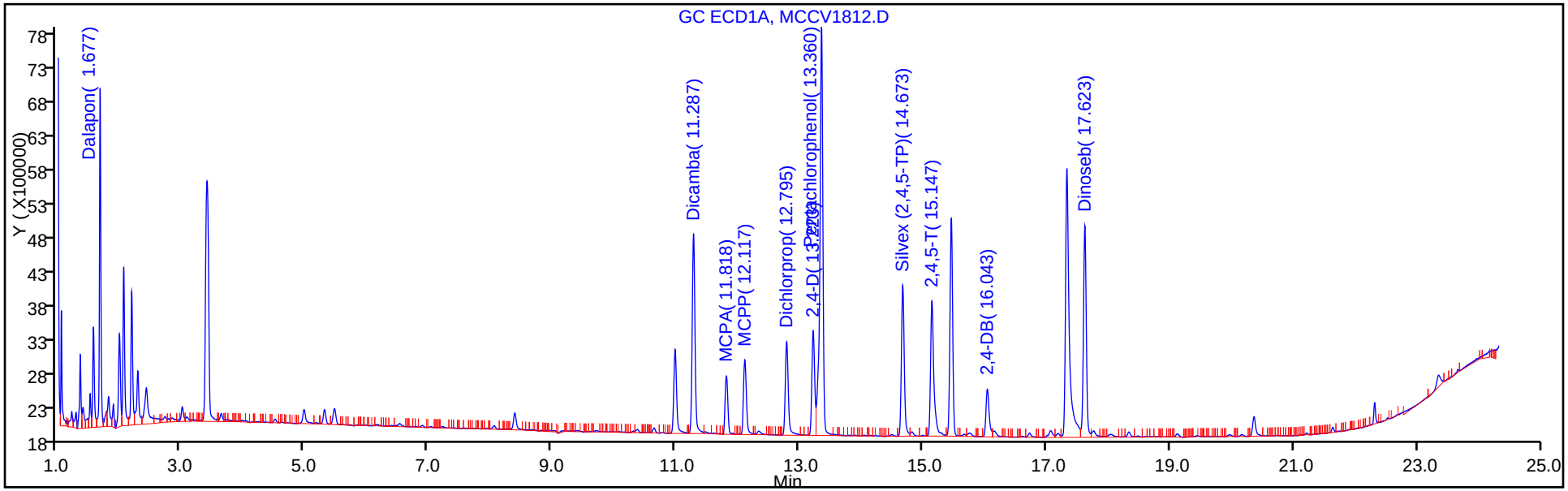
Herb Prime_00022 Amount Added: 250.00 Units: uL

Report Date: 19-Aug-2016 09:19:52 Chrom Revision: 2.2 20-Apr-2016 13:59:46

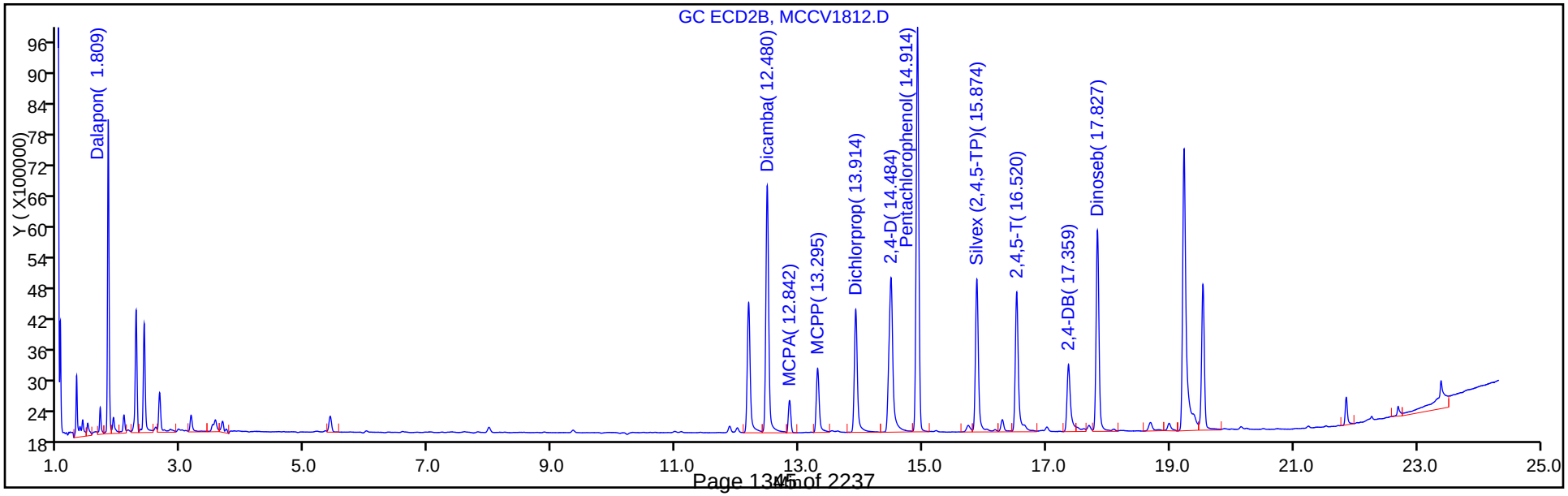
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1812.D				
Injection Date:	18-Aug-2016 22:20:58	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	CCV			Worklist Smp#:	20
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	19
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



FORM VII
HERBICIDES CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/20 Calibration Date: 08/18/2016 22:20

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1812.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dalapon	Ave	339353	331177		31.2	32.0	-2.4	20.0
Dicamba	Ave	1024971	1008536		15.7	16.0	-1.6	20.0
MCPA	Qua		547.7		3200	3200	0.0	20.0
MCPP	Ave	1204	1338		3560	3200	11.1	20.0
Dichlorprop	Ave	256924	268481		33.4	32.0	4.5	20.0
2,4-D	Ave	428775	437477		32.6	32.0	2.0	20.0
Pentachlorophenol	Ave	2944770	2967384		8.06	8.00	0.8	20.0
Silvex (2,4,5-TP)	Ave	1191865	1316915		8.84	8.00	10.5	20.0
2,4,5-T	Ave	1185233	1266155		8.55	8.00	6.8	20.0
2,4-DB	Ave	157426	162691		33.1	32.0	3.3	20.0
Dinoseb	Ave	398441	411562		33.1	32.0	3.3	20.0
2,4-Dichlorophenylacetic acid	Ave	270784	275850		32.6	32.0	1.9	20.0

FORM VII
HERBICIDES CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: CCV 160-265408/20 Calibration Date: 08/18/2016 22:20

Instrument ID: SGCM Calib Start Date: 08/16/2016 10:17

GC Column: RTXCLP2 ID: 0.53(mm) Calib End Date: 08/16/2016 13:33

Lab File ID: MCCV1812.D

Analyte	RT	RT WINDOW	
		FROM	TO
Dalapon	1.81	1.78	1.84
Dicamba	12.48	12.47	12.53
MCPA	12.84	12.83	12.89
MCPP	13.30	13.28	13.34
Dichlorprop	13.91	13.90	13.96
2,4-D	14.48	14.47	14.53
Pentachlorophenol	14.91	14.90	14.96
Silvex (2,4,5-TP)	15.87	15.86	15.92
2,4,5-T	16.52	16.51	16.57
2,4-DB	17.36	17.35	17.41
Dinoseb	17.83	17.82	17.88
2,4-Dichlorophenylacetic acid	12.18	12.17	12.23

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1812.D
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 18-Aug-2016 22:20:58 ALS Bottle#: 19 Worklist Smp#: 20
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 160-0008237-020
Operator ID: DEK Instrument ID: SGCM
Sublist: chrom-8151_SGCM*sub2

Method: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 19-Aug-2016 09:19:51 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK010

First Level Reviewer: konopkad Date: 19-Aug-2016 08:56:30

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.677	1.694	-0.017	8022174	32.0	33.6	
2	1.809	1.811	-0.002	10581771	32.0	31.2	
						RPD = 7.40	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.988	11.017	-0.029	4046495	32.0	34.0	
2	12.179	12.196	-0.017	8827184	32.0	32.6	
						RPD = 4.34	
1 Dicamba							
1	11.287	11.314	-0.027	9339485	16.0	16.7	
2	12.480	12.496	-0.016	16136568	16.0	15.7	
						RPD = 5.65	
4 MCPA							
1	11.818	11.847	-0.029	2734238	3200.0	4142.6	
2	12.842	12.859	-0.017	1752654	3200.0	3202.0	
						RPD = 25.61	
9 MCPP							
1	12.117	12.144	-0.027	3700670	3201.0	3753.5	
2	13.295	13.312	-0.017	4283852	3201.0	3556.6	
						RPD = 5.39	
6 Dichlorprop							
1	12.795	12.822	-0.027	4778138	32.0	35.0	
2	13.914	13.931	-0.017	8591377	32.0	33.4	
						RPD = 4.58	
8 2,4-D							
1	13.223	13.249	-0.026	4937018	32.0	36.8	
2	14.484	14.501	-0.017	13999261	32.0	32.6	
						RPD = 11.96	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.360	13.387	-0.027	20874117	8.00	8.34	
2	14.914	14.932	-0.018	23739075	8.00	8.06	
						RPD = 3.37	
2 Silvex (2,4,5-TP)							
1	14.673	14.699	-0.026	7238845	8.00	8.96	
2	15.874	15.892	-0.018	10535323	8.00	8.84	
						RPD = 1.32	
5 2,4,5-T							
1	15.147	15.172	-0.025	7493318	8.00	9.00	
2	16.520	16.536	-0.016	10129240	8.00	8.55	
						RPD = 5.23	
7 2,4-DB							M
1	16.043	16.069	-0.026	2584652	32.0	37.7	
2	17.359	17.376	-0.017	5206103	32.0	33.1	M
						RPD = 13.20	
13 Dinoseb							
1	17.623	17.649	-0.026	10130366	32.0	33.9	
2	17.827	17.846	-0.019	13169986	32.0	33.1	
						RPD = 2.60	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

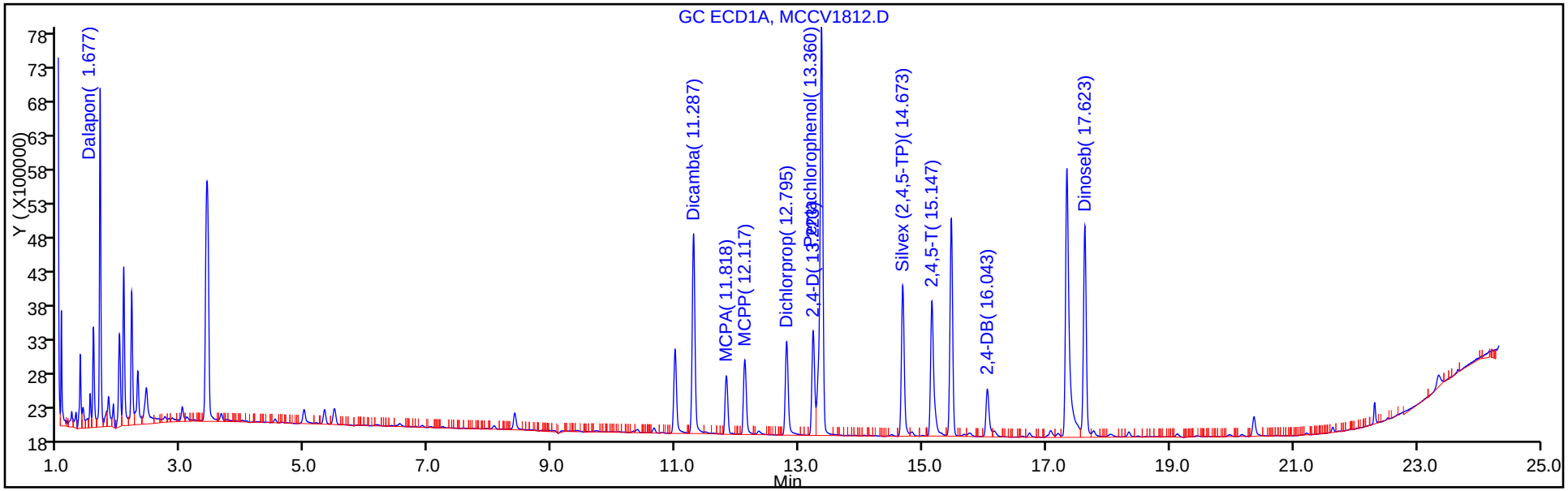
Herb Prime_00022 Amount Added: 250.00 Units: uL

Report Date: 19-Aug-2016 09:19:53 Chrom Revision: 2.2 20-Apr-2016 13:59:46

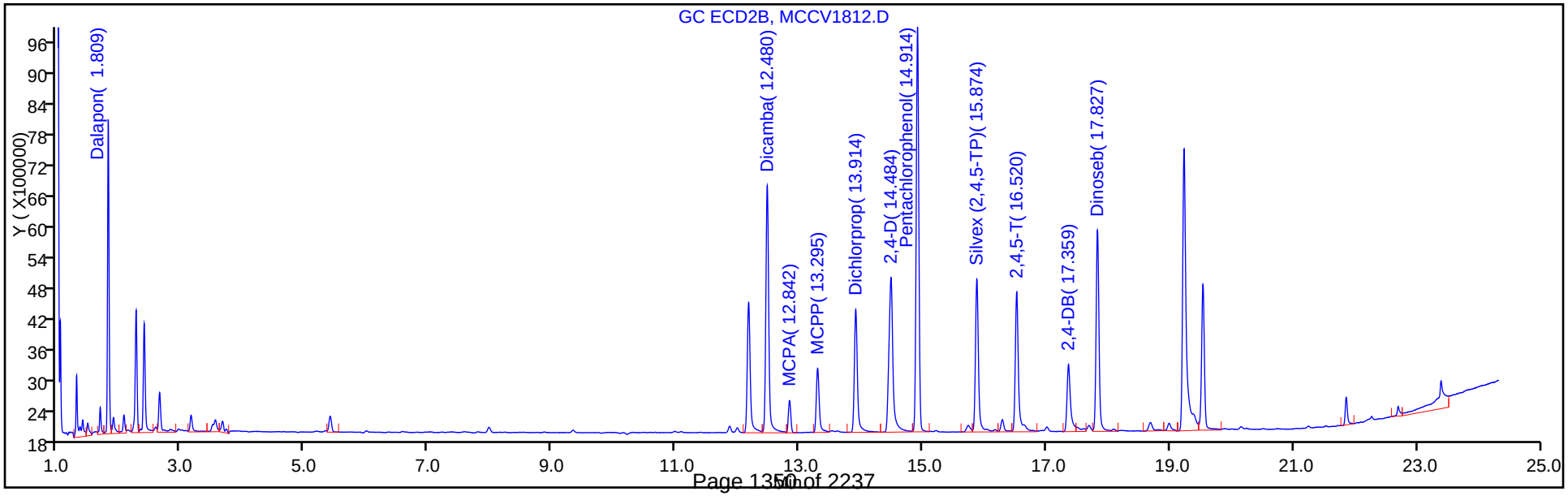
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1812.D				
Injection Date:	18-Aug-2016 22:20:58	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	CCV			Worklist Smp#:	20
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	19
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

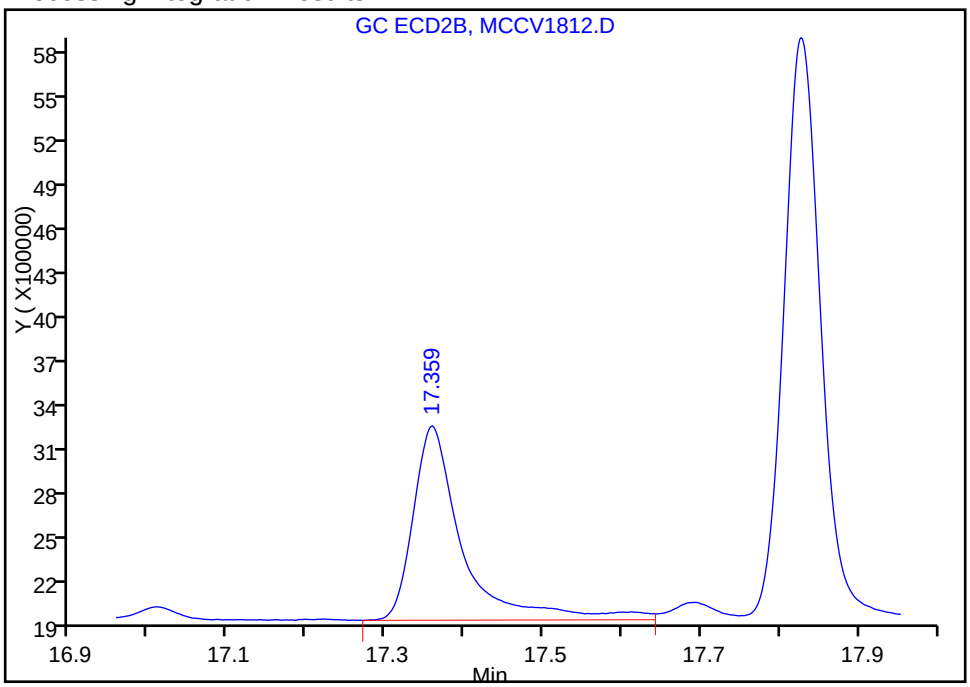
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MCCV1812.D				
Injection Date:	18-Aug-2016 22:20:58	Instrument ID:	SGCM		
Lims ID:	CCV				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	19	Worklist Smp#:	20
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

7 2,4-DB, CAS: 94-82-6

Signal: 2

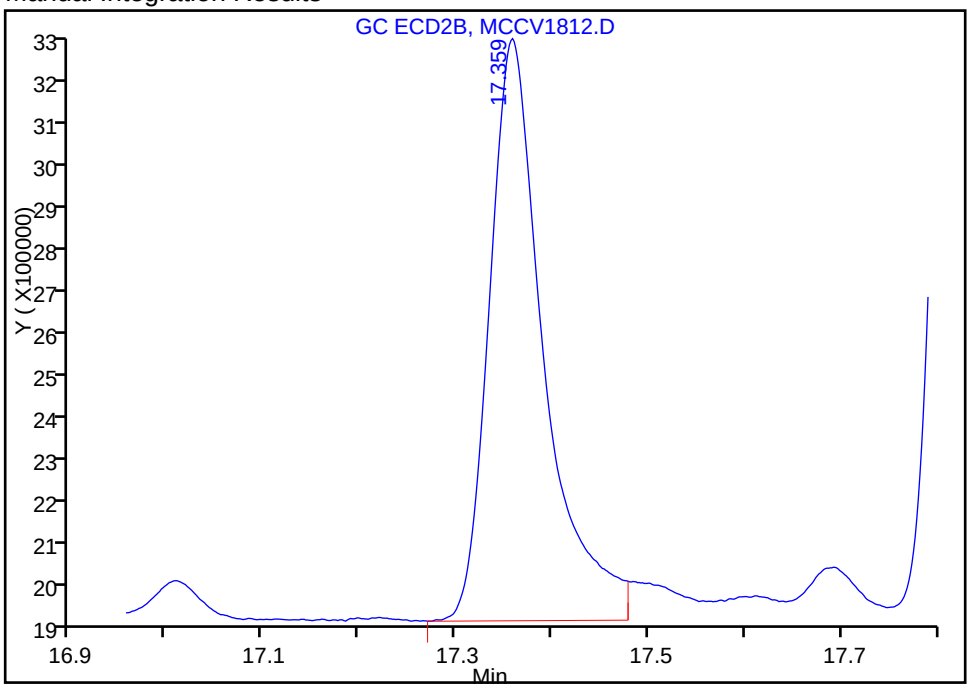
Processing Integration Results

RT: 17.36
Area: 5763659
Amount: 36.611951
Amount Units: ng/ml



Manual Integration Results

RT: 17.36
Area: 5206103
Amount: 33.070240
Amount Units: ng/ml



Reviewer: konopkad, 19-Aug-2016 08:56:30

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
HERBICIDES ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: LB 160-264502/1-C
Matrix: Solid (TCLP)
Lab File ID: MBLK1797.D
Analysis Method: 8151A
Date Collected:
Extraction Method: 8151A
Date Extracted: 08/12/2016 16:02
Sample wt/vol: 100(mL)
Date Analyzed: 08/18/2016 14:40
Con. Extract Vol.: 200(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265408
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
94-75-7	2,4-D	0.020	U	0.040	0.020
93-72-1	Silvex (2,4,5-TP)	0.0030	U	0.010	0.0030

CAS NO.	SURROGATE	%REC	Q	LIMITS
19719-28-9	2,4-Dichlorophenylacetic acid	78		56-147

TestAmerica St. Louis
Target Compound Quantitation Report

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MBLK1797.D				
Lims ID:	LB 160-264502/1-C				
Client ID:					
Sample Type:	LB				
Inject. Date:	18-Aug-2016 14:40:53	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	LB 160-264502/1-				
Misc. Info.:	160-0008237-005				
Operator ID:	DEK	Instrument ID:	SGCM		

Method:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m		
Limit Group:	GC 8151 DOD ICAL		
Last Update:	19-Aug-2016 09:19:00	Calib Date:	16-Aug-2016 13:33:13
Integrator:	Falcon		
Quant Method:	External Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK010	

First Level Reviewer: konopkad Date: 19-Aug-2016 09:13:34

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
$ 11 2,4-Dichlorophenylacetic acid							M
1	10.995	11.017	-0.022	5901654	50.0	49.7	
2	12.181	12.196	-0.015	10494456	50.0	38.8	M
						RPD = 24.66	

QC Flag Legend

Review Flags

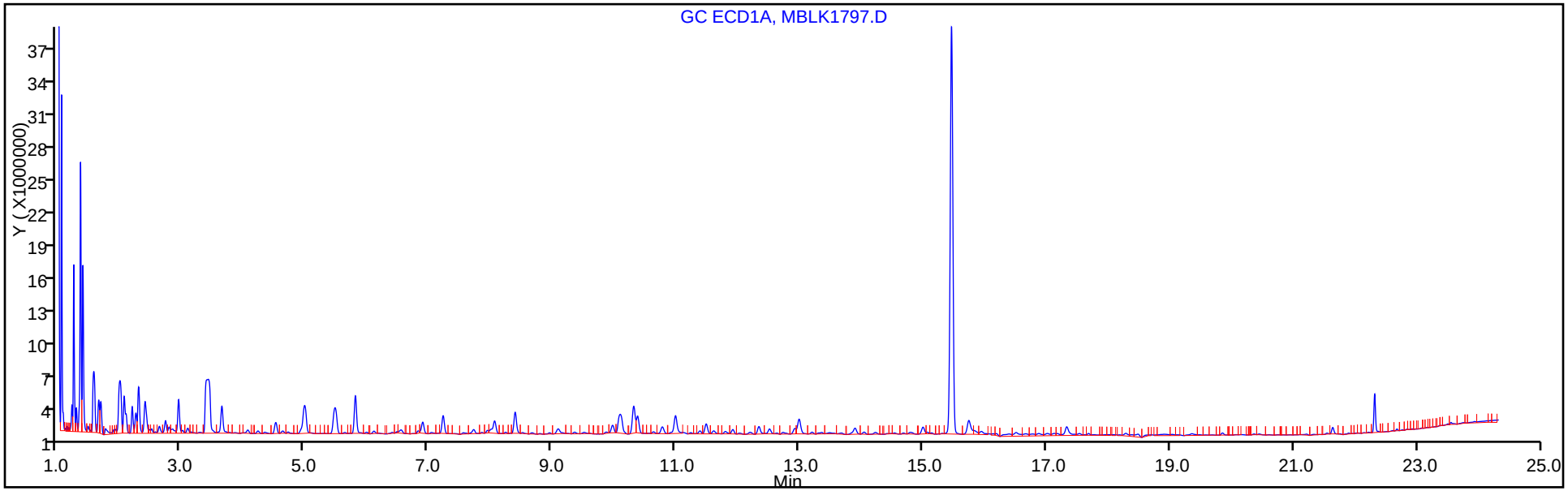
M - Manually Integrated

Report Date: 19-Aug-2016 09:19:06 Chrom Revision: 2.2 20-Apr-2016 13:59:46

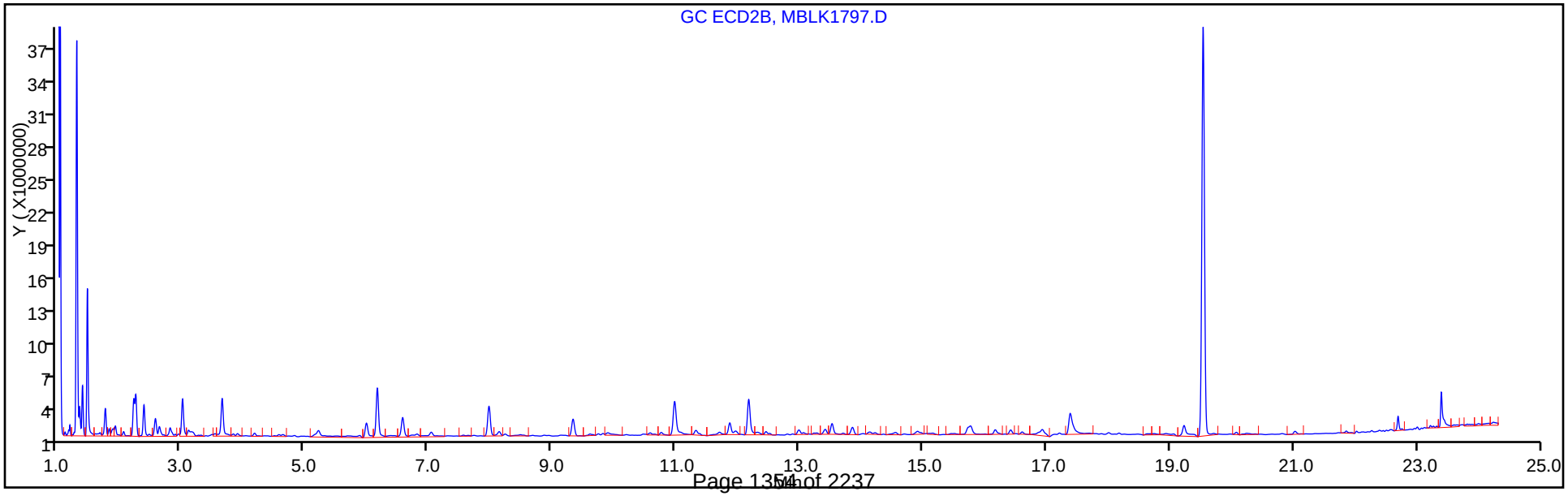
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MBLK1797.D				
Injection Date:	18-Aug-2016 14:40:53	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	LB 160-264502/1-C			Worklist Smp#:	5
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MBLK1797.D				
Lims ID:	LB 160-264502/1-C				
Client ID:					
Sample Type:	LB				
Inject. Date:	18-Aug-2016 14:40:53	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	LB 160-264502/1-				
Misc. Info.:	160-0008237-005				
Operator ID:	DEK	Instrument ID:	SGCM		

Method:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m		
Limit Group:	GC 8151 DOD ICAL		
Last Update:	19-Aug-2016 09:19:00	Calib Date:	16-Aug-2016 13:33:13
Integrator:	Falcon		
Quant Method:	External Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK010	

First Level Reviewer: konopkad Date: 19-Aug-2016 09:13:34

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	49.7	99.31

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	38.8	77.51

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

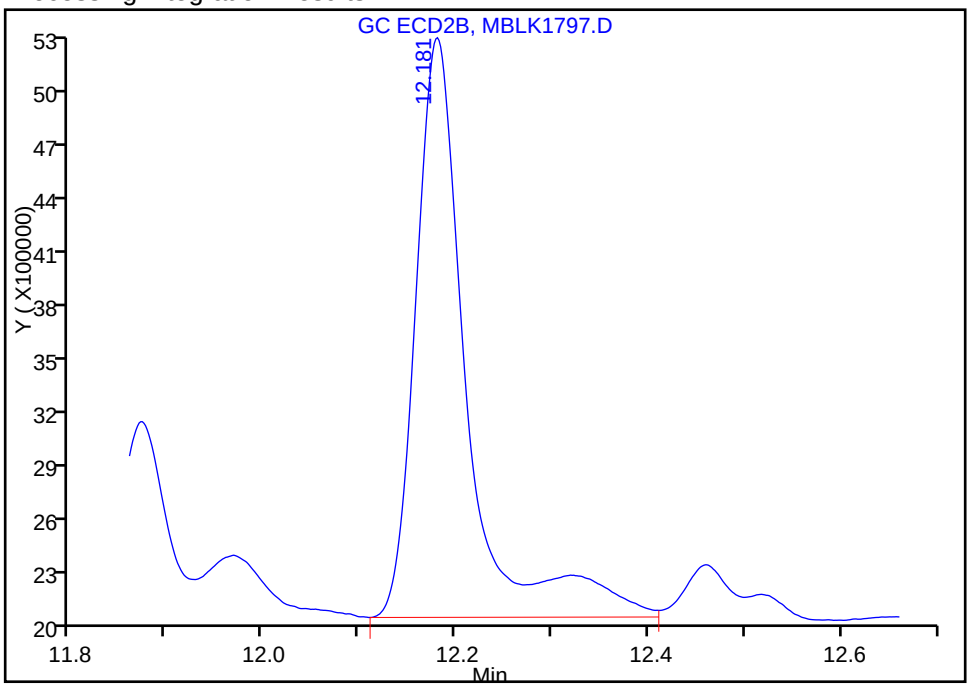
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MBLK1797.D				
Injection Date:	18-Aug-2016 14:40:53	Instrument ID:	SGCM		
Lims ID:	LB 160-264502/1-C				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

$ 11 2,4-Dichlorophenylacetic acid, CAS: 19719-28-9

Signal: 2

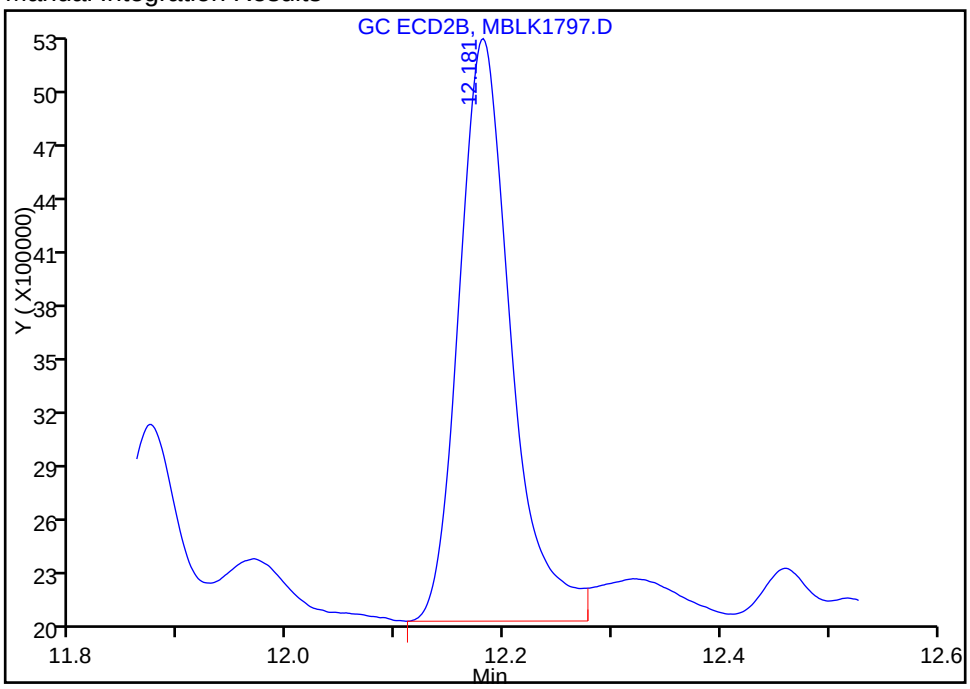
Processing Integration Results

RT: 12.18
Area: 11723795
Amount: 43.295751
Amount Units: ng/ml



Manual Integration Results

RT: 12.18
Area: 10494456
Amount: 38.755825
Amount Units: ng/ml



Reviewer: konopkad, 19-Aug-2016 09:13:34

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
HERBICIDES ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: LCS 160-264676/2-A
Matrix: Solid
Lab File ID: MLCS1798.D
Analysis Method: 8151A
Date Collected:
Extraction Method: 8151A
Date Extracted: 08/12/2016 16:02
Sample wt/vol: 100(mL)
Date Analyzed: 08/18/2016 15:14
Con. Extract Vol.: 200(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265408
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
94-75-7	2,4-D	0.237		0.040	0.020
93-72-1	Silvex (2,4,5-TP)	0.0641		0.010	0.0030

CAS NO.	SURROGATE	%REC	Q	LIMITS
19719-28-9	2,4-Dichlorophenylacetic acid	115		56-147

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MLCS1798.D
Lims ID: LCS 160-264676/2-A
Client ID:
Sample Type: LCS
Inject. Date: 18-Aug-2016 15:14:13 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: LCS 160-264676/2
Misc. Info.: 160-0008237-006
Operator ID: DEK Instrument ID: SGCM

Method: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 19-Aug-2016 09:19:00 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK010

First Level Reviewer: konopkad Date: 19-Aug-2016 09:14:50

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.683	1.694	-0.011	29222458	100.0	122.3	
2	1.806	1.811	-0.005	35027045	100.0	103.2	
						RPD = 16.94	
$ 11 2,4-Dichlorophenylacetic acid							M
1	10.994	11.017	-0.023	8847404	50.0	74.4	M
2	12.180	12.196	-0.016	15629937	50.0	57.7	M
						RPD = 25.30	
1 Dicamba							
1	11.291	11.314	-0.023	30546532	50.0	54.5	
2	12.481	12.496	-0.015	52381000	50.0	51.1	
						RPD = 6.41	
4 MCPA							
1	11.823	11.847	-0.024	8953672	10000	13566	E
2	12.843	12.859	-0.016	8009207	10000	13042	E
						RPD = 3.93	
9 MCPP							
1	12.121	12.144	-0.023	11715927	10000	11883	
2	13.296	13.312	-0.016	15892594	10000	13195	E
						RPD = 10.46	
6 Dichlorprop							
1	12.799	12.822	-0.023	17577897	100.0	128.8	E
2	13.915	13.931	-0.016	32651994	100.0	127.1	
						RPD = 1.33	
8 2,4-D							
1	13.228	13.249	-0.021	18518013	100.0	138.0	E
2	14.485	14.501	-0.016	50812031	100.0	118.5	
						RPD = 15.23	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.364	13.387	-0.023	81303069	25.0	32.5	E
2	14.915	14.932	-0.017	98805825	25.0	33.6	E
						RPD = 3.26	
2 Silvex (2,4,5-TP)							
1	14.679	14.699	-0.020	27725567	25.0	34.3	E
2	15.876	15.892	-0.016	38186017	25.0	32.0	E
						RPD = 6.83	
5 2,4,5-T							
1	15.149	15.172	-0.023	31711858	25.0	38.1	E
2	16.520	16.536	-0.016	36755619	25.0	31.0	
						RPD = 20.54	
7 2,4-DB							
1	16.044	16.069	-0.025	11637130	100.0	169.9	E
2	17.365	17.376	-0.011	35229132	100.0	223.8	E
						RPD = 27.35	
13 Dinoseb							
1	17.628	17.649	-0.021	61209651	100.0	205.0	E
2	17.830	17.846	-0.016	87763778	100.0	220.3	E
						RPD = 7.20	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

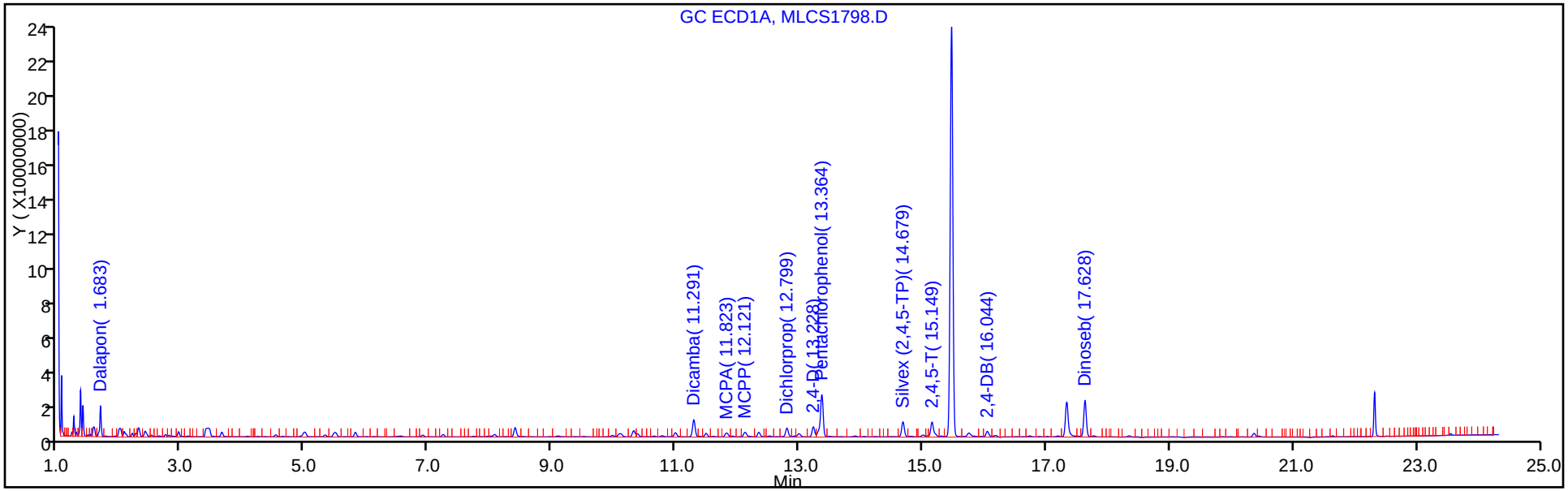
M - Manually Integrated

Report Date: 19-Aug-2016 09:19:09 Chrom Revision: 2.2 20-Apr-2016 13:59:46

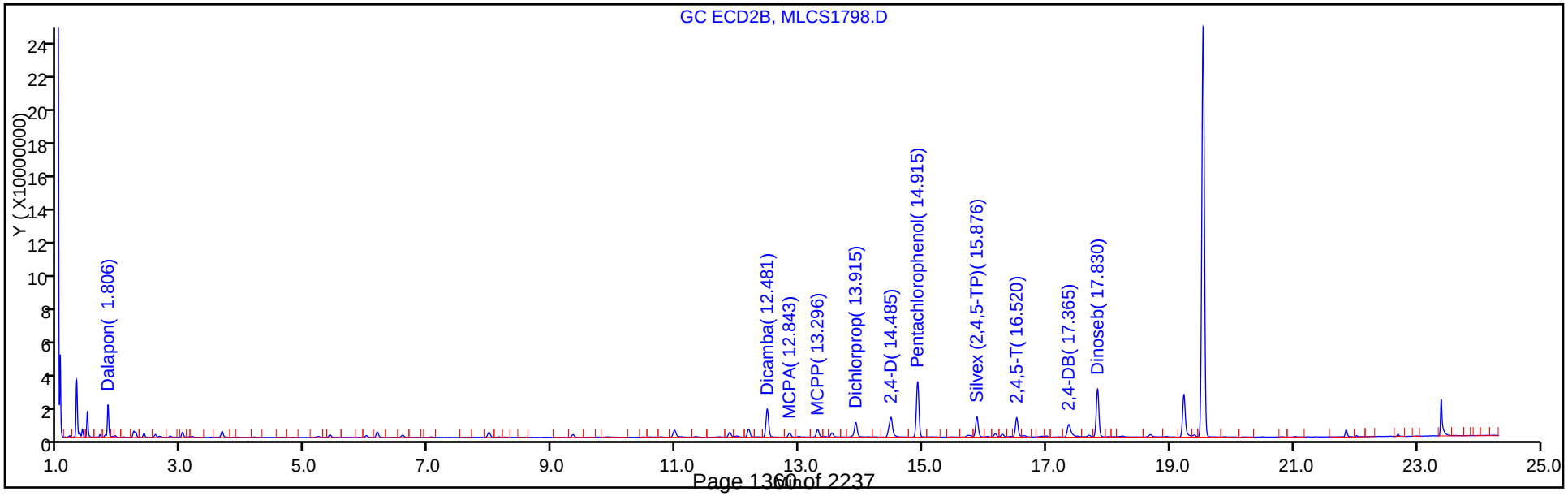
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MLCS1798.D				
Injection Date:	18-Aug-2016 15:14:13	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	LCS 160-264676/2-A			Worklist Smp#:	6
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MLCS1798.D				
Lims ID:	LCS 160-264676/2-A				
Client ID:					
Sample Type:	LCS				
Inject. Date:	18-Aug-2016 15:14:13	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	LCS 160-264676/2				
Misc. Info.:	160-0008237-006				
Operator ID:	DEK	Instrument ID:	SGCM		

Method:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m		
Limit Group:	GC 8151 DOD ICAL		
Last Update:	19-Aug-2016 09:19:00	Calib Date:	16-Aug-2016 13:33:13
Integrator:	Falcon		
Quant Method:	External Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK010	

First Level Reviewer: konopkad Date: 19-Aug-2016 09:14:50

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	74.4	148.88

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	57.7	115.44

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

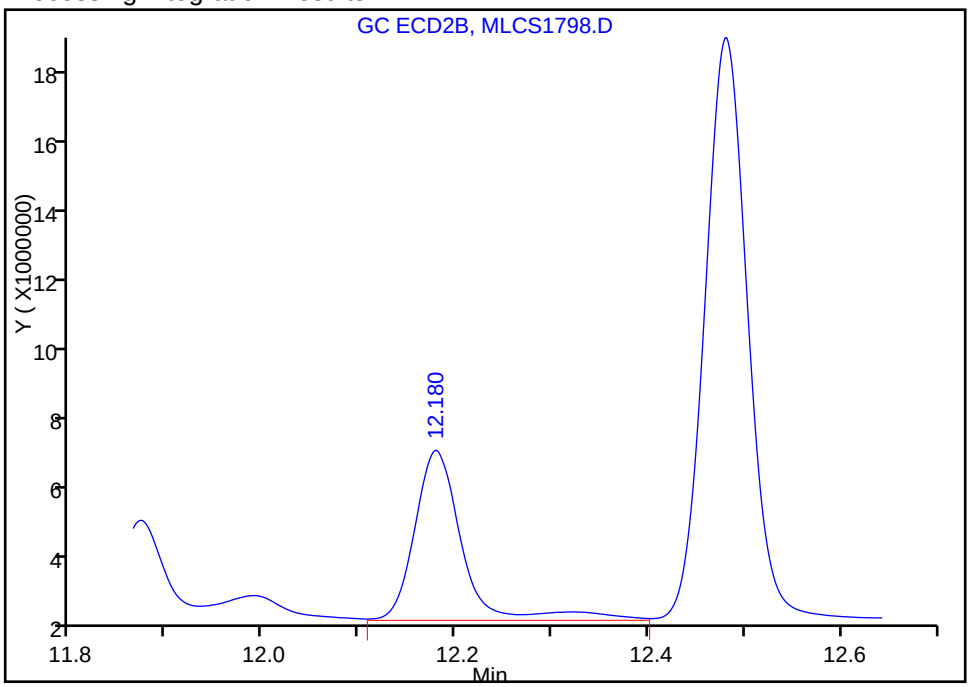
Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MLCS1798.D				
Injection Date:	18-Aug-2016 15:14:13	Instrument ID:	SGCM		
Lims ID:	LCS 160-264676/2-A				
Client ID:					
Operator ID:	DEK	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		
Column:	RTX-CLP Pesticides2 (0.53 mm)	Detector	GC ECD2B		

$ 11 2,4-Dichlorophenylacetic acid, CAS: 19719-28-9

Signal: 2

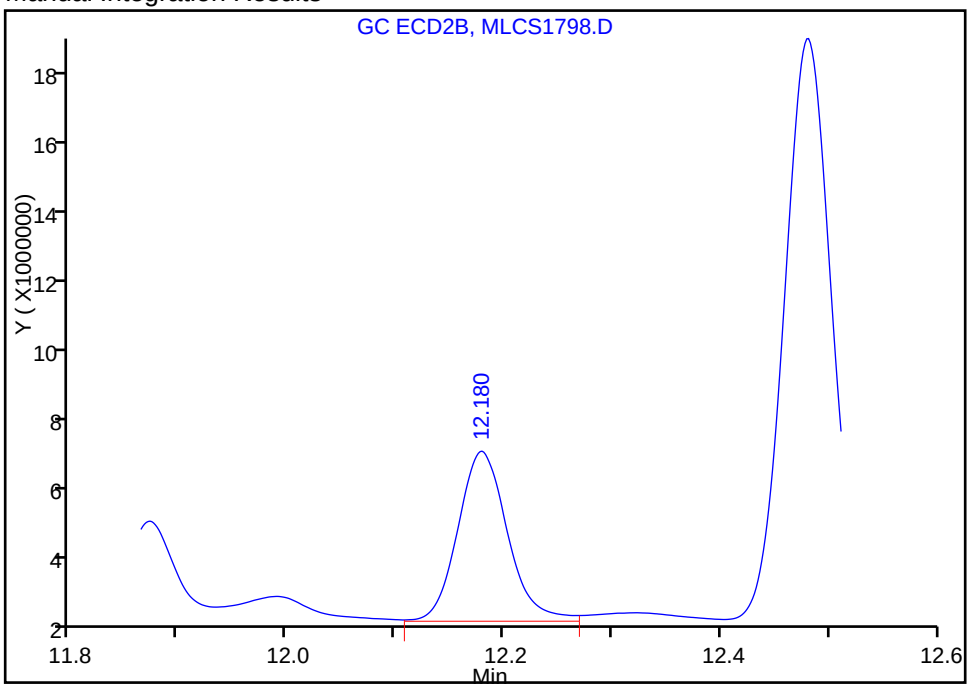
Processing Integration Results

RT: 12.18
Area: 16974926
Amount: 62.688077
Amount Units: ng/ml



Manual Integration Results

RT: 12.18
Area: 15629937
Amount: 57.721059
Amount Units: ng/ml



Reviewer: konopkad, 19-Aug-2016 09:14:50

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM I
HERBICIDES ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: 160-18504-C-1-E MS
Matrix: Solid (TCLP)
Lab File ID: MSMP1800.D
Analysis Method: 8151A
Date Collected: 08/04/2016 09:00
Extraction Method: 8151A
Date Extracted: 08/12/2016 16:02
Sample wt/vol: 100(mL)
Date Analyzed: 08/18/2016 16:20
Con. Extract Vol.: 200(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265408
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
94-75-7	2,4-D	0.171		0.040	0.020
93-72-1	Silvex (2,4,5-TP)	0.0459		0.010	0.0030

CAS NO.	SURROGATE	%REC	Q	LIMITS
19719-28-9	2,4-Dichlorophenylacetic acid	94		56-147

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1800.D
Lims ID: 160-18504-C-1-E MS
Client ID:
Sample Type: MS
Inject. Date: 18-Aug-2016 16:20:47 ALS Bottle#: 7 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-18504-C-1-E
Misc. Info.: 160-0008237-008
Operator ID: DEK Instrument ID: SGCM

Method: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 19-Aug-2016 09:19:00 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK010

First Level Reviewer: konopkad Date: 19-Aug-2016 09:15:19

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.683	1.694	-0.011	21185807	100.0	88.7	
2	1.805	1.811	-0.006	27652661	100.0	81.5	
						RPD = 8.45	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.993	11.017	-0.024	6014513	50.0	50.6	
2	12.179	12.196	-0.017	12694546	50.0	46.9	
						RPD = 7.64	
1 Dicamba							
1	11.292	11.314	-0.022	22953001	50.0	40.9	
2	12.480	12.496	-0.016	40239850	50.0	39.3	
						RPD = 4.20	
4 MCPA							
1	11.823	11.847	-0.024	6182295	10000	9366.8	
2	12.842	12.859	-0.017	5711840	10000	9387.5	
						RPD = 0.22	
9 MCPP							
1	12.122	12.144	-0.022	7914037	10000	8027.0	
2	13.297	13.312	-0.015	11614733	10000	9642.9	
						RPD = 18.29	
6 Dichlorprop							
1	12.800	12.822	-0.022	11814238	100.0	86.6	
2	13.915	13.931	-0.016	23399566	100.0	91.1	
						RPD = 5.08	
8 2,4-D							
1	13.228	13.249	-0.021	12358021	100.0	92.1	
2	14.485	14.501	-0.016	36748563	100.0	85.7	
						RPD = 7.21	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.363	13.387	-0.024	60499566	25.0	24.2	
2	14.917	14.932	-0.015	73025856	25.0	24.8	
						RPD = 2.59	
2 Silvex (2,4,5-TP)							
1	14.678	14.699	-0.021	20470526	25.0	25.3	
2	15.877	15.892	-0.015	27371886	25.0	23.0	
						RPD = 9.78	
5 2,4,5-T							
1	15.150	15.172	-0.022	21077716	25.0	25.3	
2	16.522	16.536	-0.014	25769260	25.0	21.7	
						RPD = 15.24	
7 2,4-DB							
1	16.045	16.069	-0.024	8402579	100.0	122.7	
2	17.360	17.376	-0.016	17389588	100.0	110.5	
						RPD = 10.50	
13 Dinoseb							
1	17.628	17.649	-0.021	44889054	100.0	150.3	E
2	17.830	17.846	-0.016	61969271	100.0	155.5	E
						RPD = 3.41	

QC Flag Legend

Processing Flags

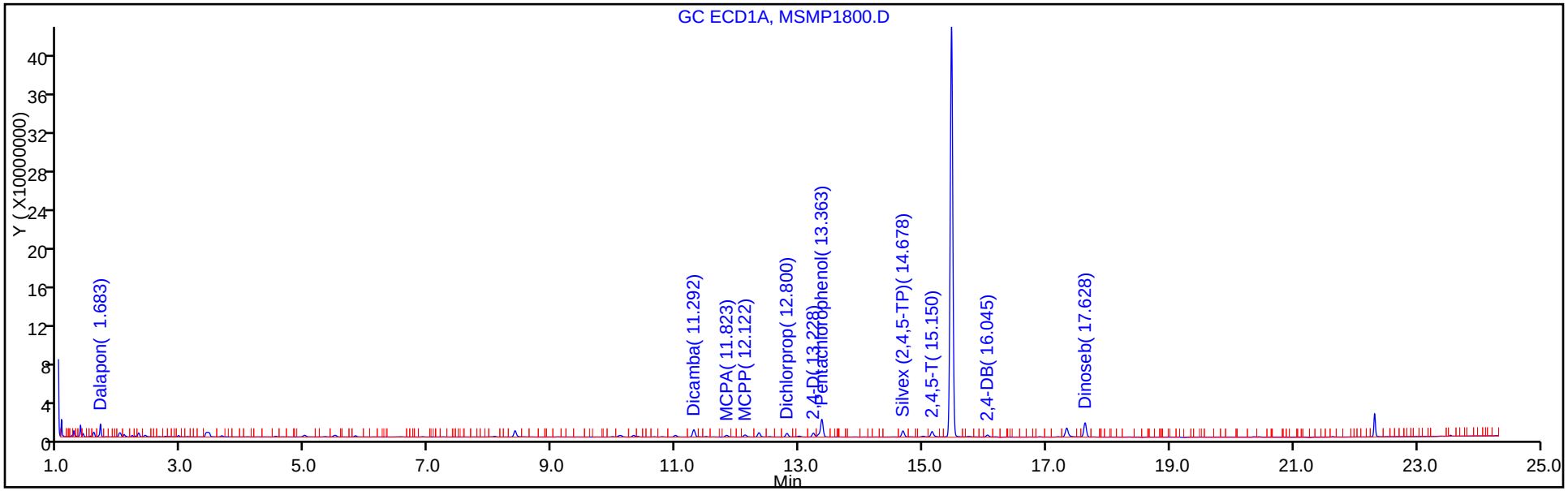
E - Exceeded Maximum Amount

Report Date: 19-Aug-2016 09:19:16 Chrom Revision: 2.2 20-Apr-2016 13:59:46

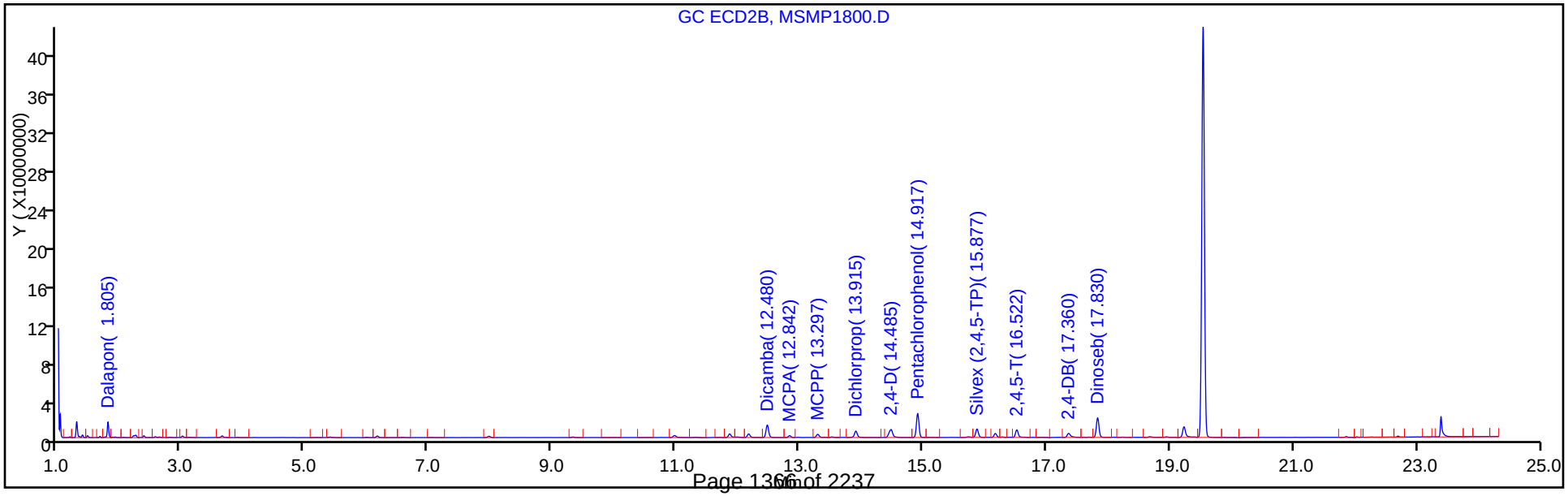
TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1800.D				
Injection Date:	18-Aug-2016 16:20:47	Instrument ID:	SGCM	Operator ID:	DEK
Lims ID:	160-18504-C-1-E MS			Worklist Smp#:	8
Client ID:					
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	7
Method:	8151_SGCM	Limit Group:	GC 8151 DOD ICAL		

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1800.D				
Lims ID:	160-18504-C-1-E MS				
Client ID:					
Sample Type:	MS				
Inject. Date:	18-Aug-2016 16:20:47	ALS Bottle#:	7	Worklist Smp#:	8
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18504-C-1-E				
Misc. Info.:	160-0008237-008				
Operator ID:	DEK	Instrument ID:	SGCM		

Method:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m		
Limit Group:	GC 8151 DOD ICAL		
Last Update:	19-Aug-2016 09:19:00	Calib Date:	16-Aug-2016 13:33:13
Integrator:	Falcon		
Quant Method:	External Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D		

Column 1 :	RTX-CLP Pesticides (0.53 mm)	Det: GC ECD1A
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)	Det: GC ECD2B
Process Host:	XAWRK010	

First Level Reviewer: konopkad Date: 19-Aug-2016 09:15:19

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	50.6	101.21

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	46.9	93.76

FORM I
HERBICIDES ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG No.: Headworks/9720-8
Client Sample ID:
Lab Sample ID: 160-18504-C-1-F MSD
Matrix: Solid (TCLP)
Lab File ID: MSMP1801.D
Analysis Method: 8151A
Date Collected: 08/04/2016 09:00
Extraction Method: 8151A
Date Extracted: 08/12/2016 16:02
Sample wt/vol: 100(mL)
Date Analyzed: 08/18/2016 16:53
Con. Extract Vol.: 200(mL)
Dilution Factor: 1
Injection Volume: 1(uL)
GC Column: RTXCLP2 ID: 0.53(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 265408
Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
94-75-7	2,4-D	0.188		0.040	0.020
93-72-1	Silvex (2,4,5-TP)	0.0514		0.010	0.0030

CAS NO.	SURROGATE	%REC	Q	LIMITS
19719-28-9	2,4-Dichlorophenylacetic acid	107		56-147

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1801.D
Lims ID: 160-18504-C-1-F MSD
Client ID:
Sample Type: MSD
Inject. Date: 18-Aug-2016 16:53:55 ALS Bottle#: 8 Worklist Smp#: 9
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 160-18504-C-1-F
Misc. Info.: 160-0008237-009
Operator ID: DEK Instrument ID: SGCM

Method: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m
Limit Group: GC 8151 DOD ICAL
Last Update: 19-Aug-2016 09:19:00 Calib Date: 16-Aug-2016 13:33:13
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D

Column 1 : RTX-CLP Pesticides (0.53 mm) Det: GC ECD1A
Column 2 : RTX-CLP Pesticides2 (0.53 mm) Det: GC ECD2B
Process Host: XAWRK010

First Level Reviewer: konopkad Date: 19-Aug-2016 09:15:48

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
12 Dalapon							
1	1.683	1.694	-0.011	23142524	100.0	96.9	
2	1.805	1.811	-0.006	29962334	100.0	88.3	
						RPD = 9.26	
$ 11 2,4-Dichlorophenylacetic acid							
1	10.993	11.017	-0.024	6681069	50.0	56.2	
2	12.180	12.196	-0.016	14419371	50.0	53.3	
						RPD = 5.41	
1 Dicamba							
1	11.292	11.314	-0.022	24740591	50.0	44.1	
2	12.480	12.496	-0.016	44339410	50.0	43.3	
						RPD = 1.99	
4 MCPA							
1	11.823	11.847	-0.024	6576361	10000	9963.8	
2	12.842	12.859	-0.017	6584378	10000	10770	
						RPD = 7.77	
9 MCPP							
1	12.122	12.144	-0.022	8510436	10000	8631.9	
2	13.297	13.312	-0.015	12684048	10000	10531	
						RPD = 19.82	
6 Dichlorprop							
1	12.798	12.822	-0.024	13008346	100.0	95.3	
2	13.914	13.931	-0.017	25168242	100.0	98.0	
						RPD = 2.74	
8 2,4-D							
1	13.227	13.249	-0.022	14136631	100.0	105.4	
2	14.485	14.501	-0.016	40402633	100.0	94.2	
						RPD = 11.17	

Col	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ng/ml	OnCol Amt ng/ml	Flags
10 Pentachlorophenol							
1	13.363	13.387	-0.024	62980201	25.0	25.2	
2	14.917	14.932	-0.015	74609121	25.0	25.3	
						RPD = 0.71	
2 Silvex (2,4,5-TP)							
1	14.678	14.699	-0.021	21692917	25.0	26.8	
2	15.875	15.892	-0.017	30622347	25.0	25.7	
						RPD = 4.37	
5 2,4,5-T							
1	15.150	15.172	-0.022	22782811	25.0	27.4	
2	16.519	16.536	-0.017	30308768	25.0	25.6	
						RPD = 6.82	
7 2,4-DB							M
1	16.045	16.069	-0.024	9259442	100.0	135.2	E
2	17.360	17.376	-0.016	19702014	100.0	125.2	M
						RPD = 7.73	
13 Dinoseb							
1	17.627	17.649	-0.022	43503869	100.0	145.7	E
2	17.830	17.846	-0.016	60169757	100.0	151.0	E
						RPD = 3.60	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 19-Aug-2016 09:19:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1801.D

Injection Date: 18-Aug-2016 16:53:55 Instrument ID: SGCM Operator ID: DEK

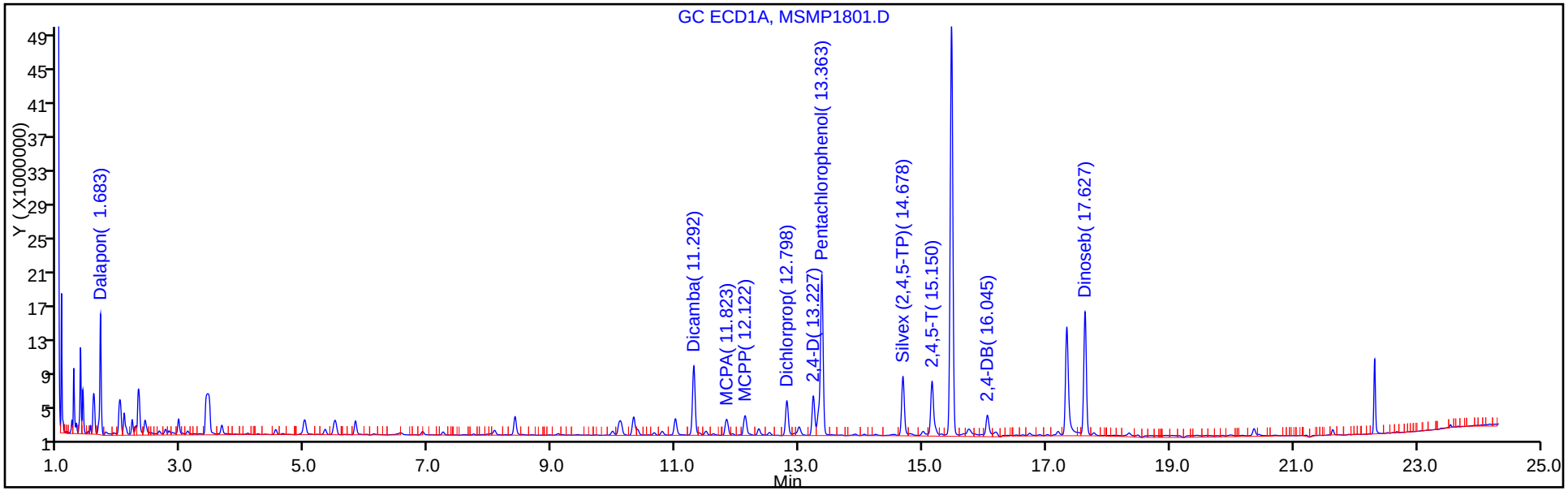
Lims ID: 160-18504-C-1-F MSD Worklist Smp#: 9

Client ID:

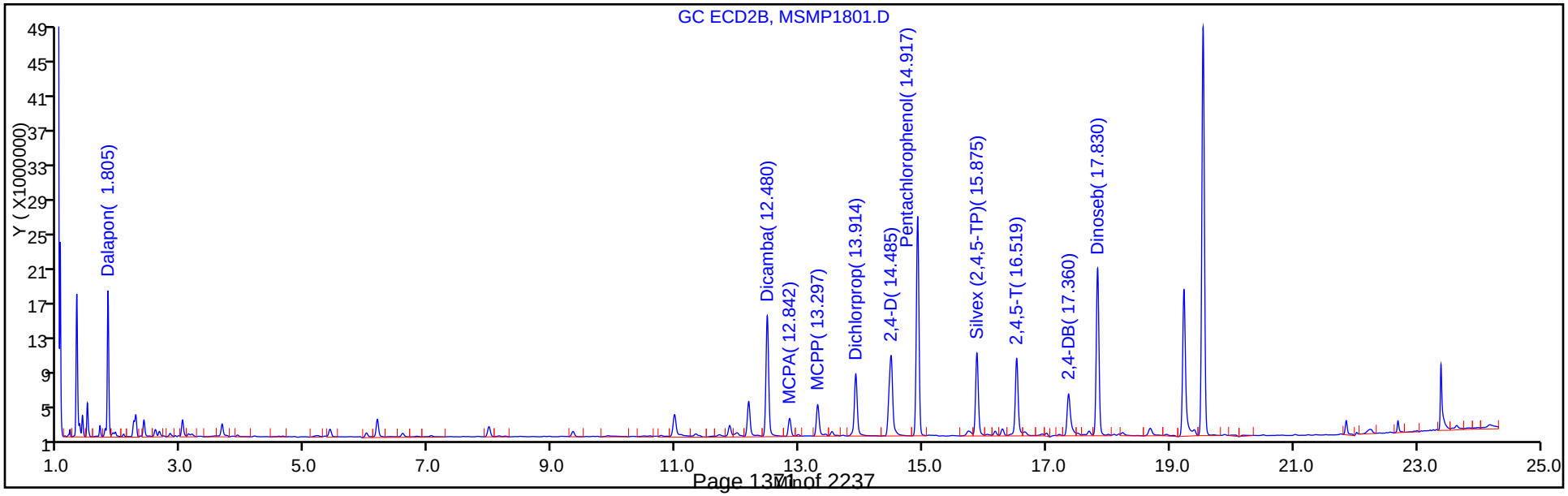
Injection Vol: 1.0 ul Dil. Factor: 1.0000 ALS Bottle#: 8

Method: 8151_SGCM Limit Group: GC 8151 DOD ICAL

Column: RTX-CLP Pesticides (0.53 mm)



Column: RTX-CLP Pesticides2 (0.53 mm)



TestAmerica St. Louis
Recovery Report

Data File:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\MSMP1801.D				
Lims ID:	160-18504-C-1-F MSD				
Client ID:					
Sample Type:	MSD				
Inject. Date:	18-Aug-2016 16:53:55	ALS Bottle#:	8	Worklist Smp#:	9
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	160-18504-C-1-F				
Misc. Info.:	160-0008237-009				
Operator ID:	DEK	Instrument ID:	SGCM		
Method:	\\ChromNA\StLouis\ChromData\SGCM\20160818-8237.b\8151_SGCM.m				
Limit Group:	GC 8151 DOD ICAL				
Last Update:	19-Aug-2016 09:19:00	Calib Date:	16-Aug-2016 13:33:13		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\StLouis\ChromData\SGCM\20160816-8212.b\MICL1733.D				
Column 1 :	RTX-CLP Pesticides (0.53 mm)		Det: GC ECD1A		
Column 2 :	RTX-CLP Pesticides2 (0.53 mm)		Det: GC ECD2B		
Process Host:	XAWRK010				
First Level Reviewer: konopkad		Date:	19-Aug-2016 09:15:48		

Surrogate Recovery, Detector: GC ECD1A

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	56.2	112.43

Surrogate Recovery, Detector: GC ECD2B

Compound	Amount Added	Amount Recovered	% Rec.
$ 11 2,4-Dichlorophenylacetic acid	50.0	53.3	106.50

HERBICIDES ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCM Start Date: 08/16/2016 10:17

Analysis Batch Number: 264929 End Date: 08/17/2016 04:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 160-264929/3		08/16/2016 10:17	1	MICL1727.D	RTXCLP1 0.53(mm)
IC 160-264929/3		08/16/2016 10:17	1	MICL1727.D	RTXCLP2 0.53(mm)
IC 160-264929/4		08/16/2016 10:51	1	MICL1728.D	RTXCLP1 0.53(mm)
IC 160-264929/4		08/16/2016 10:51	1	MICL1728.D	RTXCLP2 0.53(mm)
IC 160-264929/5		08/16/2016 11:24	1	MICL1729.D	RTXCLP1 0.53(mm)
IC 160-264929/5		08/16/2016 11:24	1	MICL1729.D	RTXCLP2 0.53(mm)
IC 160-264929/6		08/16/2016 11:58	1	MICL1730.D	RTXCLP1 0.53(mm)
IC 160-264929/6		08/16/2016 11:58	1	MICL1730.D	RTXCLP2 0.53(mm)
ICRT 160-264929/7		08/16/2016 12:27	1	MICL1731.D	RTXCLP1 0.53(mm)
ICRT 160-264929/7		08/16/2016 12:27	1	MICL1731.D	RTXCLP2 0.53(mm)
IC 160-264929/8		08/16/2016 13:00	1	MICL1732.D	RTXCLP1 0.53(mm)
IC 160-264929/8		08/16/2016 13:00	1	MICL1732.D	RTXCLP2 0.53(mm)
IC 160-264929/9		08/16/2016 13:33	1	MICL1733.D	RTXCLP1 0.53(mm)
IC 160-264929/9		08/16/2016 13:33	1	MICL1733.D	RTXCLP2 0.53(mm)
ICV 160-264929/10		08/16/2016 14:06	1	MICV1734.D	RTXCLP1 0.53(mm)
ICV 160-264929/10		08/16/2016 14:06	1	MICV1734.D	RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 15:15	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 15:15	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 15:49	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 15:49	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 16:22	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 16:22	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 16:55	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 16:55	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 17:29	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 17:29	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 18:02	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 18:02	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 18:31	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 18:31	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 19:00	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 19:00	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 19:29	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 19:29	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 19:58	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 19:58	1		RTXCLP2 0.53(mm)
CCV 160-264929/21		08/16/2016 20:27	1		RTXCLP1 0.53(mm)
CCV 160-264929/21		08/16/2016 20:27	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 20:56	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 20:56	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 21:25	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 21:25	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 21:54	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 21:54	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 22:27	1		RTXCLP1 0.53(mm)

8151A

HERBICIDES ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCM Start Date: 08/16/2016 10:17

Analysis Batch Number: 264929 End Date: 08/17/2016 04:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		08/16/2016 22:27	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 23:00	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 23:00	1		RTXCLP2 0.53(mm)
ZZZZZ		08/16/2016 23:33	1		RTXCLP1 0.53(mm)
ZZZZZ		08/16/2016 23:33	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 00:07	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 00:07	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 00:39	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 00:39	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 01:08	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 01:08	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 01:38	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 01:38	1		RTXCLP2 0.53(mm)
CCV 160-264929/32		08/17/2016 02:07	1		RTXCLP1 0.53(mm)
CCV 160-264929/32		08/17/2016 02:07	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 02:35	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 02:35	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 03:05	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 03:05	1		RTXCLP2 0.53(mm)
ZZZZZ		08/17/2016 03:34	1		RTXCLP1 0.53(mm)
ZZZZZ		08/17/2016 03:34	1		RTXCLP2 0.53(mm)
CCV 160-264929/36		08/17/2016 04:03	1		RTXCLP1 0.53(mm)
CCV 160-264929/36		08/17/2016 04:03	1		RTXCLP2 0.53(mm)

8151A

HERBICIDES ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: SGCM Start Date: 08/18/2016 14:07

Analysis Batch Number: 265408 End Date: 08/18/2016 22:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 160-265408/3		08/18/2016 14:07	1	MCCV1796.D	RTXCLP1 0.53(mm)
CCV 160-265408/3		08/18/2016 14:07	1	MCCV1796.D	RTXCLP2 0.53(mm)
LB 160-264502/1-C		08/18/2016 14:40	1	MBLK1797.D	RTXCLP1 0.53(mm)
LB 160-264502/1-C		08/18/2016 14:40	1	MBLK1797.D	RTXCLP2 0.53(mm)
LCS 160-264676/2-A		08/18/2016 15:14	1	MLCS1798.D	RTXCLP1 0.53(mm)
LCS 160-264676/2-A		08/18/2016 15:14	1	MLCS1798.D	RTXCLP2 0.53(mm)
ZZZZZ		08/18/2016 15:47	1		RTXCLP1 0.53(mm)
ZZZZZ		08/18/2016 15:47	1		RTXCLP2 0.53(mm)
160-18504-C-1-E MS		08/18/2016 16:20	1	MSMP1800.D	RTXCLP1 0.53(mm)
160-18504-C-1-E MS		08/18/2016 16:20	1	MSMP1800.D	RTXCLP2 0.53(mm)
160-18504-C-1-F MSD		08/18/2016 16:53	1	MSMP1801.D	RTXCLP1 0.53(mm)
160-18504-C-1-F MSD		08/18/2016 16:53	1	MSMP1801.D	RTXCLP2 0.53(mm)
ZZZZZ		08/18/2016 17:27	1		RTXCLP1 0.53(mm)
ZZZZZ		08/18/2016 17:27	1		RTXCLP2 0.53(mm)
ZZZZZ		08/18/2016 17:59	1		RTXCLP1 0.53(mm)
ZZZZZ		08/18/2016 17:59	1		RTXCLP2 0.53(mm)
ZZZZZ		08/18/2016 18:28	1		RTXCLP1 0.53(mm)
ZZZZZ		08/18/2016 18:28	1		RTXCLP2 0.53(mm)
ZZZZZ		08/18/2016 18:57	1		RTXCLP1 0.53(mm)
ZZZZZ		08/18/2016 18:57	1		RTXCLP2 0.53(mm)
ZZZZZ		08/18/2016 19:26	1		RTXCLP1 0.53(mm)
ZZZZZ		08/18/2016 19:26	1		RTXCLP2 0.53(mm)
CCV 160-265408/15		08/18/2016 19:55	1	MCCV1807.D	RTXCLP1 0.53(mm)
CCV 160-265408/15		08/18/2016 19:55	1	MCCV1807.D	RTXCLP2 0.53(mm)
ZZZZZ		08/18/2016 20:24	1		RTXCLP1 0.53(mm)
ZZZZZ		08/18/2016 20:24	1		RTXCLP2 0.53(mm)
ZZZZZ		08/18/2016 20:53	1		RTXCLP1 0.53(mm)
ZZZZZ		08/18/2016 20:53	1		RTXCLP2 0.53(mm)
160-18521-1		08/18/2016 21:22	1	MSMP1810.D	RTXCLP1 0.53(mm)
160-18521-1		08/18/2016 21:22	1	MSMP1810.D	RTXCLP2 0.53(mm)
160-18521-2		08/18/2016 21:52	1	MSMP1811.D	RTXCLP1 0.53(mm)
160-18521-2		08/18/2016 21:52	1	MSMP1811.D	RTXCLP2 0.53(mm)
CCV 160-265408/20		08/18/2016 22:20	1	MCCV1812.D	RTXCLP1 0.53(mm)
CCV 160-265408/20		08/18/2016 22:20	1	MCCV1812.D	RTXCLP2 0.53(mm)

8151A

HERBICIDES BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264502 Batch Start Date: 08/11/16 13:18 Batch Analyst: Mcnutt, Joe W

Batch Method: 1311 Batch End Date: 08/12/16 12:31

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	NumbSolidPhases	NumbLiqPhases	NumbTotPhases	EFD_SampleWeight
LB 160-264502/1		1311, 8151A, 8151A			2000 mL		1	1	
160-18521-B-1	YMTFA74SE001	1311, 8151A, 8151A	P	100.65 g	2000 mL	1		1	5 g
160-18521-D-2	YMTFA75SE001	1311, 8151A, 8151A	P	100.33 g	2000 mL	1		1	5 g

Lab Sample ID	Client Sample ID	Method Chain	Basis	EFD_VolumeWaterAdd	EFD_InitialpH	EFD_AddHClpH>5	EFD_HeatHeld	EFD_SecondpHCheck	ExtractionFluidOne
LB 160-264502/1		1311, 8151A, 8151A							4.96 SU
160-18521-B-1	YMTFA74SE001	1311, 8151A, 8151A	P	96 mL	6.44 SU	3.50 mL	10 min	1.71 SU	4.96 SU
160-18521-D-2	YMTFA75SE001	1311, 8151A, 8151A	P	96 mL	6.44 SU	3.50 mL	10 min	1.61 SU	4.96 SU

Lab Sample ID	Client Sample ID	Method Chain	Basis	FiltCompDate	LeachatepH	LeachVolume	ExtractFluid	TCLP Fluid #1 00100	AnalysisComment
LB 160-264502/1		1311, 8151A, 8151A		8/12/16			1	2000 mL	pH<2 _M & _Hg
160-18521-B-1	YMTFA74SE001	1311, 8151A, 8151A	P	8/12/16	6.44 SU	10 mL	1	2000 mL	pH<2 _M & _Hg
160-18521-D-2	YMTFA75SE001	1311, 8151A, 8151A	P	8/12/16	5.80 SU	10 mL	1	2000 mL	pH<2 _M & _Hg

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

HERBICIDES BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264502 Batch Start Date: 08/11/16 13:18 Batch Analyst: Mcnutt, Joe W

Batch Method: 1311 Batch End Date: 08/12/16 12:31

Batch Notes	
1N HCl ID	901776
Balance ID	26950069
Batch Comment	(SPIKES) _M896089/896090 -Hg975881
Bottle Lot ID	06736
pH Buffer 1 ID	922485
pH Buffer 2 ID	922483
pH Buffer 3 ID	922484
First End time	08/12/16 9:18
Filter ID	1168557
Lot # of Nitric Acid	976042
pH Meter Calibration Slope	100.6
pH Meter ID	A111
Room Temperature Thermometer ID	91037040
Analyst ID - Spike Analyst	JWM
Analyst ID - Spike Witness Analyst	MFM
First Start time	08/11/16 1456
TCLP Fluid 1 ID	967739
TCLP Fluid 1 pH	4.96
Thermometer ID	0801024473
Tumbler Rotations per Minute	30
Uncorrected Maximum Temperature	24.2 Degrees C
Uncorrected Minimum Temperature	21.4 Degrees C

Basis	Basis Description
P	TCLP

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

HERBICIDES BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264676 Batch Start Date: 08/12/16 10:00 Batch Analyst: Saulters, Camme N

Batch Method: 8151A Batch End Date: 08/12/16 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	ReceivedpH	InitialAmount	FirstAdjustpH	SecondAdjustpH	FinalAmount	PeroxideScr
LB 160-264502/1-A		8151A, 8151A		5 SU	100 mL	14	1	200 mL	0
LCS 160-264676/2		8151A, 8151A		5 SU	100 mL	14	1	200 mL	0
160-18504-C-1-A MS		8151A, 8151A	P	7 SU	100 mL	14	1	200 mL	0
160-18504-C-1-A MSD		8151A, 8151A	P	7 SU	100 mL	14	1	200 mL	0
160-18521-B-1-B	YMTFA74SE001	8151A, 8151A	P	7 SU	100 mL	14	1	200 mL	0
160-18521-D-2-B	YMTFA75SE001	8151A, 8151A	P	7 SU	100 mL	14	1	200 mL	0

Lab Sample ID	Client Sample ID	Method Chain	Basis	Herb LCS RTS 00017	Herb Surr RTS 00013				
LB 160-264502/1-A		8151A, 8151A			1 mL				
LCS 160-264676/2		8151A, 8151A		1 mL	1 mL				
160-18504-C-1-A MS		8151A, 8151A	P	1 mL	1 mL				
160-18504-C-1-A MSD		8151A, 8151A	P	1 mL	1 mL				
160-18521-B-1-B	YMTFA74SE001	8151A, 8151A	P		1 mL				
160-18521-D-2-B	YMTFA75SE001	8151A, 8151A	P		1 mL				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

HERBICIDES BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264676 Batch Start Date: 08/12/16 10:00 Batch Analyst: Saulters, Camme N

Batch Method: 8151A Batch End Date: 08/12/16 15:00

Batch Notes	
1:1 Sulfuric + Water Lot ID	936120
Acidic Sodium Sulfate ID	881215
Balance ID	1126423545
Concentration End Time	11:00 8/15/16
Concentration Start Time	10:00 8/15/16
Analyst ID - Concentration	kelsie richerson
Diethyl Ether ID	957956
Hexane ID	954031
Potassium Hydroxide ID	932647
MeCL2 ID	969408
Methanol ID	942310
N-evap ID	40656
N-evap Temperature	35 Degrees C
NaCl ID	823203
NaOH Lot #	823183
Peroxide Test Strip ID	669050
pH Paper ID	916510
Prep Solvent Volume Used	380
Person's name who did the prep	camme saulters
Analyst ID - Reagent Drop Witness	kelli agu
Residual Chlorine Indicator ID	875327
Silicic Acid ID	892390
Sufficient volume for MS/MSD?	yes
TMSDM ID	957955
Vendor of Reagent used	j.t.baker
Water Bath ID	2
Water Bath Temperature	65 Degrees C

Basis	Basis Description
P	TCLP

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS

COVER PAGE
METALS

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG No.: Headworks/9720-8

Project: ORNL Y-12 Outfall 200 Characterization

Client Sample ID	Lab Sample ID
YMTFA74SE001	160-18521-1
YMTFA75SE001	160-18521-2

Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - TCLP

Client Sample ID: YMTFA74SE001
Lab Sample ID: 160-18521-1
Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG ID.: Headworks/9720-8
Matrix: Solid
Date Sampled: 08/05/2016 07:50
Reporting Basis: WET
Date Received: 08/06/2016 08:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-38-2	Arsenic	0.010	0.025	0.010	mg/L	U		1	6010C
7440-39-3	Barium	0.93	0.13	0.038	mg/L			1	6010C
7440-43-9	Cadmium	0.0078	0.013	0.0038	mg/L	J		1	6010C
7440-47-3	Chromium	0.0075	0.025	0.0075	mg/L	U		1	6010C
7439-92-1	Lead	0.0075	0.025	0.0075	mg/L	U		1	6010C
7782-49-2	Selenium	0.013	0.038	0.013	mg/L	U		1	6010C
7440-22-4	Silver	0.0075	0.025	0.0075	mg/L	U		1	6010C

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - TCLP

Client Sample ID: YMTFA75SE001
Lab Sample ID: 160-18521-2
Lab Name: TestAmerica St. Louis
Job No.: 160-18521-1
SDG ID.: Headworks/9720-8
Matrix: Solid
Date Sampled: 08/05/2016 09:25
Reporting Basis: WET
Date Received: 08/06/2016 08:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-38-2	Arsenic	0.010	0.025	0.010	mg/L	U		1	6010C
7440-39-3	Barium	0.69	0.13	0.038	mg/L			1	6010C
7440-43-9	Cadmium	0.0038	0.013	0.0038	mg/L	U		1	6010C
7440-47-3	Chromium	0.0075	0.025	0.0075	mg/L	U		1	6010C
7439-92-1	Lead	0.0075	0.025	0.0075	mg/L	U		1	6010C
7782-49-2	Selenium	0.013	0.038	0.013	mg/L	U		1	6010C
7440-22-4	Silver	0.0075	0.025	0.0075	mg/L	U		1	6010C

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

ICV Source: ICP ICV_00042 Concentration Units: ug/L

CCV Source: ICP CAL1/LLC_00078

Analyte	ICV 160-265391/5 08/17/2016 13:54				CCVL 160-265391/11 08/17/2016 14:21				CCVL 160-265391/24 08/17/2016 15:25			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Arsenic	4890		5000	98	9.30	J	10.0	93	8.30	J	10.0	83
Barium	5080		5000	102	50.4		50.0	101	50.7		50.0	101
Cadmium	4960		5000	99	4.60	J	5.00	92	4.80	J	5.00	96
Chromium	4940		5000	99	9.90	J	10.0	99	10.2		10.0	102
Lead	4940		5000	99	11.0		10.0	110	10.4		10.0	104
Selenium	962		1000	96	10.9	J	15.0	73	13.0	J	15.0	87
Silver	1100		1000	110	10.8		10.0	108	10.5		10.0	105

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

ICV Source: ICP ICV_00042 Concentration Units: ug/L

CCV Source: ICP CAL1/LLC_00078

Analyte	CCVL 160-265391/37 08/17/2016 16:24											
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Arsenic	8.30	J	10.0	83								
Barium	48.0	J	50.0	96								
Cadmium	4.50	J	5.00	90								
Chromium	9.70	J	10.0	97								
Lead	10.7		10.0	107								
Selenium	11.9	J	15.0	79								
Silver	10.0		10.0	100								

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

ICV Source: ICP ICV_00042 Concentration Units: ug/L

CCV Source: ICP CAL2/CCV_00084

Analyte	ICV 160-265391/5 08/17/2016 13:54				CCV 160-265391/12 08/17/2016 14:25				CCV 160-265391/25 08/17/2016 15:29			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Arsenic	4890		5000	98	4790		5000	96	4730		5000	95
Barium	5080		5000	102	5090		5000	102	5110		5000	102
Cadmium	4960		5000	99	4880		5000	98	4810		5000	96
Chromium	4940		5000	99	4960		5000	99	4880		5000	98
Lead	4940		5000	99	4920		5000	98	4850		5000	97
Selenium	962		1000	96	953		1000	95	941		1000	94
Silver	1100		1000	110	1080		1000	108	1080		1000	108

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

ICV Source: ICP ICV_00042 Concentration Units: ug/L

CCV Source: ICP CAL2/CCV_00084

Analyte	CCV 160-265391/38 08/17/2016 16:29											
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Arsenic	4760		5000	95								
Barium	4910		5000	98								
Cadmium	4810		5000	96								
Chromium	4870		5000	97								
Lead	4880		5000	98								
Selenium	949		1000	95								
Silver	1060		1000	106								

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2B-IN
CRQL CHECK STANDARD
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Method: 6010C Instrument ID: ICP6500

Lab Sample ID: CRI 160-265391/7 Concentration Units: ug/L

CRQL Check Standard Source: ICP CAL1/LLC_00078

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Arsenic	10.0	8.70	J	87	70-130
Barium	50.0	50.1		100	70-130
Cadmium	5.00	4.60	J	92	70-130
Chromium	10.0	9.90	J	99	70-130
Lead	10.0	9.60	J	96	70-130
Selenium	15.0	12.5	J	83	70-130
Silver	10.0	11.1		111	70-130

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IIB-IN

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Concentration Units: ug/L

Analyte	RL	ICB 160-265391/6 08/17/2016 13:58		CCB 160-265391/13 08/17/2016 14:29		CCB 160-265391/26 08/17/2016 15:33		CCB 160-265391/39 08/17/2016 16:33	
		Found	C	Found	C	Found	C	Found	C
Arsenic	10	4.0	U	4.0	U	4.0	U	4.0	U
Barium	50	15	U	15	U	15	U	15	U
Cadmium	5.0	1.5	U	1.5	U	1.5	U	1.5	U
Chromium	10	3.0	U	3.0	U	3.0	U	3.0	U
Lead	10	3.0	U	3.0	U	3.0	U	3.0	U
Selenium	15	5.0	U	5.0	U	5.0	U	5.0	U
Silver	10	3.0	U	3.0	U	3.0	U	3.0	U

Italicized analytes were not requested for this sequence.

3-IN
METHOD BLANK
METALS - TCLP

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Concentration Units: mg/L Lab Sample ID: LB 160-264502/1-D

Instrument Code: ICP6500 Batch No.: 265391

CAS No.	Analyte	Concentration	C	Q	Method
7440-38-2	Arsenic	0.010	U		6010C
7440-39-3	Barium	0.038	U		6010C
7440-43-9	Cadmium	0.0038	U		6010C
7440-47-3	Chromium	0.0075	U		6010C
7439-92-1	Lead	0.0075	U		6010C
7782-49-2	Selenium	0.013	U		6010C
7440-22-4	Silver	0.0075	U		6010C

FORM III-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICSA 160-265391/8 Instrument ID: ICP6500

Lab File ID: 081716C1.asc ICS Source: ICP ICSA_00004

Concentration Units: ug/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Arsenic		**5.00**	
Barium		**0.100**	
Cadmium		**0.0000**	
Chromium		**-2.20**	
Lead		**-6.60**	
Selenium		**-2.60**	
Silver		**-0.500**	
Aluminum	*100000*	*100700*	*101*

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Lab Sample ID: ICSAB 160-265391/9 Instrument ID: ICP6500

Lab File ID: 081716C1.asc ICS Source: ICP ICSAB_00003

Concentration Units: ug/L

Analyte	True Solution AB	Found Solution AB	Percent Recovery
Arsenic	**2500**	**2396**	**96**
Barium	**2500**	**2498**	**100**
Cadmium	**2500**	**2444**	**98**
Chromium	**2500**	**2433**	**97**
Lead	**2500**	**2404**	**96**
Selenium	**500**	**478**	**96**
Silver	**500**	**545**	**109**

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS - TCLP

Client ID: _____ Lab ID: 160-18570-C-1-E MS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid Concentration Units: mg/L

% Solids: _____

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Arsenic	2.45		0.010	U	2.50	98	75-125		6010C
Barium	3.00		0.59		2.50	96	75-125		6010C
Cadmium	2.45		0.0038	U	2.50	98	75-125		6010C
Chromium	2.46		0.0075	U	2.50	99	75-125		6010C
Lead	2.40		0.0075	U	2.50	96	75-125		6010C
Selenium	1.24		0.013	U	1.25	99	75-125		6010C
Silver	0.548		0.0075	U	0.500	110	75-125		6010C

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VA - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS - TCLP

Client ID: _____ Lab ID: 160-18570-C-1-F MSD

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Matrix: Solid Concentration Units: mg/L

% Solids: _____

Analyte	(SDR)	C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Arsenic	2.62		2.50	105	75-125	7	20		6010C
Barium	3.23		2.50	106	75-125	7	20		6010C
Cadmium	2.62		2.50	105	75-125	7	20		6010C
Chromium	2.64		2.50	105	75-125	7	20		6010C
Lead	2.56		2.50	103	75-125	7	20		6010C
Selenium	1.32		1.25	105	75-125	6	20		6010C
Silver	0.587		0.500	117	75-125	7	20		6010C

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VD - IN

LINEAR RANGE CHECK STANDARD
METALS -

Lab ID: LRC 160-265391/10

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

Sample Matrix: Solid LCS Source: ICP CAL3\LRC_00047

Analyte	Solid(ug/L)							
	True	Found	C	%R	Limits		Q	Method
Arsenic	10000	9560		96	90	110		6010C
Barium	10000	10200		102	90	110		6010C
Cadmium	10000	9690		97	90	110		6010C
Chromium	10000	9660		97	90	110		6010C
Lead	10000	9560		96	90	110		6010C
Selenium	2000	1910		95	90	110		6010C
Silver	2000	1950		97	90	110		6010C

Calculations are performed before rounding to avoid round-off errors in calculated results.

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 160-265083/2-A

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

Sample Matrix: Water LCS Source: MPREP1_00006

Analyte	Water(mg/L)							
	True	Found	C	%R	Limits		Q	Method
Arsenic	2.50	2.51		100	80	120		6010C
Barium	2.50	2.49		99	80	120		6010C
Cadmium	2.50	2.52		101	80	120		6010C
Chromium	2.50	2.54		102	80	120		6010C
Lead	2.50	2.47		99	80	120		6010C
Selenium	1.25	1.27		101	80	120		6010C
Silver	0.500	0.567		113	80	120		6010C

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

8-IN
ICP-AES AND ICP-MS SERIAL DILUTIONS
METALS - TCLP

Lab ID: 160-18570-C-1-D SD ^5

SDG No: Headworks/9720-8

Lab Name: TestAmerica St. Louis Job No: 160-18521-1

Matrix: Solid Concentration Units: mg/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	Method
Arsenic	0.010	U	0.050	U	NC		6010C
Barium	0.59		0.605	J	NC		6010C
Cadmium	0.0038	U	0.019	U	NC		6010C
Chromium	0.0075	U	0.038	U	NC		6010C
Lead	0.0075	U	0.038	U	NC		6010C
Selenium	0.013	U	0.063	U	NC		6010C
Silver	0.0075	U	0.038	U	NC		6010C

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIII-IN

9-IN
DETECTION LIMITS
METALS - TCLP

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG Number: Headworks/9720-8

Matrix: Solid Instrument ID: ICP6500

Method: 6010C MDL Date: 05/05/2016 15:12

Prep Method: 3010A

Leach Method: 1311

Analyte	Wavelength/ Mass	RL (ug/L)	MDL (ug/L)
Arsenic		25	10
Barium		125	37.5
Cadmium		12.5	3.75
Chromium		25	7.5
Lead		25	7.5
Selenium		37.5	12.5
Silver		25	7.5

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS - TCLP

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG Number: Headworks/9720-8

Matrix: Solid Instrument ID: ICP6500

Method: 6010C XMDL Date: 05/05/2016 11:39

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Arsenic		10	4
Barium		50	15
Cadmium		5	1.5
Chromium		10	3
Lead		10	3
Selenium		15	5
Silver		10	3

FORM IX - IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG No.: Headworks/9720-8

ICP-AES Instrument ID: ICP6500 Date: 06/16/2016

Analyte	Wave Length	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	In
Aluminum	396.152														
Antimony	206.833											0.005128			
Arsenic	189.042													-0.000213	
Barium	455.403														
Beryllium	313.042														
Bismuth	223.061														
Boron	249.678														
Cadmium	228.802			0.006877											
Calcium	184.006														
Chromium	205.56						-0.001453								
Cobalt	228.616														
Copper	217.894														
Iron	259.940														
Lead	220.353												0.001604		
Lithium	670.784								0.000835						
Magnesium	279.806														
Manganese	257.610														
Molybdenum	202.030														
Nickel	221.647														
Phosphorus	177.495														
Potassium	766.490														
Selenium	196.090														
Silicon	251.611														
Silver	328.068														
Sodium	589.592														
Strontium	407.771														
Sulfur	182.034														
Thallium	190.856										0.002233				
Thorium	283.231														
Tin	189.989														

X-IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG No.: Headworks/9720-8

ICP-AES Instrument ID: ICP6500 Date: 06/16/2016

Analyte	Wave Length	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	In
Titanium	334.941														
Uranium	367.007													0.003944	
Vanadium	290.882														
Yttrium	371.030														
Zinc	213.856														
Zirconium															

X-IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG No.: Headworks/9720-8

ICP-AES Instrument ID: ICP6500 Date: 06/16/2016

Analyte	Wave Length	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Si	Sn
Aluminum	396.152														
Antimony	206.833														
Arsenic	189.042														
Barium	455.403														
Beryllium	313.042														
Bismuth	223.061														
Boron	249.678														
Cadmium	228.802														
Calcium	184.006														
Chromium	205.56														
Cobalt	228.616														
Copper	217.894														
Iron	259.940														
Lead	220.353														
Lithium	670.784														
Magnesium	279.806														
Manganese	257.610														
Molybdenum	202.030														
Nickel	221.647														
Phosphorus	177.495														
Potassium	766.490														
Selenium	196.090														
Silicon	251.611														
Silver	328.068														
Sodium	589.592														
Strontium	407.771														
Sulfur	182.034														
Thallium	190.856														
Thorium	283.231														
Tin	189.989														

X-IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG No.: Headworks/9720-8

ICP-AES Instrument ID: ICP6500 Date: 06/16/2016

Analyte	Wave Length	K	Li	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Se	Si	Sn
Titanium	334.941														
Uranium	367.007														
Vanadium	290.882														
Yttrium	371.030														
Zinc	213.856							0.006060							
Zirconium															

X-IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG No.: Headworks/9720-8

ICP-AES Instrument ID: ICP6500 Date: 06/16/2016

Analyte	Wave Length	Sr	Th	Ti	Tl	U	V	Y	Zn						
Aluminum	396.152														
Antimony	206.833					-0.001093									
Arsenic	189.042														
Barium	455.403														
Beryllium	313.042														
Bismuth	223.061														
Boron	249.678														
Cadmium	228.802														
Calcium	184.006														
Chromium	205.56														
Cobalt	228.616														
Copper	217.894														
Iron	259.940														
Lead	220.353					0.001321									
Lithium	670.784														
Magnesium	279.806														
Manganese	257.610														
Molybdenum	202.030														
Nickel	221.647														
Phosphorus	177.495														
Potassium	766.490														
Selenium	196.090					-0.001753									
Silicon	251.611														
Silver	328.068														
Sodium	589.592														
Strontium	407.771														
Sulfur	182.034														
Thallium	190.856						-0.011746								
Thorium	283.231														
Tin	189.989														

X-IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG No.: Headworks/9720-8

ICP-AES Instrument ID: ICP6500 Date: 06/16/2016

Analyte	Wave Length	Sr	Th	Ti	Tl	U	V	Y	Zn						
Titanium	334.941														
Uranium	367.007		0.139950												
Vanadium	290.882														
Yttrium	371.030														
Zinc	213.856														
Zirconium															

X-IN

11-IN
LINEAR RANGES
METALS

Lab Name: TestAmerica St. Louis Job No: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: ICP6500 Date: 08/09/2016 13:49

Analyte	Integ. Time (Sec.)	Concentration (mg/L)	Method
Arsenic		10	6010C
Barium		10	6010C
Cadmium		10	6010C
Chromium		10	6010C
Lead		10	6010C
Selenium		2	6010C
Silver		2	6010C

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Prep Method: 3010A

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
LB 160-264502/1-D	08/16/2016 15:50	265083		20	50
LCS 160-265083/2-A	08/16/2016 15:50	265083		20	50
160-18570-C-1-E MS	08/16/2016 15:50	265083		20	50
160-18570-C-1-F MSD	08/16/2016 15:50	265083		20	50
160-18521-1	08/16/2016 15:52	265083		20	50
160-18521-2	08/16/2016 15:52	265083		20	50

FORM XII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: ICP6500 Analysis Method: 6010C

Start Date: 08/17/2016 13:36 End Date: 08/17/2016 19:09

Lab Sample Id	D/F	Type	Time	Analytes																							
				Ag	As	Ba	Cd	Cr	Pb	Se																	
ICIS 160-265391/1	1		13:36	X	X	X	X	X	X	X																	
IC 160-265391/2			13:41	X	X	X	X	X	X	X																	
IC 160-265391/3			13:46	X	X	X	X	X	X	X																	
IC 160-265391/4			13:50	X	X	X	X	X	X	X																	
ICV 160-265391/5	1		13:54	X	X	X	X	X	X	X																	
ICB 160-265391/6	1		13:58	X	X	X	X	X	X	X																	
CRI 160-265391/7	1		14:03	X	X	X	X	X	X	X																	
ICSA 160-265391/8	1		14:08	X	X	X	X	X	X	X																	
ICSAB 160-265391/9	1		14:12	X	X	X	X	X	X	X																	
LRC 160-265391/10	1		14:16	X	X	X	X	X	X	X																	
CCVL 160-265391/11	1		14:21	X	X	X	X	X	X	X																	
CCV 160-265391/12	1		14:25	X	X	X	X	X	X	X																	
CCB 160-265391/13	1		14:29	X	X	X	X	X	X	X																	
LB 160-264502/1-D	1	P	14:39	X	X	X	X	X	X	X																	
LCS 160-265083/2-A	1	T	14:44	X	X	X	X	X	X	X																	
ZZZZZZ			14:48																								
160-18570-C-1-D SD ^5	5	P	14:53	X	X	X	X	X	X	X																	
160-18570-C-1-E MS	1	P	14:58	X	X	X	X	X	X	X																	
160-18570-C-1-F MSD	1	P	15:02	X	X	X	X	X	X	X																	
ZZZZZZ			15:06																								
ZZZZZZ			15:11																								
ZZZZZZ			15:16																								
ZZZZZZ			15:20																								
CCVL 160-265391/24	1		15:25	X	X	X	X	X	X	X																	
CCV 160-265391/25	1		15:29	X	X	X	X	X	X	X																	
CCB 160-265391/26	1		15:33	X	X	X	X	X	X	X																	
ZZZZZZ			15:38																								
ZZZZZZ			15:43																								
ZZZZZZ			15:47																								
160-18521-1	1	P	15:52	X	X	X	X	X	X	X																	
160-18521-2	1	P	15:57	X	X	X	X	X	X	X																	
ZZZZZZ			16:02																								
ZZZZZZ			16:06																								
ZZZZZZ			16:11																								
ZZZZZZ			16:15																								
ZZZZZZ			16:20																								
CCVL 160-265391/37	1		16:24	X	X	X	X	X	X	X																	
CCV 160-265391/38	1		16:29	X	X	X	X	X	X	X																	
CCB 160-265391/39	1		16:33	X	X	X	X	X	X	X																	
ZZZZZZ			16:38																								
ZZZZZZ			16:42																								
ZZZZZZ			16:46																								

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: ICP6500 Analysis Method: 6010C

Start Date: 08/17/2016 13:36 End Date: 08/17/2016 19:09

Lab Sample Id	D/F	Type	Time	Analytes																								
				Ag	As	Ba	Cd	Cr	Pb	Se																		
ZZZZZZ			16:51																									
ZZZZZZ			16:56																									
ZZZZZZ			17:00																									
ZZZZZZ			17:05																									
ZZZZZZ			17:09																									
ZZZZZZ			17:13																									
ZZZZZZ			17:18																									
CCVL 160-265391/50			17:23																									
CCV 160-265391/51			17:27																									
CCB 160-265391/52			17:31																									
ZZZZZZ			17:36																									
ZZZZZZ			17:40																									
ZZZZZZ			17:45																									
ZZZZZZ			17:49																									
ZZZZZZ			17:54																									
ZZZZZZ			17:59																									
ZZZZZZ			18:03																									
ZZZZZZ			18:08																									
ZZZZZZ			18:12																									
ZZZZZZ			18:16																									
CCVL 160-265391/63			18:21																									
CCV 160-265391/64			18:26																									
CCB 160-265391/65			18:30																									
ZZZZZZ			18:34																									
ZZZZZZ			18:39																									
ZZZZZZ			18:43																									
ZZZZZZ			18:47																									
ZZZZZZ			18:52																									
ZZZZZZ			18:56																									
CCVL 160-265391/72			19:01																									
CCV 160-265391/73			19:05																									
CCB 160-265391/74			19:09																									

Prep Types:
P = TCLP
T = Total/NA

FORM XIII-IN

Sample Name: CALBLK1 Acquired: 8/17/2016 13:36:43 Type: Cal
Method: _2016(v44) Mode: IR Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.0019	.0087	.0002	.0047	.0290	.0008	-.0002	.0003	-.0003
Stddev	.0002	.0024	.0000	.0010	.0041	.0013	.0001	.0000	.0001
%RSD	12.64	27.48	11.48	21.81	14.02	159.8	30.71	10.86	28.11
#1	.0017	.0087	.0002	.0035	.0245	-.0002	-.0002	.0003	-.0002
#2	.0021	.0112	.0002	.0055	.0304	.0003	-.0001	.0004	-.0004
#3	.0019	.0064	.0002	.0050	.0323	.0022	-.0003	.0004	-.0003

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.0006	-.0000	-.0002	.0033	.0791	.0309	-.0047	.0043	-.0001
Stddev	.0001	.0001	.0001	.0010	.0035	.0033	.0002	.0009	.0001
%RSD	13.67	2526.	32.02	30.43	4.423	10.79	4.929	20.12	102.4
#1	.0007	-.0001	-.0001	.0042	.0831	.0346	-.0047	.0051	.0000
#2	.0006	.0001	-.0003	.0022	.0772	.0298	-.0044	.0045	-.0002
#3	.0006	-.0000	-.0002	.0035	.0769	.0282	-.0049	.0034	-.0001

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.0491	-.0001	-.0012	-.0001	.0002	.0001	-.0001	-.0019	.0003
Stddev	.0034	.0001	.0000	.0001	.0001	.0001	.0001	.0015	.0000
%RSD	6.931	141.8	.7742	57.46	24.55	54.00	47.72	77.10	13.41
#1	.0530	-.0000	-.0012	-.0002	.0002	.0001	-.0002	-.0005	.0003
#2	.0472	-.0002	-.0012	-.0001	.0003	.0000	-.0001	-.0018	.0003
#3	.0471	-.0000	-.0012	-.0001	.0002	.0001	-.0001	-.0034	.0003

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.0069	.0026	.0060	-.0004	-.0041	.0039	-.0000
Stddev	.0019	.0000	.0021	.0001	.0008	.0011	.0001
%RSD	27.80	.7811	34.24	15.38	19.35	27.59	276.5
#1	-.0084	.0026	.0043	-.0005	-.0043	.0038	.0000
#2	-.0048	.0026	.0083	-.0004	-.0048	.0050	-.0001
#3	-.0075	.0027	.0054	-.0004	-.0032	.0028	-.0000

Sample Name: CALBLK1 Acquired: 8/17/2016 13:36:43 Type: Cal
Method: _2016(v44) Mode: IR Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	**14418.**	**1837.2**
Stddev	240.	14.3
%RSD	1.6623	.77728
#1	14668.	1832.1
#2	14190.	1853.4
#3	14397.	1826.3

Sample Name: CAL 1 Acquired: 8/17/2016 13:41:25 Type: Cal
Method: _2016(v44) Mode: IR Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.0086	.0595	.0005	.0281	.6360	.0831	.0108	.1285	.0033
Stddev	.0004	.0038	.0000	.0017	.0049	.0013	.0002	.0023	.0001
%RSD	4.305	6.382	5.812	5.906	.7669	1.525	1.996	1.791	3.960
#1	.0087	.0609	.0004	.0291	.6396	.0836	.0107	.1268	.0031
#2	.0081	.0552	.0005	.0290	.6379	.0841	.0107	.1276	.0033
#3	.0088	.0623	.0005	.0262	.6304	.0817	.0111	.1311	.0034

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.0158	.0034	.0012	.0363	.3896	.1081	.0369	.0330	.0106
Stddev	.0003	.0001	.0000	.0011	.0027	.0076	.0005	.0010	.0003
%RSD	2.046	3.650	2.768	3.027	.7027	7.079	1.449	3.088	2.422
#1	.0155	.0033	.0012	.0370	.3866	.1036	.0362	.0337	.0104
#2	.0157	.0033	.0013	.0368	.3920	.1037	.0371	.0318	.0105
#3	.0161	.0035	.0012	.0350	.3901	.1169	.0372	.0335	.0109

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.2576	.0191	.0082	.0009	.1034	.0005	.0002	.0504	.0088
Stddev	.0049	.0004	.0002	.0000	.0025	.0001	.0001	.0006	.0002
%RSD	1.888	2.096	2.188	3.830	2.395	14.05	27.04	1.286	2.576
#1	.2535	.0187	.0080	.0009	.1021	.0006	.0002	.0511	.0086
#2	.2564	.0189	.0081	.0008	.1019	.0004	.0002	.0499	.0087
#3	.2630	.0195	.0084	.0008	.1063	.0005	.0001	.0502	.0090

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.1025	.0126	.0361	.0007	.0210	.0248	.0161
Stddev	.0035	.0001	.0024	.0001	.0007	.0005	.0002
%RSD	3.379	.4648	6.667	14.56	3.128	1.854	1.122
#1	.1012	.0126	.0366	.0006	.0211	.0246	.0159
#2	.0998	.0127	.0383	.0006	.0216	.0245	.0160
#3	.1064	.0126	.0335	.0008	.0203	.0254	.0163

Sample Name: CAL 1 Acquired: 8/17/2016 13:41:25 Type: Cal
Method: _2016(v44) Mode: IR Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14630.	1964.3
Stddev	93.	6.8
%RSD	.63300	.34667
#1	14735.	1960.2
#2	14559.	1972.2
#3	14597.	1960.6

Sample Name: Cal 2 Acquired: 8/17/2016 13:46:04 Type: Cal
Method: _2016(v44) Mode: IR Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.7432	13.48	.2228	.2560	64.82	87.57	.2831	6.627	3.942
Stddev	.0009	.16	.0018	.0034	.56	.92	.0025	.046	.033
%RSD	.1177	1.222	.7896	1.345	.8650	1.048	.8855	.6961	.8283
#1	.7433	13.30	.2208	.2523	64.19	86.55	.2802	6.574	3.905
#2	.7440	13.53	.2236	.2568	65.00	87.84	.2847	6.647	3.957
#3	.7423	13.62	.2241	.2590	65.26	88.33	.2844	6.660	3.965

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.576	1.806	.3017	17.35	3.418	7.860	2.187	10.09	.2886
Stddev	.012	.014	.0029	.16	.045	.079	.021	.10	.0026
%RSD	.7758	.7985	.9631	.9495	1.307	1.005	.9737	.9646	.8942
#1	1.562	1.789	.2983	17.17	3.367	7.771	2.163	9.977	.2857
#2	1.582	1.813	.3032	17.38	3.437	7.887	2.192	10.14	.2896
#3	1.585	1.816	.3035	17.49	3.450	7.921	2.204	10.15	.2906

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	11.02	2.483	2.023	.4752	1.173	.0461	.0318	.7656	.4515
Stddev	.12	.018	.015	.0034	.011	.0004	.0002	.0082	.0028
%RSD	1.077	.7327	.7246	.7242	.9283	.8279	.6971	1.068	.6234
#1	10.89	2.462	2.007	.4713	1.161	.0457	.0316	.7562	.4483
#2	11.07	2.490	2.030	.4764	1.179	.0464	.0319	.7697	.4525
#3	11.11	2.496	2.033	.4778	1.180	.0463	.0320	.7709	.4537

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	114.2	.2842	8.347	.0531	.2836	2.193	4.348
Stddev	1.1	.0005	.074	.0004	.0007	.025	.034
%RSD	.9579	.1590	.8908	.8212	.2335	1.122	.7923
#1	113.0	.2837	8.263	.0526	.2842	2.165	4.308
#2	114.5	.2845	8.373	.0532	.2829	2.203	4.364
#3	115.1	.2844	8.405	.0534	.2838	2.210	4.371

Sample Name: Cal 2 Acquired: 8/17/2016 13:46:04 Type: Cal
Method: _2016(v44) Mode: IR Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13366.	1869.3
Stddev	50.	39.5
%RSD	.37145	2.1124
#1	13416.	1913.4
#2	13363.	1857.7
#3	13317.	1837.0

Sample Name: Cal 3 Acquired: 8/17/2016 13:50:13 Type: Cal
Method: _2016(v44) Mode: IR Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.323	27.23	.4612	.5084	129.7	169.4	.5827	13.22	8.127
Stddev	.005	.10	.0105	.0034	.7	.8	.0141	.32	.189
%RSD	.3593	.3723	2.279	.6664	.5041	.4928	2.413	2.385	2.327
#1	1.323	27.17	.4634	.5049	129.3	168.5	.5859	13.30	8.170
#2	1.328	27.16	.4704	.5087	129.3	169.4	.5949	13.49	8.291
#3	1.319	27.34	.4497	.5116	130.4	170.2	.5673	12.87	7.920

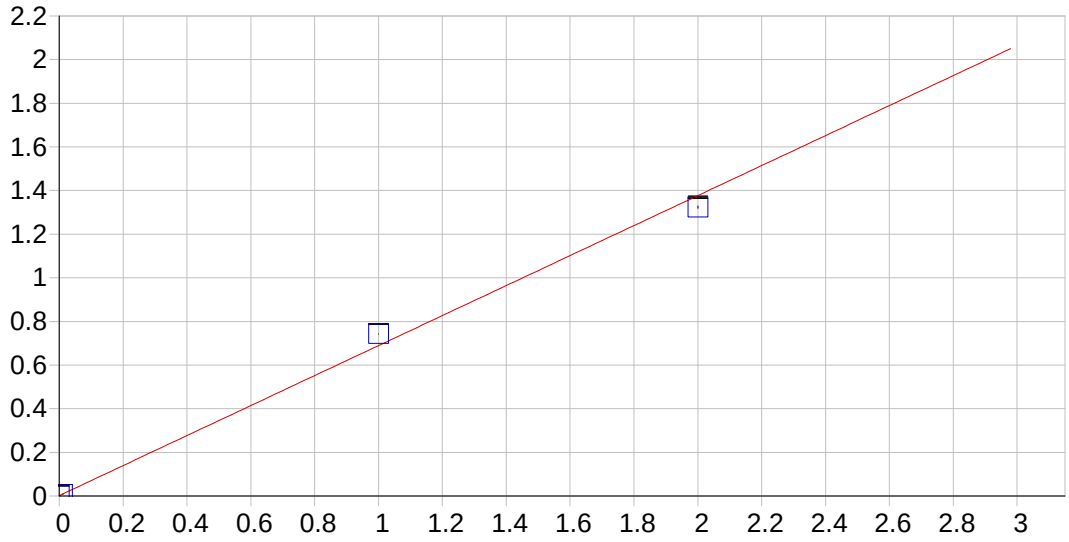
Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.185	3.659	.6192	34.36	6.794	15.71	4.398	20.25	.5914
Stddev	.075	.085	.0150	.13	.035	.06	.024	.13	.0140
%RSD	2.342	2.324	2.417	.3875	.5202	.4064	.5393	.6324	2.374
#1	3.204	3.679	.6229	34.23	6.765	15.66	4.374	20.12	.5946
#2	3.249	3.732	.6320	34.36	6.782	15.68	4.398	20.26	.6035
#3	3.103	3.565	.6027	34.50	6.833	15.78	4.422	20.38	.5760

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	21.95	5.002	4.054	.9535	2.462	.0967	.0664	1.502	.9138
Stddev	.08	.118	.096	.0222	.058	.0024	.0016	.012	.0209
%RSD	.3742	2.360	2.355	2.333	2.367	2.522	2.399	.7681	2.287
#1	21.89	5.031	4.080	.9595	2.473	.0969	.0669	1.491	.9202
#2	21.92	5.103	4.134	.9721	2.514	.0990	.0676	1.500	.9307
#3	22.05	4.872	3.948	.9289	2.399	.0941	.0646	1.514	.8904

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	223.5	.5668	16.82	.1056	.5604	4.391	8.891
Stddev	.9	.0009	.08	.0025	.0020	.014	.215
%RSD	.3829	.1580	.4962	2.370	.3502	.3207	2.423
#1	224.3	.5658	16.76	.1062	.5584	4.387	8.939
#2	222.6	.5675	16.79	.1077	.5624	4.380	9.078
#3	223.5	.5671	16.92	.1029	.5605	4.407	8.655

Sample Name: Cal 3 Acquired: 8/17/2016 13:50:13 Type: Cal
Method: _2016(v44) Mode: IR Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12673.	1795.7
Stddev	279.	15.9
%RSD	2.2052	.88747
#1	12592.	1810.2
#2	12443.	1778.6
#3	12984.	1798.3

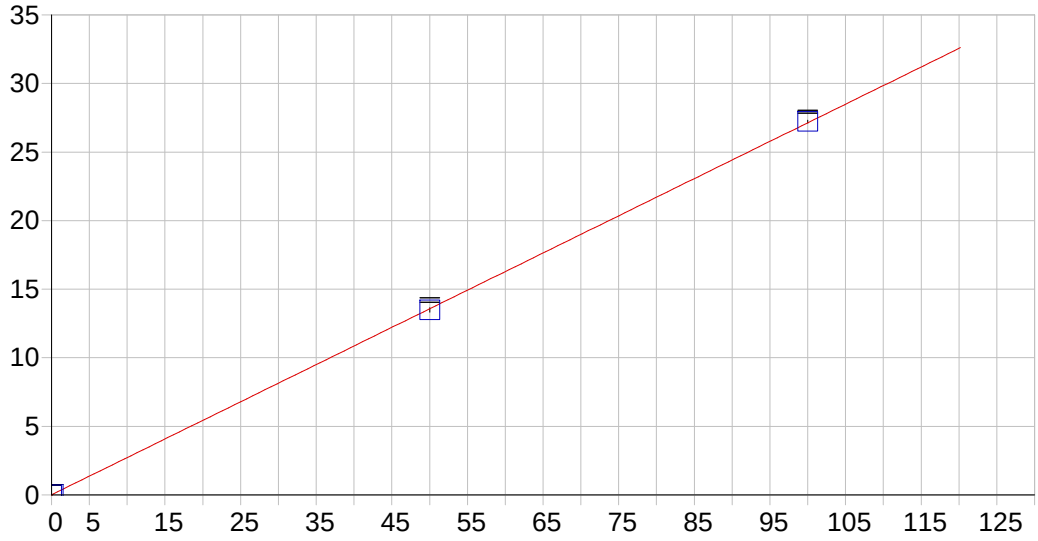


Ag 328.068 {103}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001900	Re-Slope:	1.000000
A1 (Gain):	0.687535	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998481	Status:	OK.
Std Error of Est:	0.000294		
Predicted MDL:	0.000786		
Predicted MQL:	0.002620		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	-.00000	-.000	.000	.00190	.000	1
CAL 1	.01000	.00968	-.000	-3.23	.00855	.000	1
Cal 2	1.0000	1.0782	.078	7.82	.74322	.001	1
Cal 3	2.0000	1.9221	-.078	-3.90	1.3234	.005	1

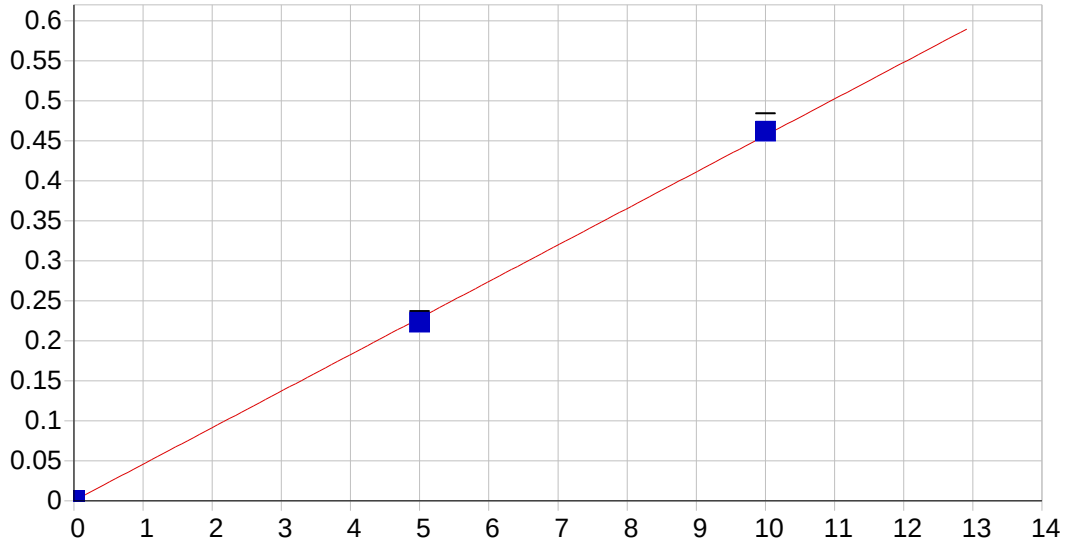


Al 396.152 { 85}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.008726	Re-Slope:	1.000000
A1 (Gain):	0.271249	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999986	Status:	OK.
Std Error of Est:	0.000349		
Predicted MDL:	0.012143		
Predicted MQL:	0.040475		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00001	.000	.000	.00873	.002	1
CAL 1	.20000	.18709	-.013	-6.46	.05947	.004	1
Cal 2	50.000	49.672	-.328	-.655	13.482	.165	1
Cal 3	100.00	100.34	.340	.340	27.226	.101	1

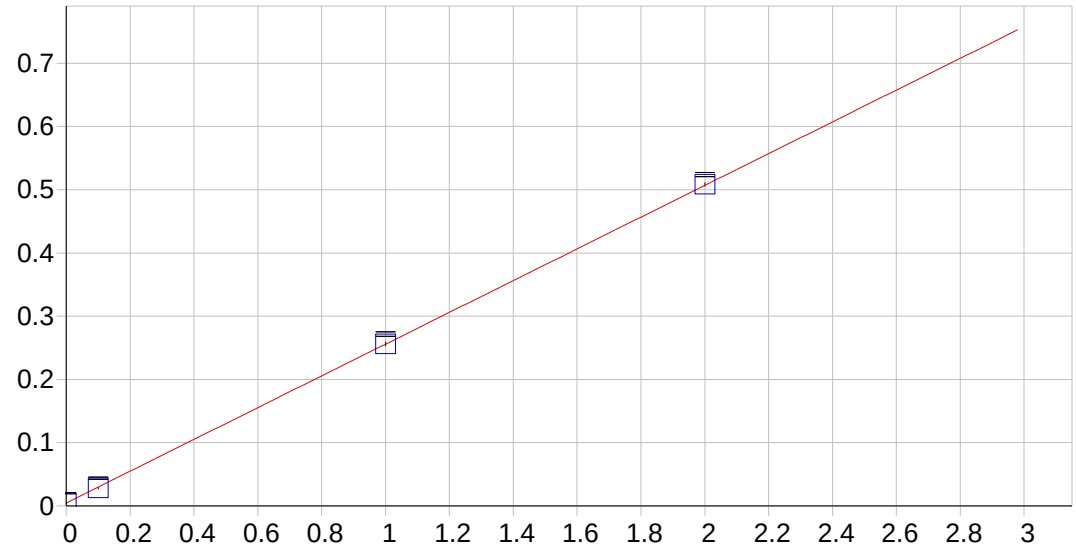


As 189.042 {478}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000163	Re-Slope:	1.000000
A1 (Gain):	0.045656	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999836	Status:	OK.
Std Error of Est:	0.000014		
Predicted MDL:	0.001511		
Predicted MQL:	0.005035		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.00016	.000	1
CAL 1	.01000	.00688	-.003	-31.2	.00048	.000	1
Cal 2	5.0000	4.8865	-.114	-2.27	.22283	.002	1
Cal 3	10.000	10.117	.117	1.17	.46118	.011	1

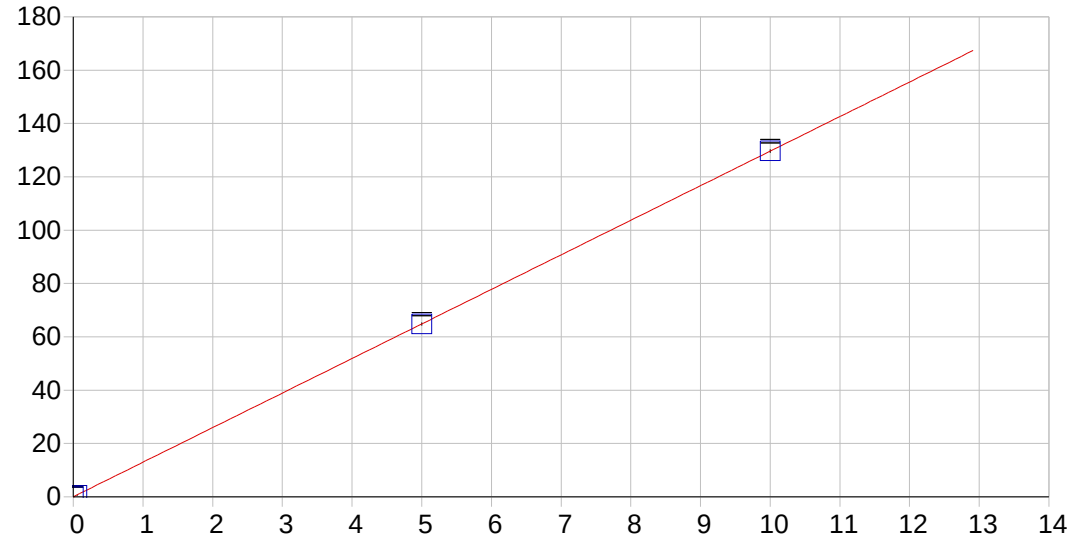


B 249.678 {135}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.004695	Re-Slope:	1.000000
A1 (Gain):	0.251111	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999922	Status:	OK.
Std Error of Est:	0.000078		
Predicted MDL:	0.004306		
Predicted MQL:	0.014354		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00001	.000	.000	.00470	.001	1
CAL 1	.10000	.09321	-.007	-6.79	.02810	.002	1
Cal 2	1.0000	1.0008	.001	.082	.25601	.003	1
Cal 3	2.0000	2.0060	.006	.299	.50842	.003	1

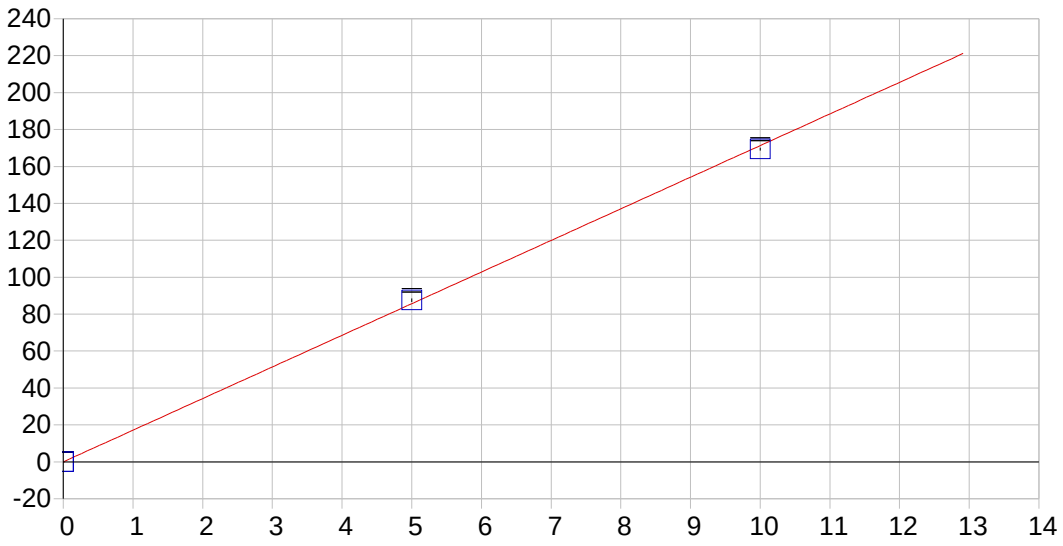


Ba 455.403 { 74}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.029005	Re-Slope:	1.000000
A1 (Gain):	12.960064	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999993	Status:	OK.
Std Error of Est:	0.001844		
Predicted MDL:	0.000324		
Predicted MQL:	0.001078		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.02905	.004	1
CAL 1	.05000	.04683	-.003	-6.33	.63596	.005	1
Cal 2	5.0000	4.9992	-.001	-.017	64.818	.561	1
Cal 3	10.000	10.004	.004	.040	129.68	.654	1

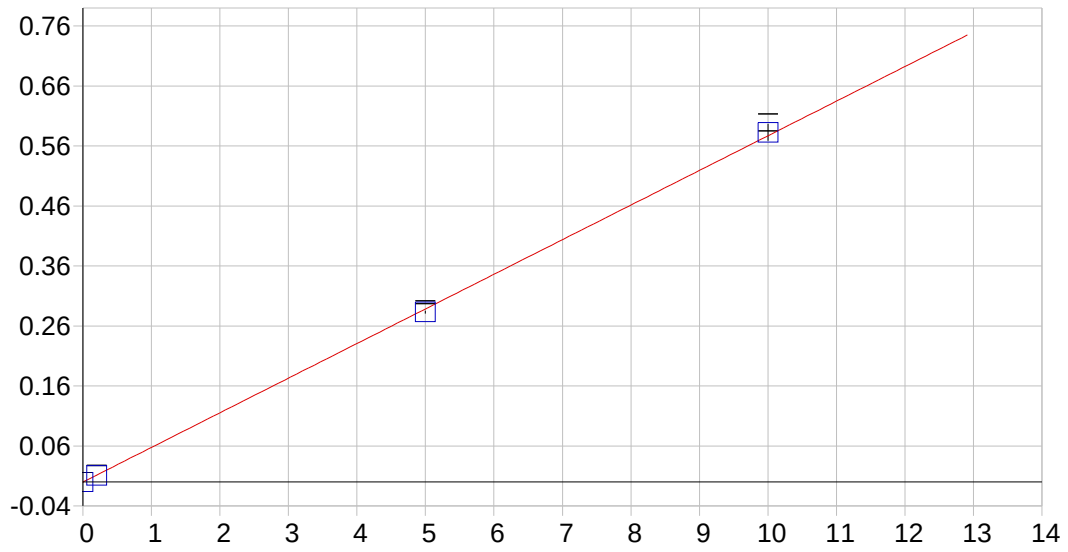


Be 313.042 {108}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000783	Re-Slope:	1.000000
A1 (Gain):	17.129984	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999874	Status:	OK.
Std Error of Est:	0.003326		
Predicted MDL:	0.000108		
Predicted MQL:	0.000359		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.00079	.001	1
CAL 1	.00500	.00481	-.000	-3.90	.08309	.001	1
Cal 2	5.0000	5.1121	.112	2.24	87.571	.918	1
Cal 3	10.000	9.8881	-.112	-1.12	169.38	.835	1

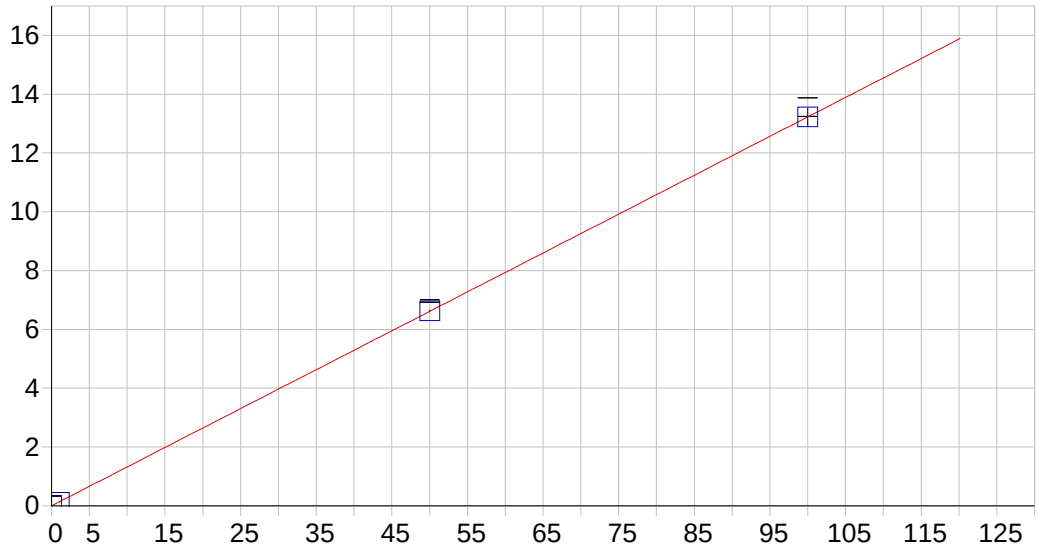


Bi 223.061 {451}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000221	Re-Slope:	1.000000
A1 (Gain):	0.057718	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999900	Status:	OK.
Std Error of Est:	0.000064		
Predicted MDL:	0.002105		
Predicted MQL:	0.007015		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00001	.000	.000	-.00022	.000	1
CAL 1	.20000	.19110	-.009	-4.45	.01081	.000	1
Cal 2	5.0000	4.9090	-.091	-1.82	.28311	.003	1
Cal 3	10.000	10.100	.100	.999	.58273	.014	1

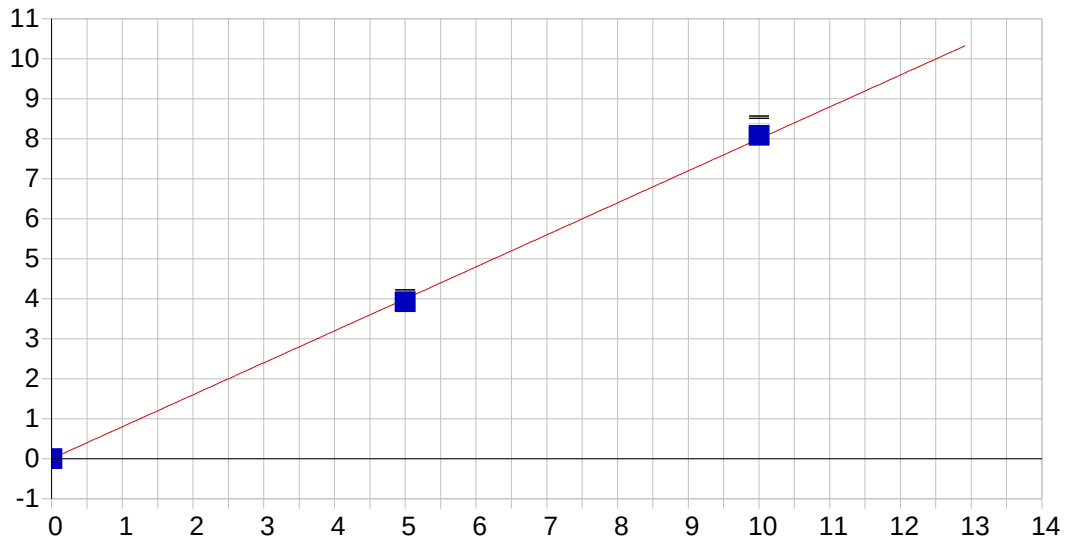


Ca 184.006 {483}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000338	Re-Slope:	1.000000
A1 (Gain):	0.132281	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999996	Status:	OK.
Std Error of Est:	0.000205		
Predicted MDL:	0.000500		
Predicted MQL:	0.001666		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00003	.000	.000	.00034	.000	1
CAL 1	1.0000	.96859	-.031	-3.14	.12846	.002	1
Cal 2	50.000	50.095	.095	.189	6.6269	.046	1
Cal 3	100.00	99.937	-.063	-.063	13.220	.315	1

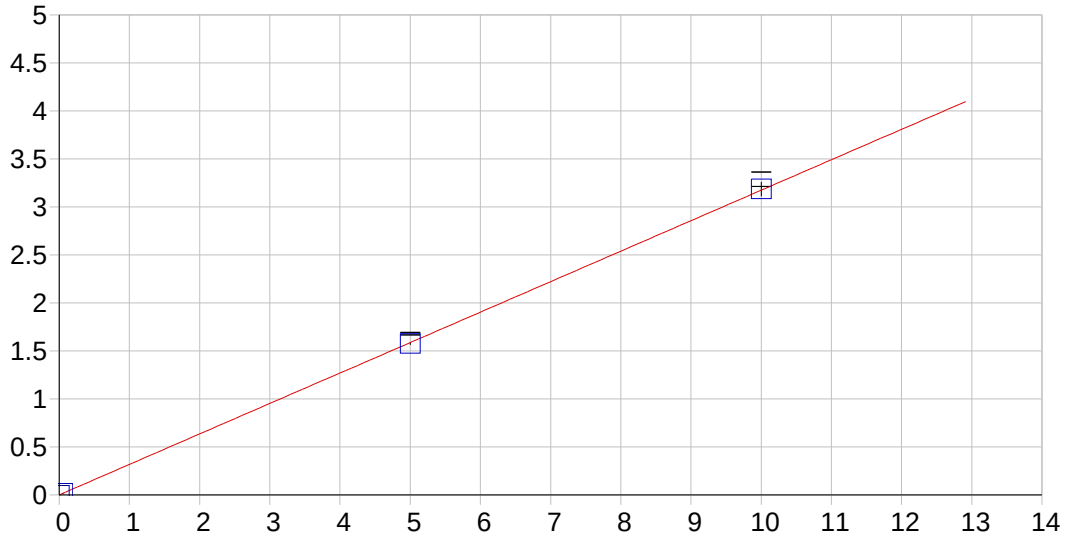


Cd 228.802 {447}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000298	Re-Slope:	1.000000
A1 (Gain):	0.799664	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999897	Status:	OK.
Std Error of Est:	0.000141		
Predicted MDL:	0.000157		
Predicted MQL:	0.000525		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	-.00030	.000	1
CAL 1	.00500	.00439	-.001	-12.1	.00326	.000	1
Cal 2	5.0000	4.8993	-.101	-2.01	3.9423	.033	1
Cal 3	10.000	10.101	.101	1.01	8.1270	.189	1

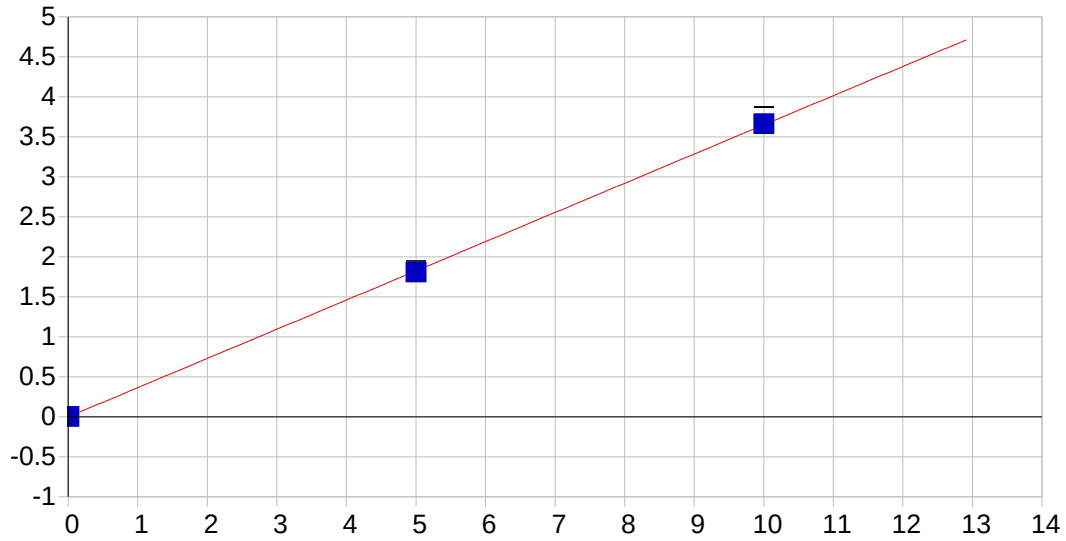


Co 228.616 {448}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000644	Re-Slope:	1.000000
A1 (Gain):	0.317321	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999984	Status:	OK.
Std Error of Est:	0.000069		
Predicted MDL:	0.000291		
Predicted MQL:	0.000970		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.00064	.000	1
CAL 1	.05000	.04770	-.002	-4.59	.01578	.000	1
Cal 2	5.0000	4.9657	-.034	-.687	1.5764	.012	1
Cal 3	10.000	10.037	.037	.366	3.1855	.075	1

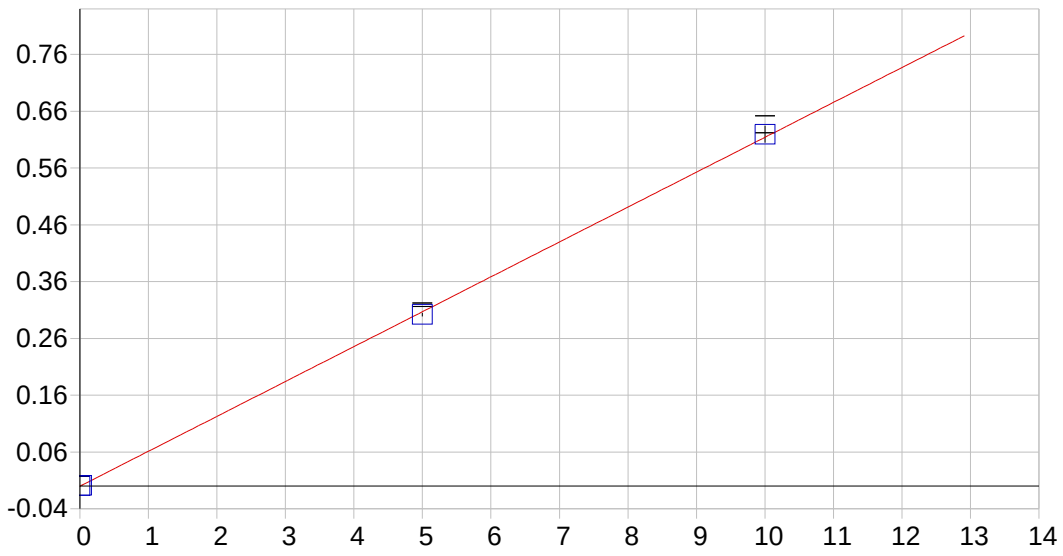


Cr 205.560 {464}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000002	Re-Slope:	1.000000
A1 (Gain):	0.364962	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999980	Status:	OK.
Std Error of Est:	0.000040		
Predicted MDL:	0.000150		
Predicted MQL:	0.000501		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	-.00000	.000	1
CAL 1	.01000	.00924	-.001	-7.60	.00337	.000	1
Cal 2	5.0000	4.9578	-.042	-.844	1.8060	.014	1
Cal 3	10.000	10.043	.043	.430	3.6585	.085	1

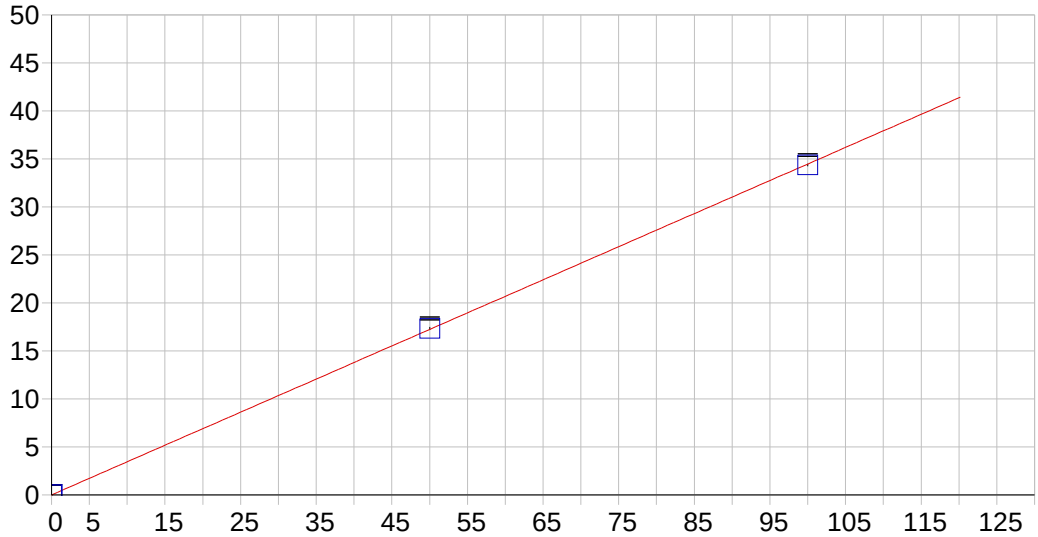


Cu 217.894 {455}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000224	Re-Slope:	1.000000
A1 (Gain):	0.061418	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999927	Status:	OK.
Std Error of Est:	0.000020		
Predicted MDL:	0.001676		
Predicted MQL:	0.005588		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	-.00022	.000	1
CAL 1	.02500	.02379	-.001	-4.85	.00124	.000	1
Cal 2	5.0000	4.9158	-.084	-1.68	.30169	.003	1
Cal 3	10.000	10.085	.085	.855	.61921	.015	1

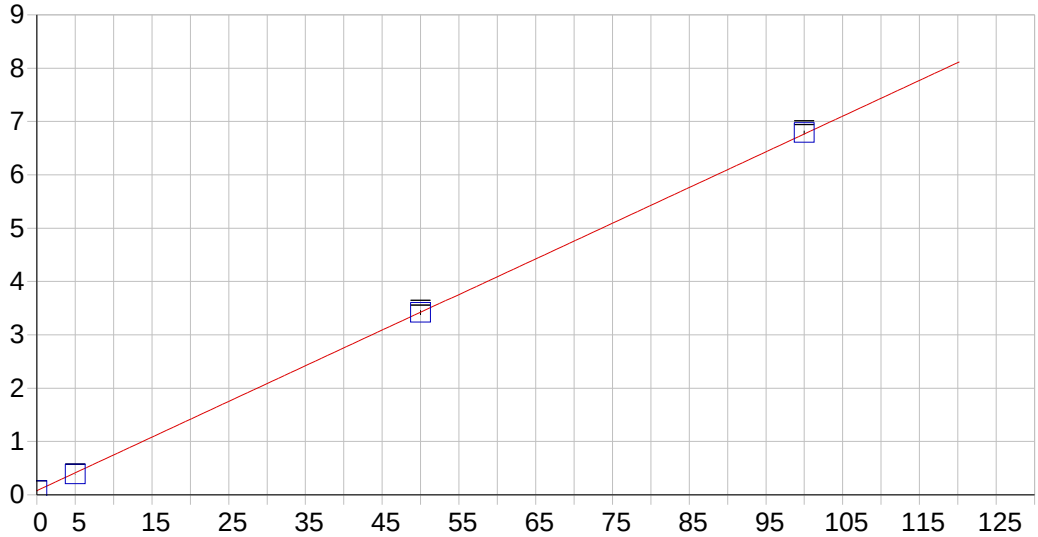


Fe 259.940 {130}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.003325	Re-Slope:	1.000000
A1 (Gain):	0.344696	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999989	Status:	OK.
Std Error of Est:	0.000279		
Predicted MDL:	0.003311		
Predicted MQL:	0.011036		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.00333	.001	1
CAL 1	.10000	.09554	-.004	-4.46	.03626	.001	1
Cal 2	50.000	50.322	.322	.645	17.349	.165	1
Cal 3	100.00	99.682	-.318	-.318	34.363	.133	1

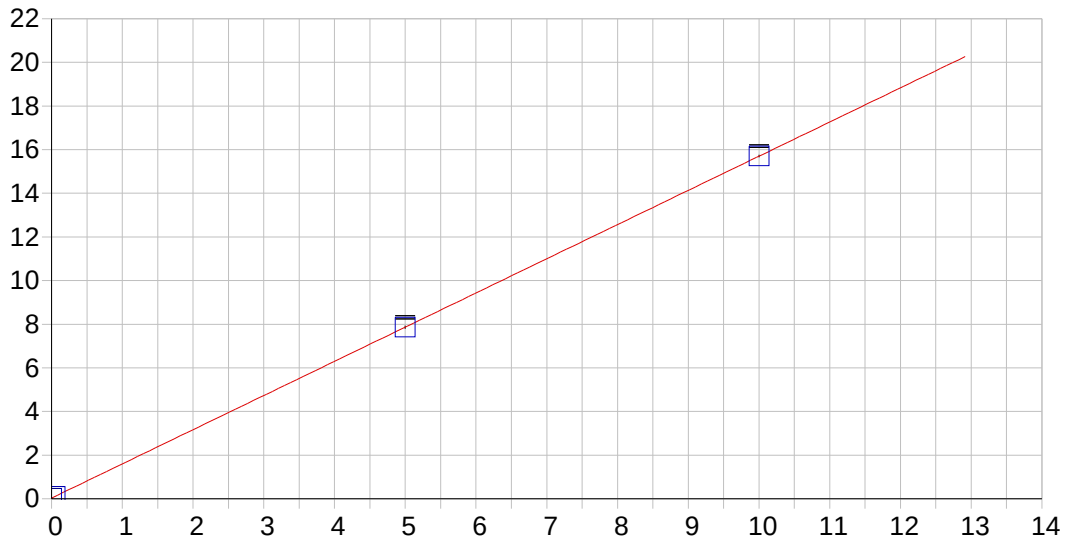


K 766.490 { 44}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.079061	Re-Slope:	1.000000
A1 (Gain):	0.066867	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999912	Status:	OK.
Std Error of Est:	0.001103		
Predicted MDL:	0.057941		
Predicted MQL:	0.193136		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00034	.000	.000	.07908	.003	1
CAL 1	5.0000	4.6437	-.356	-7.13	.38957	.003	1
Cal 2	50.000	49.939	-.061	-.123	3.4183	.045	1
Cal 3	100.00	100.42	.418	.418	6.7936	.035	1

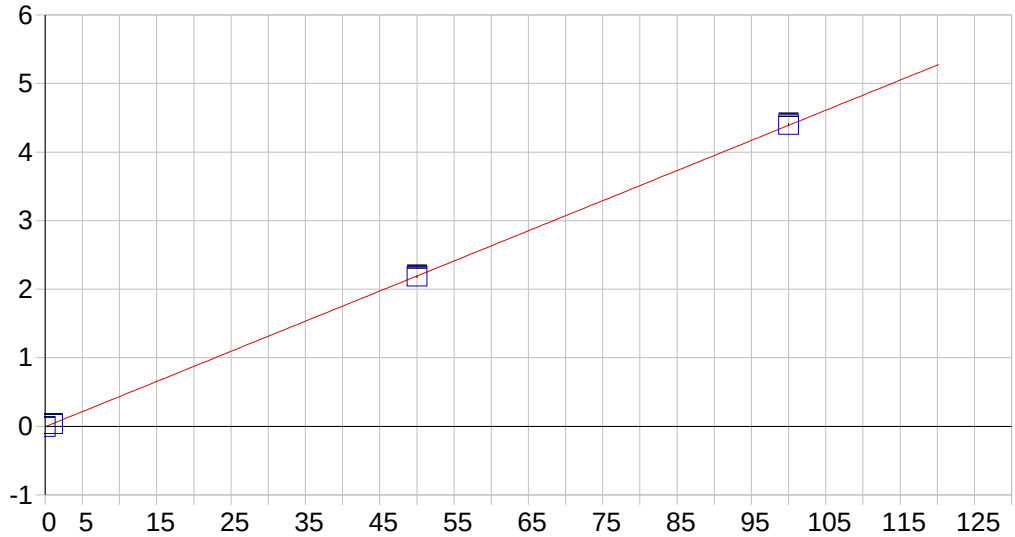


Li 670.784 { 50}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.030867	Re-Slope:	1.000000
A1 (Gain):	1.566899	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999999	Status:	OK.
Std Error of Est:	0.000061		
Predicted MDL:	0.002693		
Predicted MQL:	0.008978		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.03087	.003	1
CAL 1	.05000	.04926	-.001	-1.48	.10806	.008	1
Cal 2	5.0000	4.9965	-.004	-.070	7.8599	.079	1
Cal 3	10.000	10.004	.004	.042	15.706	.064	1

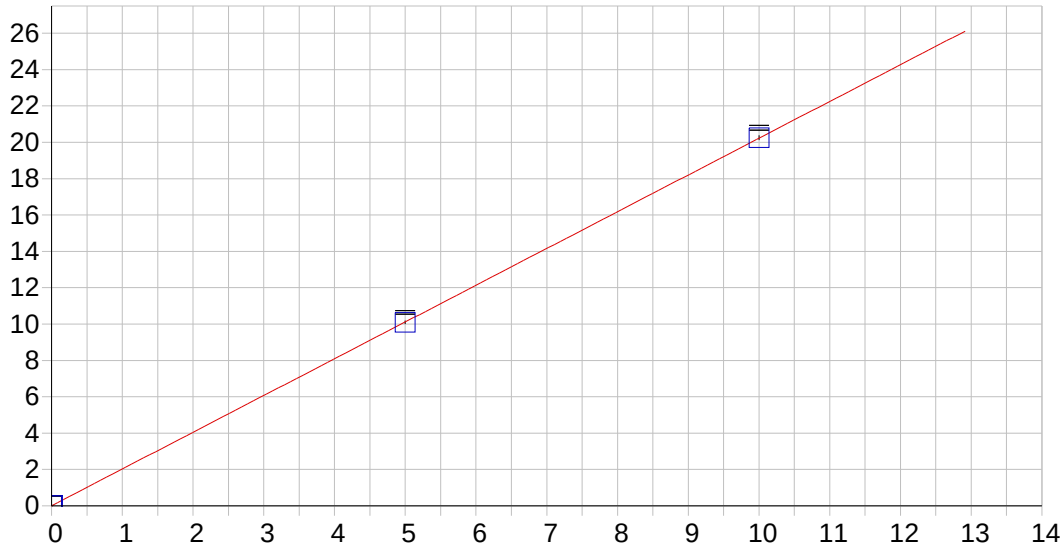


Mg 279.806 {121}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.004672	Re-Slope:	1.000000
A1 (Gain):	0.043944	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999988	Status:	OK.
Std Error of Est:	0.000121		
Predicted MDL:	0.023682		
Predicted MQL:	0.078941		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00006	.000	.000	-.00467	.000	1
CAL 1	1.0000	.94495	-.055	-5.50	.03685	.001	1
Cal 2	50.000	49.864	-.136	-.273	2.1865	.021	1
Cal 3	100.00	100.19	.191	.191	4.3981	.024	1

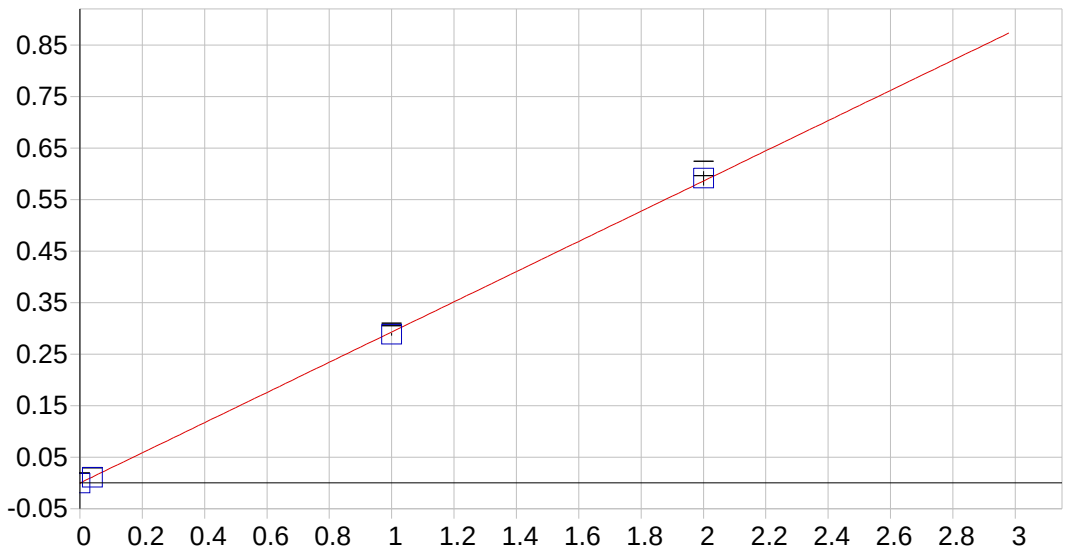


Mn 257.610 {131}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.004339	Re-Slope:	1.000000
A1 (Gain):	2.022057	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999997	Status:	OK.
Std Error of Est:	0.000108		
Predicted MDL:	0.000524		
Predicted MQL:	0.001746		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.00434	.001	1
CAL 1	.01500	.01418	-.001	-5.44	.03302	.001	1
Cal 2	5.0000	4.9872	-.013	-.256	10.089	.097	1
Cal 3	10.000	10.014	.014	.136	20.252	.128	1

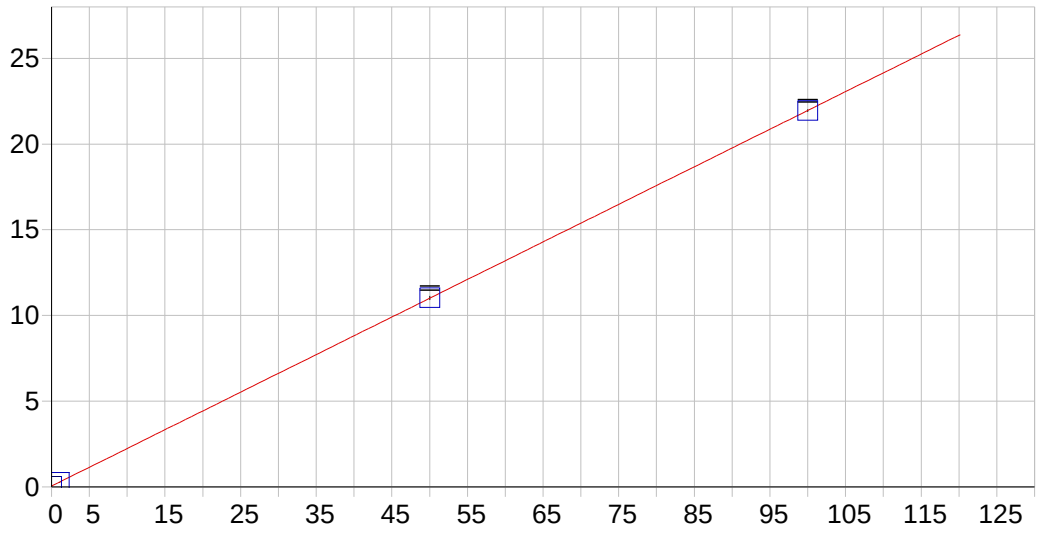


Mo 202.030 {467}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000100	Re-Slope:	1.000000
A1 (Gain):	0.293054	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999887	Status:	OK.
Std Error of Est:	0.000069		
Predicted MDL:	0.000288		
Predicted MQL:	0.000959		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	-.00010	.000	1
CAL 1	.04000	.03651	-.003	-8.72	.01060	.000	1
Cal 2	1.0000	.98522	-.015	-1.48	.28862	.003	1
Cal 3	2.0000	2.0183	.018	.913	.59136	.014	1

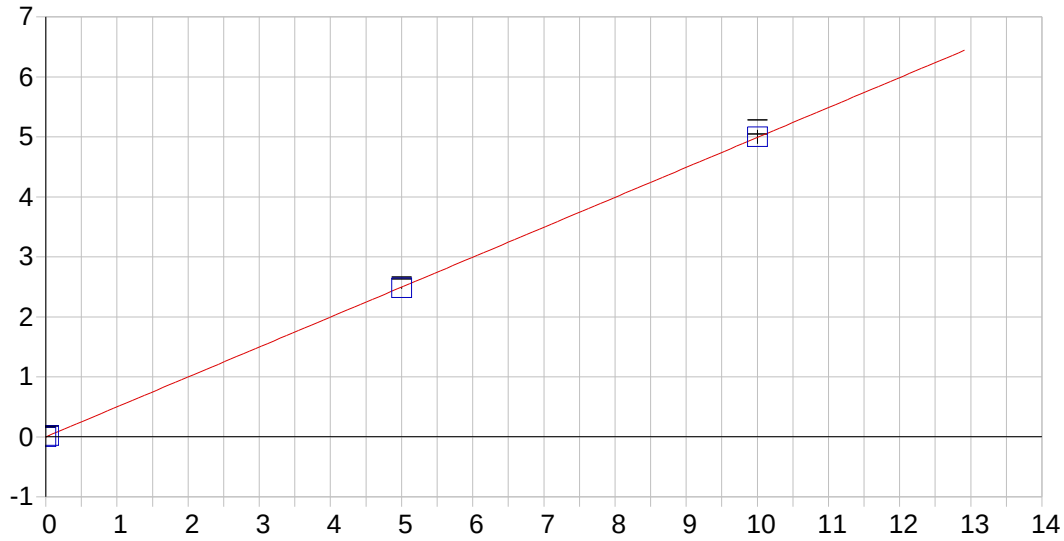


Na 589.592 { 57}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.049108	Re-Slope:	1.000000
A1 (Gain):	0.219114	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999992	Status:	OK.
Std Error of Est:	0.000489		
Predicted MDL:	0.017165		
Predicted MQL:	0.057216		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00005	.000	.000	.04912	.003	1
CAL 1	1.0000	.95169	-.048	-4.83	.25764	.005	1
Cal 2	50.000	50.084	.084	.168	11.023	.119	1
Cal 3	100.00	99.964	-.036	-.036	21.953	.082	1

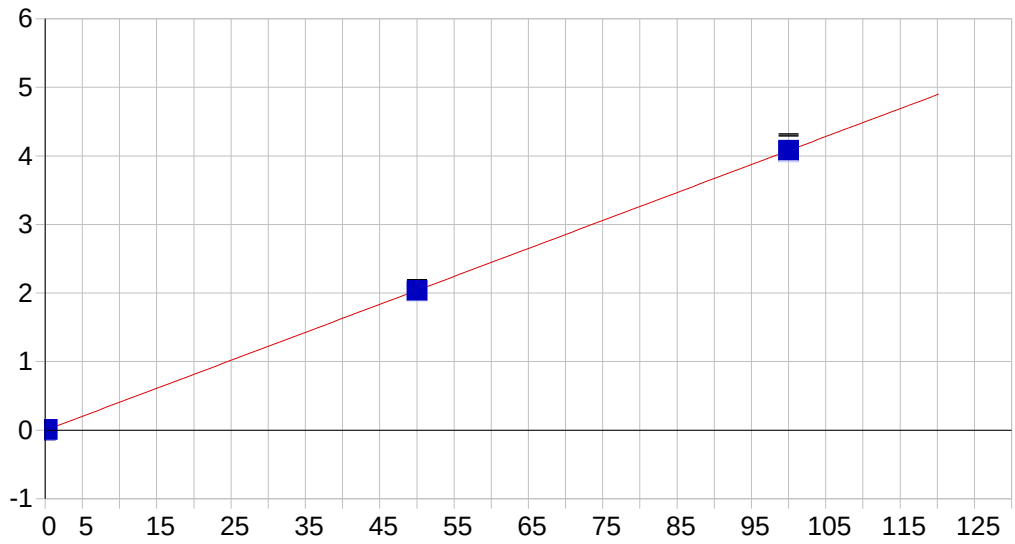


Ni 221.647 {452}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000091	Re-Slope:	1.000000
A1 (Gain):	0.498934	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999992	Status:	OK.
Std Error of Est:	0.000068		
Predicted MDL:	0.000239		
Predicted MQL:	0.000798		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	-.00009	.000	1
CAL 1	.04000	.03839	-.002	-4.01	.01907	.000	1
Cal 2	5.0000	4.9767	-.023	-.466	2.4830	.018	1
Cal 3	10.000	10.025	.025	.249	5.0017	.118	1

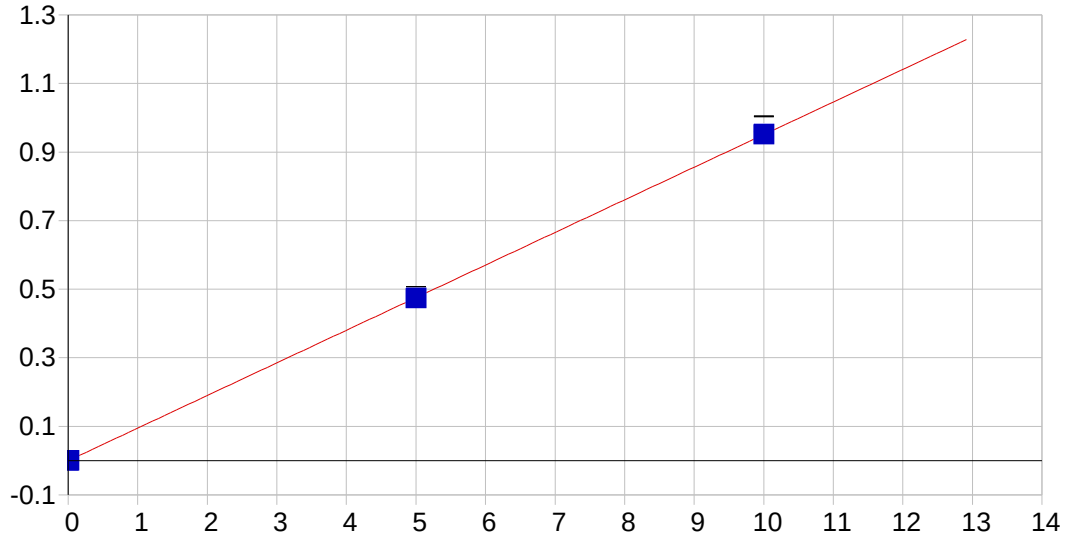


P 177.495 {490}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.001179	Re-Slope:	1.000000
A1 (Gain):	0.040787	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999995	Status:	OK.
Std Error of Est:	0.000036		
Predicted MDL:	0.001359		
Predicted MQL:	0.004531		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00002	.000	.000	-.00118	.000	1
CAL 1	.25000	.23046	-.020	-7.82	.00815	.000	1
Cal 2	50.000	49.959	-.041	-.081	2.0234	.015	1
Cal 3	100.00	100.06	.060	.060	4.0538	.095	1

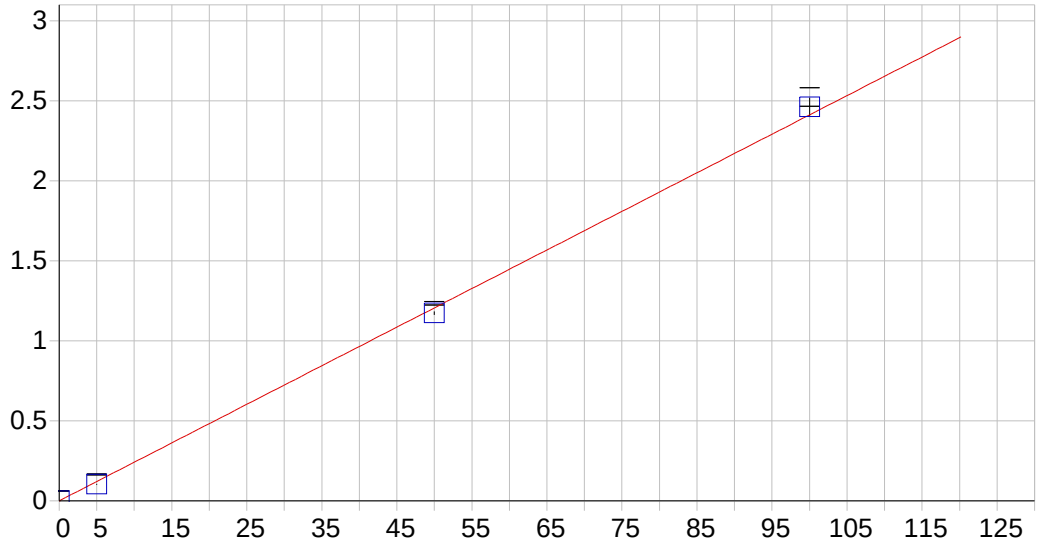


Pb 220.353 {453}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000133	Re-Slope:	1.000000
A1 (Gain):	0.095094	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999998	Status:	OK.
Std Error of Est:	0.000003		
Predicted MDL:	0.000999		
Predicted MQL:	0.003330		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	-.00013	.000	1
CAL 1	.01000	.00955	-.000	-4.51	.00086	.000	1
Cal 2	5.0000	4.9895	-.011	-.211	.47515	.003	1
Cal 3	10.000	10.011	.011	.110	.95350	.022	1

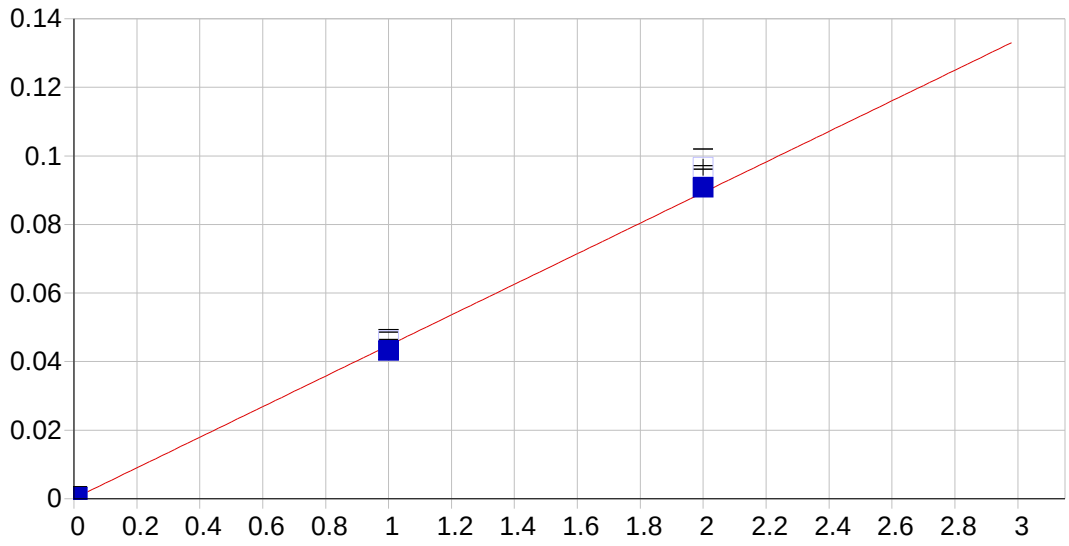


S 182.034 {485}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000201	Re-Slope:	1.000000
A1 (Gain):	0.024118	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999406	Status:	OK.
Std Error of Est:	0.001035		
Predicted MDL:	0.002529		
Predicted MQL:	0.008430		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00075	.001	.000	.00022	.000	1
CAL 1	5.0000	4.2807	-.719	-14.4	.10344	.002	1
Cal 2	50.000	48.634	-1.37	-2.73	1.1732	.011	1
Cal 3	100.00	102.09	2.09	2.09	2.4623	.058	1

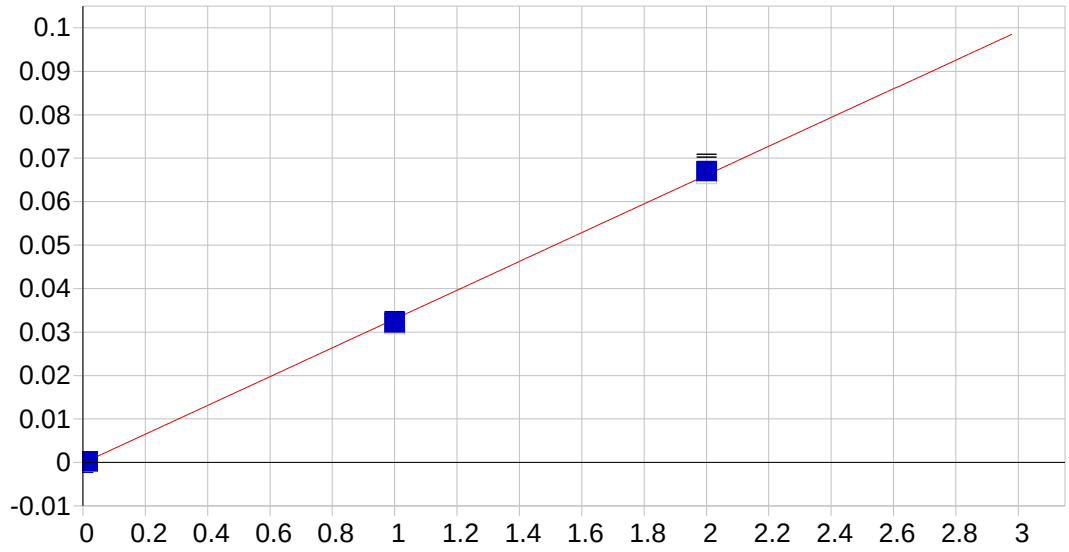


Sb 206.833 {463}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000100	Re-Slope:	1.000000
A1 (Gain):	0.044603	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999722	Status:	OK.
Std Error of Est:	0.000009		
Predicted MDL:	0.002202		
Predicted MQL:	0.007339		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.00010	.000	1
CAL 1	.01000	.00854	-.001	-14.6	.00049	.000	1
Cal 2	1.0000	.96697	-.033	-3.30	.04614	.000	1
Cal 3	2.0000	2.0344	.034	1.72	.09666	.002	1

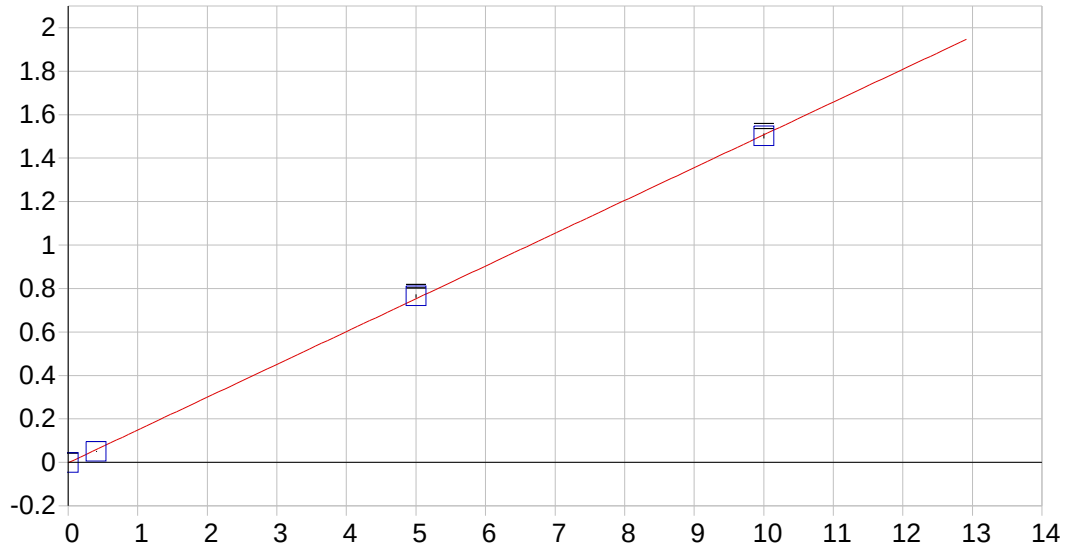


Se 196.090 {472}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000125	Re-Slope:	1.000000
A1 (Gain):	0.033113	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999620	Status:	OK.
Std Error of Est:	0.000009		
Predicted MDL:	0.002507		
Predicted MQL:	0.008356		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	-.00012	.000	1
CAL 1	.01500	.01067	-.004	-28.8	.00019	.000	1
Cal 2	1.0000	.97566	-.024	-2.43	.03184	.000	1
Cal 3	2.0000	2.0284	.028	1.42	.06636	.002	1

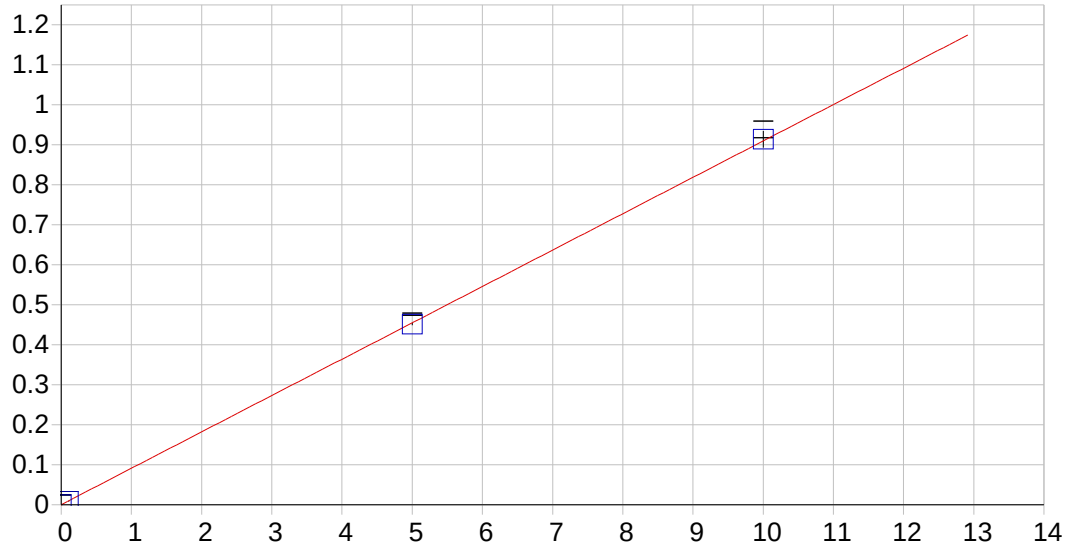


Si 251.611 {134}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.001897	Re-Slope:	1.000000
A1 (Gain):	0.150884	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999716	Status:	OK.
Std Error of Est:	0.000399		
Predicted MDL:	0.007321		
Predicted MQL:	0.024402		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00005	.000	.000	-.00189	.001	1
CAL 1	.40000	.34663	-.053	-13.3	.05040	.001	1
Cal 2	5.0000	5.0866	.087	1.73	.76560	.008	1
Cal 3	10.000	9.9667	-.033	-.333	1.5019	.012	1

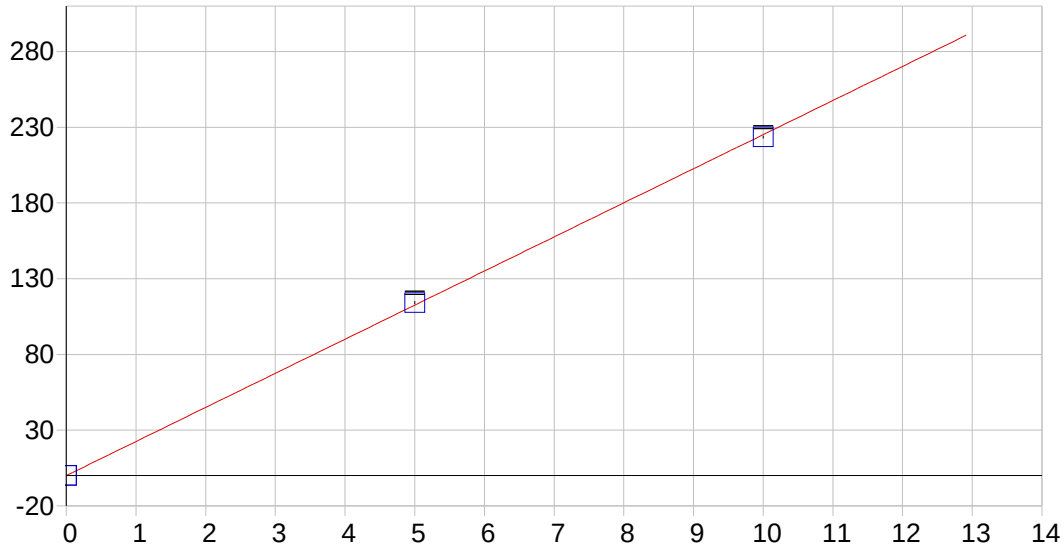


Sn 189.989 {478}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000294	Re-Slope:	1.000000
A1 (Gain):	0.090940	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999968	Status:	OK.
Std Error of Est:	0.000040		
Predicted MDL:	0.000629		
Predicted MQL:	0.002096		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00001	.000	.000	.00029	.000	1
CAL 1	.10000	.09314	-.007	-6.86	.00876	.000	1
Cal 2	5.0000	4.9618	-.038	-.765	.45152	.003	1
Cal 3	10.000	10.045	.045	.451	.91379	.021	1

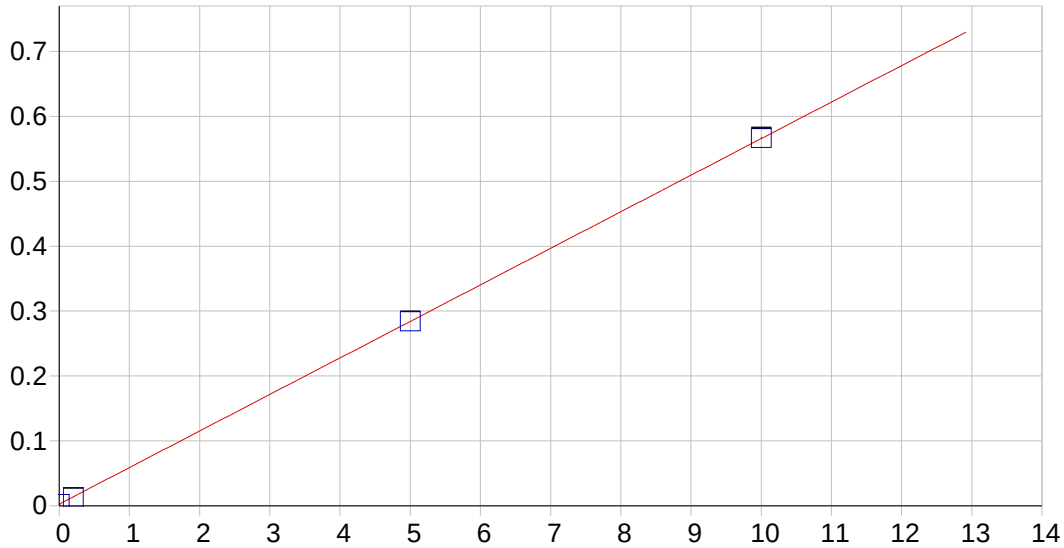


Sr 407.771 { 83}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.006911	Re-Slope:	1.000000
A1 (Gain):	22.513813	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999947	Status:	OK.
Std Error of Est:	0.002847		
Predicted MDL:	0.000128		
Predicted MQL:	0.000427		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	-.00691	.002	1
CAL 1	.00500	.00486	-.000	-2.82	.10248	.003	1
Cal 2	5.0000	5.0730	.073	1.46	114.21	1.09	1
Cal 3	10.000	9.9271	-.073	-.729	223.49	.856	1

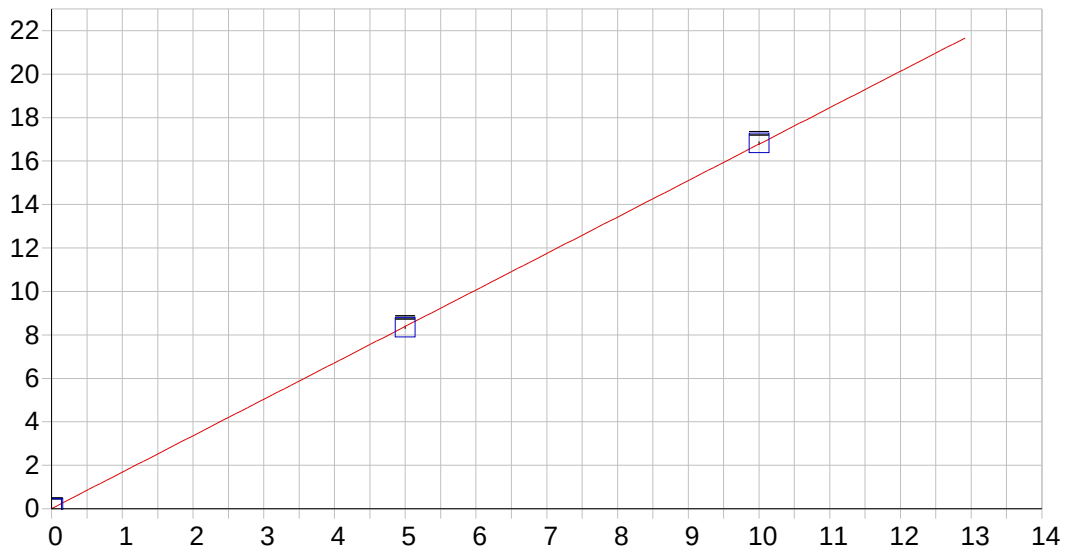


Th 283.231 {119}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002635	Re-Slope:	1.000000
A1 (Gain):	0.056295	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999913	Status:	OK.
Std Error of Est:	0.000058		
Predicted MDL:	0.002675		
Predicted MQL:	0.008916		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00002	.000	.000	.00264	.000	1
CAL 1	.20000	.17727	-.023	-11.4	.01261	.000	1
Cal 2	5.0000	5.0015	.001	.029	.28419	.000	1
Cal 3	10.000	10.021	.021	.213	.56678	.001	1

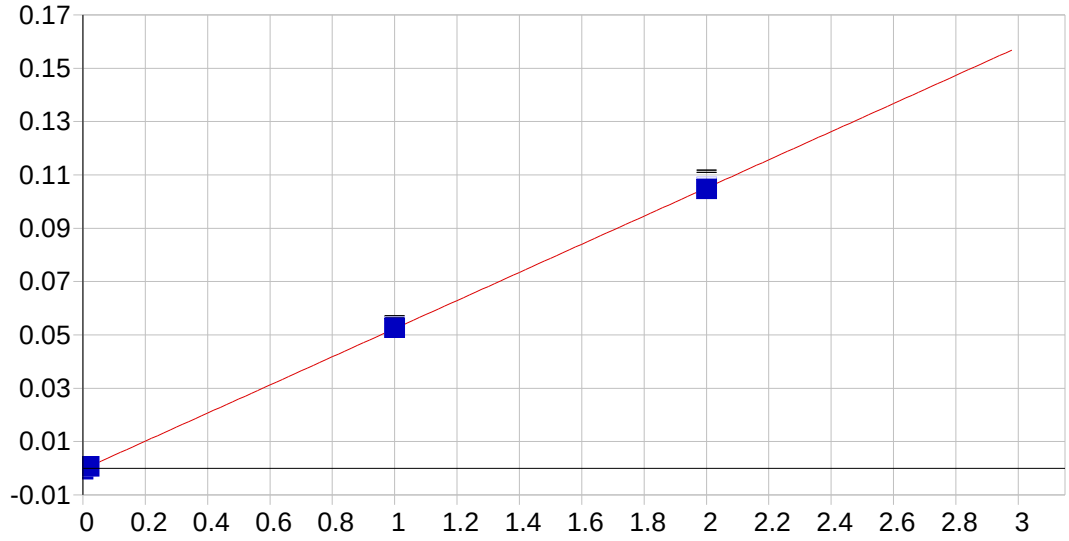


Ti 334.941 {101}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.006002	Re-Slope:	1.000000
A1 (Gain):	1.677011	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999986	Status:	OK.
Std Error of Est:	0.000218		
Predicted MDL:	0.001168		
Predicted MQL:	0.003895		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.00601	.002	1
CAL 1	.02000	.01798	-.002	-10.1	.03615	.002	1
Cal 2	5.0000	4.9737	-.026	-.527	8.3469	.074	1
Cal 3	10.000	10.028	.028	.284	16.824	.083	1

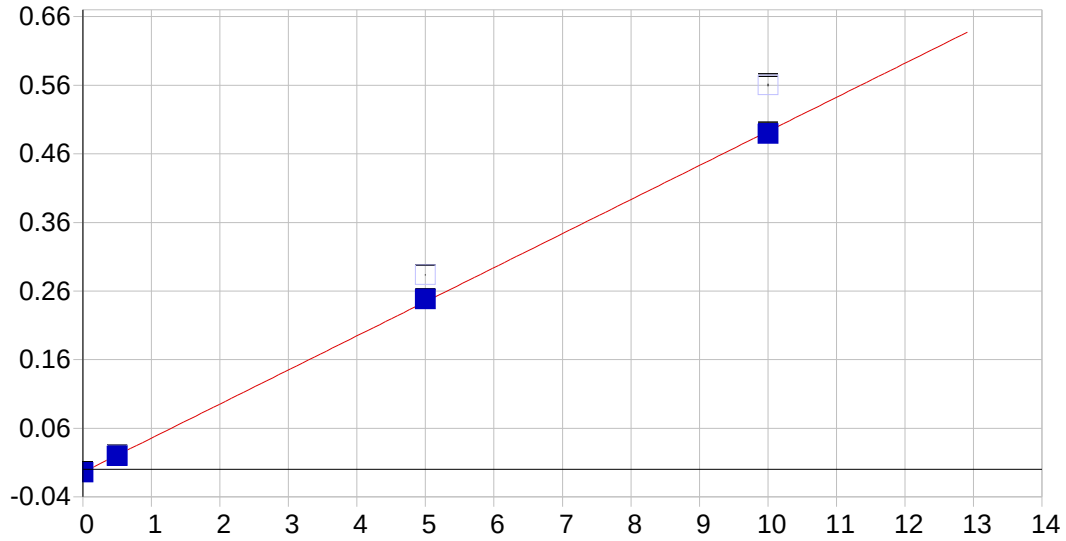


Tl 190.856 {477}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000421	Re-Slope:	1.000000
A1 (Gain):	0.052764	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999979	Status:	OK.
Std Error of Est:	0.000004		
Predicted MDL:	0.001296		
Predicted MQL:	0.004321		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	-.00000	-.000	.000	-.00042	.000	1
CAL 1	.02000	.02120	.001	6.00	.00070	.000	1
Cal 2	1.0000	1.0057	.006	.566	.05308	.000	1
Cal 3	2.0000	1.9931	-.007	-.343	.10561	.003	1

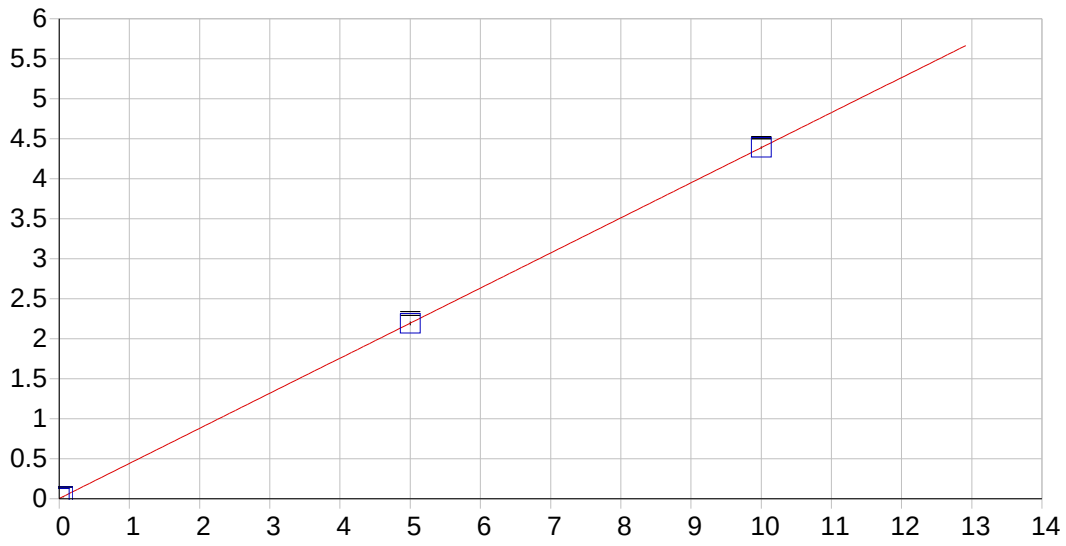


U 367.007 { 92}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.004099	Re-Slope:	1.000000
A1 (Gain):	0.049682	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999942	Status:	OK.
Std Error of Est:	0.000076		
Predicted MDL:	0.015090		
Predicted MQL:	0.050301		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00001	.000	.000	-.00410	.001	1
CAL 1	.50000	.48091	-.019	-3.82	.02099	.001	1
Cal 2	5.0000	5.0789	.079	1.58	.28361	.001	1
Cal 3	10.000	9.9386	-.061	-.614	.56042	.002	1

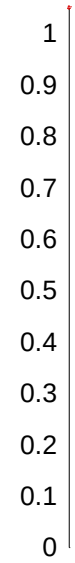


V 290.882 {116}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.003871	Re-Slope:	1.000000
A1 (Gain):	0.438356	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999996	Status:	OK.
Std Error of Est:	0.000047		
Predicted MDL:	0.003733		
Predicted MQL:	0.012443		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	.00387	.001	1
CAL 1	.05000	.04781	-.002	-4.37	.02483	.000	1
Cal 2	5.0000	4.9931	-.007	-.138	2.1926	.025	1
Cal 3	10.000	10.009	.009	.091	4.3914	.014	1

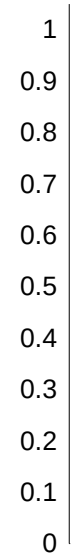


Y 360.073 { 94}*

Date of Fit:	8/17/2016 13:41:21	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	1.0000	.000	1



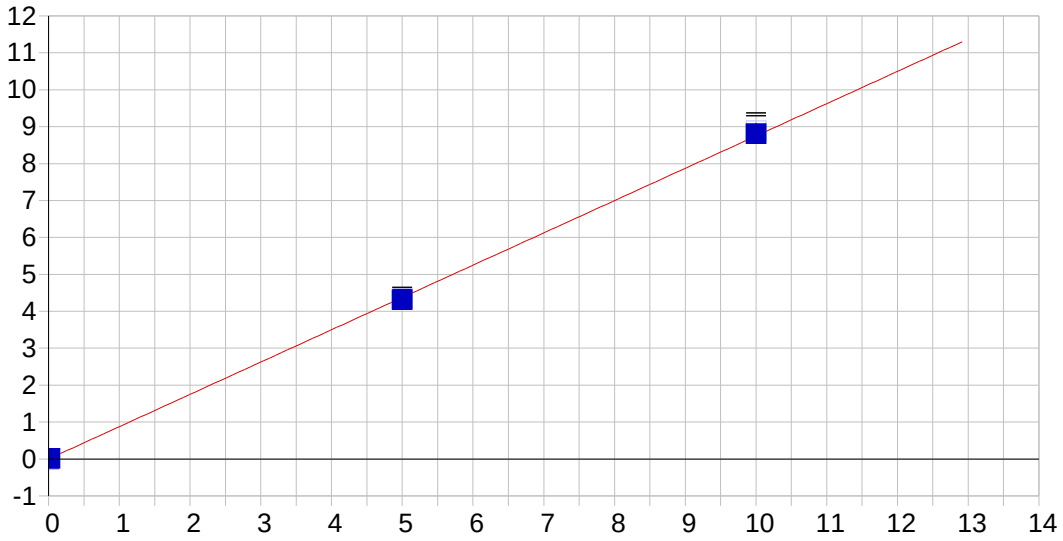
Y 371.030 { 91}*

Date of Fit:	8/17/2016 13:41:21	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000

A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	1.0000	.000	1



Zn 213.856 {458}

Date of Fit:	8/17/2016 13:54:34	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000031	Re-Slope:	1.000000
A1 (Gain):	0.874821	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999940	Status:	OK.
Std Error of Est:	0.000237		
Predicted MDL:	0.000107		
Predicted MQL:	0.000358		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
CALBLK1	.00000	.00000	.000	.000	-.00003	.000	1
CAL 1	.02000	.01811	-.002	-9.43	.01608	.000	1
Cal 2	5.0000	4.9264	-.074	-1.47	4.3479	.034	1
Cal 3	10.000	10.075	.075	.755	8.8906	.215	1

Sample Name: ICV Acquired: 8/17/2016 13:54:41 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	W 1.095	50.07	4.885	1.031	5.083	5.169	4.907	48.96
Stddev	.003	.10	.016	.005	.011	.007	.010	.15
%RSD	.2427	.1928	.3166	.5081	.2201	.1309	.1951	.3053
#1	1.094	50.11	4.890	1.030	5.088	5.169	4.914	49.00
#2	1.092	50.13	4.868	1.036	5.090	5.176	4.896	48.79
#3	1.098	49.96	4.897	1.026	5.070	5.162	4.911	49.09
Check ?	Chk Warn	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	1.000							
Range	5.000%							

Elem	Cd2288	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.959	5.011	4.939	5.006	50.26	50.36	W 5.255	50.58
Stddev	.014	.015	.013	.013	.05	.25	.016	.25
%RSD	.2814	.2979	.2673	.2664	.0963	.4925	.2997	.5028
#1	4.964	5.015	4.944	5.009	50.26	50.53	5.256	50.51
#2	4.943	4.994	4.924	4.992	50.30	50.48	5.271	50.87
#3	4.970	5.023	4.949	5.018	50.21	50.08	5.239	50.38
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Warn	Chk Pass
Value							5.000	
Range							5.000%	

Elem	Mn2576	Mo2020	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.192	W .9409	50.63	4.994	49.81	4.942	48.11	.9954
Stddev	.023	.0023	.14	.015	.14	.013	.17	.0045
%RSD	.4481	.2444	.2708	.2944	.2909	.2594	.3620	.4562
#1	5.195	.9415	50.70	4.996	49.81	4.941	48.15	.9948
#2	5.213	.9384	50.72	4.978	49.66	4.930	47.92	.9912
#3	5.167	.9429	50.47	5.008	49.95	4.956	48.26	1.000
Check ?	Chk Pass	Chk Warn	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		1.000						
Range		-5.000%						

Sample Name: ICV Acquired: 8/17/2016 13:54:41 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960	Si2516	Sn1899	Sr4077	Th2832	Ti3349	Tl1908	U_3670
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9623	5.008	4.911	5.190	5.138	5.041	W 1.090	5.071
Stddev	.0028	.035	.013	.010	.015	.016	.002	.002
%RSD	.2940	.6933	.2542	.1973	.2868	.3074	.1801	.0340
#1	.9616	4.991	4.914	5.199	5.149	5.046	1.090	5.070
#2	.9599	5.048	4.898	5.193	5.143	5.054	1.087	5.070
#3	.9654	4.985	4.922	5.179	5.121	5.024	1.091	5.073
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Warn	None
Value							1.000	
Range							5.000%	

Elem	V_2908	Zn2138
Units	ppm	ppm
Avg	5.068	5.004
Stddev	.010	.016
%RSD	.1885	.3192
#1	5.079	5.008
#2	5.064	4.987
#3	5.061	5.018
Check ?	Chk Pass	Chk Pass
Value		
Range		

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13628.	1857.3
Stddev	41.	13.0
%RSD	.29786	.70180
#1	13628.	1843.7
#2	13669.	1858.5
#3	13587.	1869.7

Sample Name: ICB Acquired: 8/17/2016 13:58:50 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000	.0161	.0002	.0025	.0001	.0000	.0011	-.0009	.0000
Stddev	.0001	.0182	.0015	.0059	.0005	.0001	.0015	.0004	.0000
%RSD	203.8	113.3	721.7	234.6	381.7	788.0	139.9	46.95	1813.
#1	.0001	-.0049	.0014	.0077	.0005	-.0000	.0013	-.0011	-.0000
#2	-.0001	.0253	-.0015	.0038	-.0005	.0001	-.0005	-.0004	.0000
#3	.0001	.0277	.0007	-.0039	.0004	-.0000	.0025	-.0012	.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002	.0001	-.0002	-.0015	-.1040	.0031	.0014	.0001	.0001
Stddev	.0001	.0001	.0008	.0031	.0118	.0057	.0143	.0006	.0003
%RSD	37.85	157.4	440.2	208.2	11.31	186.5	1022.	829.1	185.9
#1	.0002	-.0000	.0006	-.0031	-.1024	.0045	-.0006	.0008	.0003
#2	.0001	.0002	-.0009	-.0035	-.1165	-.0032	.0166	-.0002	-.0002
#3	.0002	.0000	-.0002	.0021	-.0932	.0079	-.0118	-.0004	.0003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0088	-.0001	.0010	.0004	.0074	.0013	-.0037	-.0176	.0002
Stddev	.0095	.0001	.0009	.0009	.0012	.0026	.0022	.0096	.0003
%RSD	107.2	172.0	92.67	217.8	15.71	201.3	60.04	54.80	186.9
#1	.0198	-.0001	.0019	.0014	.0086	.0042	-.0061	-.0191	.0005
#2	.0028	-.0002	.0009	.0000	.0072	-.0009	-.0017	-.0264	.0001
#3	.0040	.0000	.0001	-.0002	.0064	.0006	-.0033	-.0073	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: ICB Acquired: 8/17/2016 13:58:50 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000	.0013	-.0001	-.0004	-.0124	-.0017	.0000
Stddev	.0001	.0021	.0005	.0006	.0039	.0057	.0000
%RSD	68500.	160.0	591.9	159.6	31.29	332.5	93.72
#1	.0001	.0034	.0005	-.0011	-.0157	-.0081	.0001
#2	-.0000	.0012	-.0003	-.0004	-.0134	.0002	.0000
#3	-.0001	-.0007	-.0005	.0002	-.0081	.0027	.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14184.	1858.5
Stddev	53.	4.6
%RSD	.37045	.25018
#1	14124.	1858.8
#2	14222.	1863.0
#3	14206.	1853.7

Sample Name: LLC Acquired: 8/17/2016 14:03:30 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0111	.2095	.0087	.0990	.0501	.0051	.2021	1.029	.0046
Stddev	.0005	.0028	.0005	.0031	.0003	.0001	.0021	.010	.0002
%RSD	4.297	1.337	5.859	3.111	.5147	1.026	1.052	.9362	3.913
#1	.0116	.2066	.0090	.0963	.0500	.0051	.2029	1.026	.0047
#2	.0107	.2121	.0090	.0983	.0499	.0051	.1997	1.022	.0048
#3	.0110	.2099	.0081	.1023	.0504	.0052	.2038	1.040	.0044
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0507	.0099	.0261	.0993	4.997	.0527	1.011	.0149	.0384
Stddev	.0005	.0001	.0010	.0013	.050	.0014	.014	.0001	.0005
%RSD	.9303	.6566	3.946	1.260	.9995	2.694	1.411	.7646	1.264
#1	.0507	.0099	.0252	.0989	4.967	.0542	1.007	.0148	.0385
#2	.0502	.0098	.0272	.0983	4.968	.0527	.9988	.0150	.0379
#3	.0511	.0100	.0258	.1007	5.054	.0513	1.026	.0148	.0389
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.028	.0410	.2443	.0096	4.555	.0102	.0125	.3633	.0988
Stddev	.021	.0003	.0027	.0005	.040	.0010	.0024	.0024	.0013
%RSD	2.086	.8199	1.095	5.040	.8746	9.393	19.21	.6572	1.304
#1	1.019	.0411	.2422	.0098	4.548	.0104	.0144	.3631	.0986
#2	1.013	.0406	.2435	.0091	4.519	.0111	.0135	.3611	.0977
#3	1.053	.0413	.2473	.0100	4.598	.0092	.0098	.3658	.1002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: LLC Acquired: 8/17/2016 14:03:30 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0052	.1917	.0195	.0219	.4989	.0502	.0193
Stddev	.0001	.0049	.0008	.0013	.0025	.0042	.0002
%RSD	2.396	2.566	3.980	5.777	.5106	8.354	1.065
#1	.0052	.1865	.0197	.0215	.4978	.0455	.0192
#2	.0054	.1963	.0202	.0234	.4971	.0536	.0192
#3	.0052	.1923	.0187	.0210	.5018	.0514	.0196
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14278.	1874.8
Stddev	128.	12.4
%RSD	.89772	.66157
#1	14370.	1866.5
#2	14334.	1889.1
#3	14132.	1868.9

Sample Name: ICSA Acquired: 8/17/2016 14:08:03 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0005	100.7	.0050	W -.0178	.0001	.0001	.0025	96.55
Stddev	.0005	.8	.0018	.0021	.0003	.0002	.0015	.93
%RSD	87.02	.8065	36.89	12.02	269.4	250.5	61.82	.9610
#1	-.0001	100.8	.0047	-.0185	.0004	.0003	.0043	95.60
#2	-.0004	99.90	.0033	-.0196	-.0002	-.0001	.0017	97.45
#3	-.0010	101.5	.0070	-.0155	.0001	.0000	.0015	96.62
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Warn	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit				.0045				
Low Limit				-.0045				

Elem	Cd2288	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000	.0010	-.0022	-.0059	99.63	100.8	F .0524	100.5
Stddev	.0001	.0004	.0001	.0019	.84	.6	.0041	.8
%RSD	411.1	41.30	2.910	31.87	.8461	.6320	7.867	.8054
#1	.0000	.0015	-.0022	-.0081	99.61	100.8	.0529	100.9
#2	-.0001	.0008	-.0021	-.0048	98.79	100.2	.0481	99.55
#3	.0001	.0007	-.0022	-.0049	100.5	101.4	.0563	101.0
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit							.0500	
Low Limit							-.0500	

Elem	Mn2576	Mo2020	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0018	-.0011	100.3	.0010	96.36	-.0066	98.32	.0073
Stddev	.0004	.0003	.7	.0002	.84	.0008	1.06	.0011
%RSD	20.58	24.57	.7027	23.90	.8699	12.80	1.077	14.61
#1	.0022	-.0008	100.4	.0009	95.47	-.0057	97.24	.0067
#2	.0016	-.0013	99.59	.0008	97.13	-.0072	99.36	.0066
#3	.0016	-.0010	101.0	.0012	96.49	-.0070	98.38	.0085
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Sample Name: ICSA Acquired: 8/17/2016 14:08:03 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960	Si2516	Sn1899	Sr4077	Th2832	Ti3349	Tl1908	U_3670
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0026	-.0314	-.0004	.0010	.0620	.0015	-.0005	.1451
Stddev	.0030	.0113	.0004	.0001	.0003	.0007	.0024	.0111
%RSD	116.2	35.94	112.3	10.50	.4622	46.66	488.6	7.639
#1	-.0061	-.0184	-.0005	.0010	.0616	.0016	-.0020	.1366
#2	-.0009	-.0369	-.0007	.0008	.0622	.0022	-.0018	.1411
#3	-.0008	-.0389	.0001	.0010	.0620	.0008	.0023	.1577
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None
High Limit								
Low Limit								

Elem	V_2908	Zn2138
Units	ppm	ppm
Avg	.0067	-.0061
Stddev	.0009	.0002
%RSD	13.89	3.279
#1	.0076	-.0062
#2	.0057	-.0059
#3	.0067	-.0062
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13095.	1782.1
Stddev	109.	23.2
%RSD	.82881	1.3040
#1	13218.	1755.6
#2	13012.	1791.8
#3	13055.	1799.0

Sample Name: ICSAB Acquired: 8/17/2016 14:12:37 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5446	101.1	2.396	.4917	2.498	2.580	2.444	96.71	2.444
Stddev	.0051	.9	.010	.0131	.022	.026	.008	.29	.005
%RSD	.9322	.9386	.4339	2.656	.8756	.9941	.3189	.2963	.2242
#1	.5447	100.1	2.398	.4784	2.476	2.554	2.446	97.00	2.449
#2	.5495	101.2	2.384	.4922	2.497	2.581	2.435	96.71	2.438
#3	.5394	102.0	2.405	.5045	2.520	2.605	2.450	96.42	2.445
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.425	2.433	2.425	99.32	101.3	2.591	101.1	2.463	.4824
Stddev	.003	.004	.005	.78	1.0	.029	.9	.011	.0005
%RSD	.1401	.1742	.1976	.7887	1.036	1.123	.8569	.4491	.1122
#1	2.428	2.437	2.427	98.50	100.2	2.561	100.2	2.451	.4830
#2	2.422	2.429	2.419	99.41	101.4	2.591	101.1	2.468	.4821
#3	2.423	2.432	2.428	100.1	102.3	2.620	101.9	2.472	.4821
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	100.5	2.422	95.96	2.404	97.41	.4953	.4775	2.436	2.391
Stddev	.9	.005	.20	.002	.39	.0021	.0041	.024	.003
%RSD	.9103	.2129	.2059	.0914	.3999	.4282	.8487	.9646	.1423
#1	99.48	2.428	96.18	2.405	97.52	.4977	.4787	2.409	2.392
#2	100.6	2.420	95.84	2.405	96.97	.4944	.4730	2.455	2.393
#3	101.3	2.419	95.84	2.401	97.72	.4937	.4808	2.442	2.387
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: ICSAB Acquired: 8/17/2016 14:12:37 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.540	2.572	2.493	.4894	2.574	2.538	2.464
Stddev	.026	.022	.021	.0014	.041	.024	.007
%RSD	1.011	.8679	.8515	.2865	1.579	.9277	.2971
#1	2.515	2.576	2.473	.4888	2.584	2.515	2.472
#2	2.541	2.592	2.490	.4885	2.610	2.537	2.458
#3	2.566	2.548	2.515	.4910	2.530	2.562	2.464
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12801.	1758.0
Stddev	168.	24.2
%RSD	1.3121	1.3767
#1	12706.	1784.3
#2	12702.	1736.6
#3	12995.	1753.3

Sample Name: LDR Acquired: 8/17/2016 14:16:48 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.945	102.7	9.563	2.036	10.16	10.11	9.682	96.75	9.692
Stddev	.003	.6	.244	.021	.02	.46	.242	2.30	.235
%RSD	.1580	.5794	2.552	1.039	.1637	4.545	2.502	2.376	2.424
#1	1.948	102.6	9.631	2.028	10.16	9.622	9.767	97.58	9.766
#2	1.942	102.2	9.292	2.021	10.14	10.16	9.409	94.16	9.429
#3	1.944	103.3	9.765	2.061	10.17	10.54	9.871	98.53	9.881
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.648	9.656	9.622	99.74	103.0	10.29	102.0	10.07	1.935
Stddev	.242	.236	.243	.52	.5	.05	.8	.05	.048
%RSD	2.506	2.449	2.528	.5238	.4775	.4981	.8084	.5166	2.497
#1	9.731	9.735	9.687	99.50	103.0	10.29	102.0	10.05	1.952
#2	9.376	9.390	9.352	99.38	102.5	10.25	101.2	10.04	1.880
#3	9.838	9.843	9.826	100.3	103.5	10.35	102.9	10.13	1.972
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	102.0	9.619	96.24	9.560	97.45	1.977	1.905	10.09	9.557
Stddev	.6	.235	2.39	.237	2.46	.049	.053	.08	.243
%RSD	.5421	2.449	2.481	2.475	2.527	2.483	2.774	.7863	2.541
#1	101.9	9.699	96.99	9.628	98.35	1.997	1.922	10.03	9.626
#2	101.4	9.354	93.57	9.296	94.67	1.921	1.846	10.07	9.288
#3	102.5	9.804	98.16	9.754	99.34	2.013	1.947	10.18	9.758
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: LDR Acquired: 8/17/2016 14:16:48 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.927	10.13	10.14	1.918	9.952	10.25	9.703
Stddev	.155	.03	.03	.046	.013	.05	.240
%RSD	1.563	.2508	.3201	2.404	.1261	.5256	2.478
#1	9.755	10.11	10.14	1.932	9.938	10.25	9.785
#2	9.970	10.12	10.11	1.866	9.962	10.19	9.432
#3	10.06	10.16	10.18	1.955	9.956	10.30	9.891
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12512.	1741.0
Stddev	273.	62.5
%RSD	2.1827	3.5887
#1	12460.	1764.1
#2	12808.	1788.6
#3	12269.	1670.2

Sample Name: CCVL Acquired: 8/17/2016 14:21:15 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0108	.2168	.0093	.1026	.0504	.0050	.2013	1.032	.0046
Stddev	.0003	.0046	.0004	.0063	.0004	.0002	.0011	.002	.0002
%RSD	2.474	2.127	4.505	6.182	.7853	4.299	.5553	.2062	3.713
#1	.0105	.2181	.0090	.1033	.0502	.0048	.2002	1.031	.0048
#2	.0109	.2117	.0098	.1085	.0502	.0051	.2024	1.031	.0045
#3	.0109	.2206	.0091	.0959	.0509	.0052	.2015	1.035	.0047
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0504	.0099	.0239	.1008	5.131	.0558	1.034	.0154	.0386
Stddev	.0003	.0002	.0009	.0038	.043	.0029	.025	.0010	.0001
%RSD	.5172	2.281	3.647	3.780	.8469	5.164	2.442	6.452	.3697
#1	.0501	.0099	.0230	.1049	5.181	.0549	1.015	.0165	.0386
#2	.0506	.0097	.0241	.1004	5.110	.0591	1.063	.0146	.0385
#3	.0506	.0101	.0247	.0973	5.103	.0536	1.025	.0150	.0388
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.077	.0406	.2420	.0110	4.532	.0095	.0109	.3879	.0962
Stddev	.020	.0001	.0018	.0012	.004	.0008	.0019	.0073	.0005
%RSD	1.860	.3265	.7557	11.24	.0929	8.349	17.81	1.872	.5050
#1	1.054	.0406	.2408	.0098	4.537	.0087	.0104	.3962	.0957
#2	1.087	.0406	.2411	.0122	4.531	.0103	.0092	.3824	.0965
#3	1.090	.0408	.2441	.0110	4.529	.0095	.0130	.3853	.0965
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCVL Acquired: 8/17/2016 14:21:15 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0051	.1898	.0215	.0215	.4728	.0541	.0192
Stddev	.0002	.0016	.0004	.0008	.0108	.0014	.0001
%RSD	3.482	.8667	1.964	3.897	2.278	2.568	.3618
#1	.0053	.1899	.0217	.0223	.4810	.0556	.0193
#2	.0049	.1913	.0218	.0215	.4606	.0537	.0191
#3	.0052	.1881	.0211	.0206	.4767	.0529	.0192
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13719.	1768.5
Stddev	22.	25.2
%RSD	.16355	1.4259
#1	13723.	1750.3
#2	13739.	1757.9
#3	13695.	1797.3

Sample Name: CCV Acquired: 8/17/2016 14:25:49 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.082	51.23	4.787	1.056	5.089	5.194	4.915	50.35	4.884
Stddev	.002	.28	.040	.013	.030	.032	.030	.37	.034
%RSD	.2090	.5430	.8427	1.271	.5945	.6211	.6043	.7446	.6980
#1	1.085	51.51	4.833	1.070	5.121	5.228	4.949	50.77	4.922
#2	1.082	50.95	4.755	1.043	5.061	5.164	4.902	50.04	4.855
#3	1.080	51.23	4.773	1.054	5.084	5.190	4.895	50.23	4.875
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.970	4.960	4.869	50.65	51.93	5.218	52.18	5.117	.9829
Stddev	.037	.037	.041	.30	.35	.022	.30	.028	.0076
%RSD	.7422	.7534	.8362	.5945	.6787	.4159	.5833	.5446	.7725
#1	5.011	5.002	4.916	50.98	52.26	5.237	52.46	5.149	.9914
#2	4.940	4.930	4.840	50.40	51.56	5.194	51.86	5.097	.9769
#3	4.959	4.949	4.852	50.56	51.96	5.222	52.22	5.106	.9803
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.00	4.964	49.98	4.923	48.58	.9845	.9530	5.284	4.885
Stddev	.24	.037	.38	.042	.30	.0052	.0109	.057	.040
%RSD	.4634	.7519	.7654	.8603	.6111	.5261	1.143	1.073	.8144
#1	52.21	5.005	50.41	4.971	48.91	.9904	.9647	5.339	4.929
#2	51.73	4.933	49.67	4.889	48.34	.9824	.9431	5.226	4.851
#3	52.05	4.953	49.86	4.910	48.48	.9807	.9511	5.286	4.874
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCV Acquired: 8/17/2016 14:25:49 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.150	5.067	5.079	1.010	5.050	5.142	4.943
Stddev	.031	.019	.035	.009	.004	.042	.033
%RSD	.5937	.3763	.6886	.9215	.0795	.8195	.6759
#1	5.181	5.088	5.119	1.021	5.054	5.188	4.980
#2	5.120	5.051	5.053	1.004	5.047	5.105	4.916
#3	5.149	5.062	5.064	1.005	5.048	5.133	4.934
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12829.	1691.9
Stddev	115.	6.1
%RSD	.89715	.36302
#1	12709.	1691.0
#2	12938.	1698.5
#3	12840.	1686.3

Sample Name: CCB Acquired: 8/17/2016 14:29:58 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0004	.0051	.0001	.0021	.0006	.0001	-.0000	-.0011	-.0001
Stddev	.0004	.0235	.0011	.0045	.0001	.0001	.0006	.0003	.0001
%RSD	88.20	461.5	1016.	216.0	15.38	53.64	10520.	27.99	67.51
#1	-.0008	.0290	.0013	-.0002	.0006	.0001	.0001	-.0014	-.0002
#2	-.0005	-.0179	-.0007	-.0008	.0005	.0001	.0005	-.0008	-.0000
#3	-.0000	.0041	-.0003	.0073	.0006	.0002	-.0007	-.0011	-.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0002	.0001	.0012	-.0014	-.0402	.0019	-.0449	.0005	-.0000
Stddev	.0001	.0000	.0008	.0051	.0393	.0013	.0038	.0007	.0001
%RSD	71.59	16.27	62.89	355.0	97.94	67.61	8.471	141.3	136.6
#1	-.0003	.0001	.0003	-.0067	-.0795	.0028	-.0486	.0013	.0000
#2	-.0000	.0001	.0018	-.0010	-.0401	.0004	-.0410	.0000	-.0001
#3	-.0002	.0001	.0015	.0034	-.0009	.0025	-.0451	.0002	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0411	-.0000	.0003	.0003	.0077	.0023	-.0021	-.0254	.0000
Stddev	.0205	.0001	.0005	.0006	.0018	.0015	.0029	.0054	.0002
%RSD	49.81	440.8	160.1	187.6	23.60	64.47	134.0	21.39	1194.
#1	.0633	.0001	-.0001	.0007	.0097	.0006	-.0025	-.0218	.0001
#2	.0230	-.0002	.0009	-.0004	.0063	.0033	.0009	-.0316	.0002
#3	.0369	-.0000	.0002	.0007	.0071	.0030	-.0048	-.0227	-.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: CCB Acquired: 8/17/2016 14:29:58 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0000	-.0016	.0009	-.0002	-.0049	-.0009	-.0001
Stddev	.0000	.0010	.0005	.0012	.0223	.0030	.0001
%RSD	97.62	61.45	57.23	609.1	453.9	336.1	70.97
#1	-.0001	-.0017	.0004	-.0004	-.0292	.0016	-.0003
#2	-.0000	-.0006	.0014	-.0013	.0149	.0000	-.0001
#3	-.0000	-.0025	.0010	.0011	-.0005	-.0042	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13905.	1725.4
Stddev	133.	4.9
%RSD	.95502	.28242
#1	13787.	1730.2
#2	13880.	1725.4
#3	14049.	1720.5

Sample Name: LB 160-264502/1-D Acquired: 8/17/2016 14:39:45 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment: 265083

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0014	.0471	.0001	.0680	.0010	.0000	.0013	.5118	-.0002
Stddev	.0007	.0248	.0023	.0049	.0001	.0002	.0013	.0039	.0001
%RSD	54.11	52.78	3492.	7.245	14.93	658.1	105.9	.7652	61.03
#1	.0021	.0562	.0015	.0675	.0010	-.0002	.0003	.5126	-.0003
#2	.0007	.0660	.0013	.0634	.0011	.0002	.0007	.5153	-.0001
#3	.0013	.0189	-.0026	.0732	.0008	.0000	.0028	.5076	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0004	.0006	.0016	.0063	.2297	.0120	.0905	-.0000	-.0001
Stddev	.0003	.0001	.0013	.0028	.1175	.0047	.0302	.0007	.0001
%RSD	82.92	9.907	82.39	44.20	51.17	39.07	33.34	10030.	105.5
#1	.0007	.0006	.0027	.0084	.1409	.0173	.1136	.0008	-.0001
#2	.0005	.0005	.0019	.0031	.1852	.0106	.1015	-.0004	-.0001
#3	.0000	.0006	.0002	.0074	.3630	.0082	.0563	-.0004	.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 566.8	.0002	.0069	.0007	.0872	.0022	-.0009	.0720	.0010
Stddev	15.7	.0001	.0006	.0005	.0009	.0019	.0005	.0074	.0004
%RSD	2.762	31.54	8.409	72.37	1.060	88.65	55.20	10.28	42.07
#1	563.6	.0002	.0074	.0011	.0873	.0040	-.0015	.0727	.0009
#2	583.8	.0001	.0063	.0002	.0881	.0025	-.0005	.0789	.0014
#3	553.0	.0002	.0069	.0007	.0863	.0001	-.0008	.0642	.0006
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: LB 160-264502/1-D Acquired: 8/17/2016 14:39:45 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment: 265083

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0022	.0083	-.0010	-.0033	-.0115	.0026	.0020
Stddev	.0002	.0006	.0014	.0007	.0197	.0022	.0001
%RSD	7.659	7.301	143.8	22.50	171.0	85.37	4.367
#1	.0024	.0089	-.0023	-.0036	.0084	.0003	.0020
#2	.0022	.0077	-.0012	-.0024	-.0121	.0027	.0021
#3	.0021	.0084	.0005	-.0038	-.0309	.0048	.0020
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12337.	1729.7
Stddev	77.	35.6
%RSD	.62641	2.0593
#1	12283.	1765.7
#2	12304.	1694.5
#3	12426.	1728.8

Sample Name: LCS 160-265083/2-A Acquired: 8/17/2016 14:44:32 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2266	9.972	1.002	F 2.088	.9943	1.018	.9950	10.82	1.008
Stddev	.0008	.074	.014	.020	.0074	.007	.0151	.11	.010
%RSD	.3462	.7470	1.437	.9418	.7450	.6819	1.517	1.052	1.020
#1	.2259	9.905	.9883	2.077	.9929	1.014	.9796	10.71	.9973
#2	.2275	10.05	1.017	2.111	1.002	1.026	1.010	10.94	1.018
#3	.2264	9.958	.9999	2.077	.9877	1.014	.9956	10.81	1.008
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit				2.000					
Low Limit				-500.0					

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.017	1.016	.9811	9.903	10.58	1.031	9.993	.9875	.4928
Stddev	.011	.012	.0083	.068	.08	.008	.048	.0083	.0052
%RSD	1.097	1.167	.8466	.6834	.7916	.8127	.4788	.8366	1.052
#1	1.006	1.004	.9737	9.893	10.51	1.024	9.944	.9841	.4875
#2	1.028	1.028	.9901	9.975	10.67	1.040	10.04	.9969	.4979
#3	1.016	1.016	.9794	9.841	10.56	1.029	9.994	.9815	.4929
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 535.2	1.026	1.151	.9897	10.33	.5239	.5073	5.026	.9953
Stddev	8.5	.011	.012	.0092	.10	.0064	.0086	.051	.0095
%RSD	1.586	1.037	1.025	.9265	1.001	1.226	1.697	1.009	.9576
#1	528.1	1.015	1.140	.9803	10.24	.5177	.5000	4.999	.9863
#2	544.6	1.036	1.164	.9986	10.44	.5305	.5168	5.085	1.005
#3	532.9	1.026	1.150	.9901	10.31	.5234	.5052	4.995	.9943
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: LCS 160-265083/2-A Acquired: 8/17/2016 14:44:32 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.009	1.031	1.005	.1955	.9657	1.016	1.037
Stddev	.006	.003	.007	.0033	.0182	.006	.012
%RSD	.6325	.2655	.6921	1.692	1.883	.5538	1.107
#1	1.009	1.028	1.001	.1919	.9582	1.015	1.025
#2	1.015	1.034	1.013	.1983	.9525	1.022	1.048
#3	1.002	1.030	1.001	.1964	.9865	1.011	1.036
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12417.	1748.5
Stddev	117.	34.4
%RSD	.94507	1.9676
#1	12552.	1786.3
#2	12356.	1740.0
#3	12342.	1719.1

Sample Name: 160-18570-C-1-D Acquired: 8/17/2016 14:48:52 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0013	.5950	.0005	.0729	.2350	.0003	-.0008	43.41	.0003
Stddev	.0005	.0156	.0022	.0046	.0004	.0001	.0020	.84	.0001
%RSD	42.73	2.618	416.9	6.353	.1817	43.48	236.1	1.933	26.80
#1	.0015	.5850	.0013	.0709	.2347	.0004	-.0023	44.14	.0002
#2	.0017	.5870	-.0019	.0696	.2347	.0002	.0014	43.60	.0003
#3	.0007	.6129	.0022	.0782	.2355	.0003	-.0016	42.49	.0003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007	.0010	.0011	.3413	1.341	.0261	6.455	1.036	-.0004
Stddev	.0005	.0001	.0033	.0046	.097	.0031	.031	.008	.0001
%RSD	70.05	8.058	307.8	1.358	7.225	11.88	.4801	.7651	27.72
#1	.0004	.0011	.0039	.3371	1.230	.0273	6.436	1.029	-.0004
#2	.0012	.0010	-.0025	.3463	1.406	.0226	6.438	1.035	-.0003
#3	.0004	.0009	.0018	.3405	1.387	.0285	6.490	1.044	-.0005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 487.8	.0035	.0136	.0017	.2180	.0012	-.0007	2.125	-.0006
Stddev	8.8	.0001	.0012	.0004	.0039	.0007	.0031	.007	.0003
%RSD	1.807	4.113	8.841	23.98	1.778	62.05	437.6	.3289	51.51
#1	483.8	.0034	.0142	.0018	.2218	.0014	.0020	2.126	-.0008
#2	481.6	.0037	.0143	.0020	.2183	.0004	-.0040	2.118	-.0002
#3	497.8	.0035	.0122	.0012	.2140	.0018	-.0001	2.132	-.0007
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18570-C-1-D Acquired: 8/17/2016 14:48:52 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0718	.0069	.0158	-.0002	-.0203	.0012	.0040
Stddev	.0005	.0014	.0008	.0012	.0110	.0028	.0001
%RSD	.6627	20.45	4.792	620.0	54.15	240.2	2.987
#1	.0716	.0073	.0150	-.0015	-.0256	.0024	.0040
#2	.0714	.0082	.0158	.0006	-.0077	.0032	.0041
#3	.0723	.0054	.0165	.0003	-.0277	-.0021	.0039
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12488.	1788.8
Stddev	118.	30.6
%RSD	.94757	1.7122
#1	12429.	1824.0
#2	12411.	1774.0
#3	12624.	1768.4

Sample Name: 160-18570-C-1-DSD@5 Acquired: 8/17/2016 14:53:37 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002	.1398	.0002	.0145	.0484	-.0001	.0021	9.110	.0001
Stddev	.0004	.0080	.0011	.0029	.0005	.0000	.0008	.058	.0001
%RSD	252.0	5.721	640.5	20.08	1.088	29.99	39.64	.6338	209.0
#1	-.0000	.1313	.0015	.0169	.0486	-.0002	.0019	9.161	.0001
#2	-.0001	.1408	-.0005	.0152	.0488	-.0001	.0013	9.121	-.0001
#3	.0006	.1472	-.0005	.0113	.0478	-.0001	.0029	9.047	.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	.0003	.0012	.0715	.2475	.0076	1.322	.2150	.0001
Stddev	.0002	.0001	.0009	.0020	.1044	.0017	.028	.0035	.0002
%RSD	222.3	31.15	71.53	2.770	42.17	21.89	2.086	1.609	378.3
#1	.0001	.0003	.0013	.0719	.3625	.0093	1.354	.2189	-.0002
#2	-.0001	.0002	.0021	.0694	.2213	.0072	1.305	.2122	.0002
#3	.0002	.0004	.0003	.0733	.1587	.0061	1.307	.2140	.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 111.0	.0007	.0022	.0008	.0482	.0020	-.0011	.4276	-.0001
Stddev	1.1	.0003	.0006	.0008	.0008	.0003	.0011	.0167	.0006
%RSD	.9558	38.09	27.73	101.8	1.610	13.55	100.3	3.911	665.8
#1	112.3	.0005	.0023	.0004	.0484	.0020	-.0021	.4088	.0006
#2	110.4	.0007	.0016	.0016	.0474	.0022	-.0014	.4409	-.0006
#3	110.4	.0011	.0028	.0002	.0489	.0017	.0001	.4329	-.0004
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18570-C-1-DSD@5 Acquired: 8/17/2016 14:53:37 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0147	.0002	.0024	-.0005	-.0313	.0077	.0011
Stddev	.0002	.0020	.0024	.0016	.0050	.0041	.0000
%RSD	1.437	938.8	101.2	354.9	16.02	53.73	3.780
#1	.0149	-.0021	.0051	.0012	-.0369	.0038	.0011
#2	.0147	.0009	.0012	-.0021	-.0272	.0073	.0011
#3	.0145	.0019	.0008	-.0005	-.0298	.0120	.0010
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13395.	1767.6
Stddev	116.	2.6
%RSD	.86712	.14634
#1	13275.	1766.1
#2	13401.	1766.3
#3	13507.	1770.6

Sample Name: 160-18570-C-1-E MS Acquired: 8/17/2016 14:58:15 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2191	10.36	.9798	F 2.035	1.198	.9953	.9709	51.87	.9800
Stddev	.0004	.14	.0117	.027	.013	.0117	.0086	.48	.0104
%RSD	.1643	1.383	1.198	1.342	1.101	1.174	.8863	.9269	1.056
#1	.2194	10.24	.9756	2.007	1.185	.9831	.9687	51.82	.9768
#2	.2192	10.32	.9707	2.035	1.200	.9965	.9637	51.42	.9715
#3	.2187	10.52	.9930	2.062	1.211	1.006	.9804	52.38	.9915
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit				2.000					
Low Limit				-500.0					

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9826	.9859	.9538	9.909	11.06	1.026	15.84	1.956	.4821
Stddev	.0081	.0098	.0091	.107	.19	.014	.26	.024	.0050
%RSD	.8267	.9933	.9591	1.076	1.742	1.334	1.633	1.221	1.044
#1	.9804	.9835	.9498	9.794	10.85	1.011	15.55	1.933	.4813
#2	.9759	.9774	.9474	9.929	11.10	1.029	15.90	1.955	.4775
#3	.9917	.9966	.9643	10.00	11.23	1.038	16.05	1.981	.4874
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 480.7	.9920	1.137	.9585	10.16	.5133	.4956	6.988	.9688
Stddev	4.1	.0085	.010	.0111	.10	.0072	.0059	.109	.0087
%RSD	.8601	.8594	.9164	1.154	1.012	1.409	1.193	1.564	.9022
#1	476.1	.9901	1.134	.9563	10.10	.5138	.4928	6.894	.9677
#2	484.1	.9845	1.128	.9487	10.11	.5059	.4915	6.962	.9606
#3	482.0	1.001	1.148	.9705	10.28	.5203	.5023	7.108	.9780
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18570-C-1-E MS Acquired: 8/17/2016 14:58:15 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.052	1.003	.9975	.1903	.9573	.9935	1.009
Stddev	.011	.007	.0114	.0016	.0087	.0165	.010
%RSD	1.024	.6537	1.140	.8186	.9135	1.661	.9566
#1	1.040	1.009	.9851	.1902	.9669	.9798	1.007
#2	1.054	.9962	.9999	.1888	.9549	.9889	1.000
#3	1.061	1.004	1.007	.1919	.9499	1.012	1.019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12856.	1868.9
Stddev	164.	30.2
%RSD	1.2759	1.6163
#1	12717.	1895.6
#2	13037.	1875.1
#3	12815.	1836.1

Sample Name: 160-18570-C-1-F MSD Acquired: 8/17/2016 15:02:35 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2349	11.24	1.046	F 2.198	1.291	1.083	1.033	54.11	1.047
Stddev	.0005	.07	.006	.017	.007	.007	.007	.29	.005
%RSD	.2121	.6572	.5878	.7815	.5324	.6060	.6962	.5294	.5060
#1	.2348	11.28	1.048	2.203	1.295	1.086	1.035	54.27	1.050
#2	.2355	11.29	1.052	2.212	1.295	1.088	1.038	54.27	1.049
#3	.2345	11.16	1.039	2.179	1.283	1.076	1.024	53.78	1.041
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit				2.000					
Low Limit				-500.0					

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.049	1.054	1.021	10.76	12.17	1.109	16.94	2.078	.4958
Stddev	.006	.005	.005	.08	.11	.004	.13	.012	.0024
%RSD	.5348	.4583	.5126	.7866	.9214	.3200	.7949	.5923	.4766
#1	1.053	1.057	1.026	10.78	12.14	1.113	16.88	2.088	.4977
#2	1.052	1.057	1.022	10.83	12.30	1.108	17.10	2.082	.4965
#3	1.042	1.049	1.016	10.66	12.08	1.106	16.85	2.064	.4932
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 501.8	1.060	1.217	1.025	10.81	.5264	.5265	7.281	.9951
Stddev	6.1	.005	.005	.005	.07	.0025	.0030	.086	.0036
%RSD	1.224	.5211	.3906	.5288	.6136	.4830	.5738	1.175	.3575
#1	507.1	1.064	1.220	1.028	10.86	.5279	.5296	7.322	.9964
#2	503.2	1.062	1.220	1.028	10.83	.5278	.5235	7.338	.9978
#3	495.0	1.054	1.212	1.019	10.73	.5235	.5266	7.182	.9910
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18570-C-1-F MSD Acquired: 8/17/2016 15:02:35 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.143	1.078	1.036	.2029	1.020	1.078	1.076
Stddev	.007	.002	.004	.0014	.012	.009	.006
%RSD	.6406	.2037	.3645	.6755	1.162	.8750	.5501
#1	1.144	1.081	1.039	.2016	1.019	1.084	1.080
#2	1.149	1.078	1.038	.2043	1.032	1.082	1.078
#3	1.135	1.076	1.032	.2028	1.009	1.067	1.069
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12326.	1775.8
Stddev	39.	8.0
%RSD	.31404	.45005
#1	12339.	1780.2
#2	12282.	1766.6
#3	12357.	1780.6

Sample Name: 160-18570-D-2-D Acquired: 8/17/2016 15:06:55 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002	.2870	.0011	.0705	.3065	.0002	.0008	92.72	.0003
Stddev	.0005	.0172	.0017	.0019	.0021	.0001	.0014	1.47	.0001
%RSD	259.7	5.994	163.0	2.702	.6895	64.41	165.5	1.591	38.56
#1	-.0003	.3016	.0030	.0696	.3079	.0001	.0012	91.08	.0002
#2	.0001	.2913	-.0004	.0726	.3040	.0002	-.0007	93.11	.0003
#3	.0008	.2680	.0006	.0691	.3075	.0003	.0020	93.95	.0004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005	.0007	-.0003	.1688	1.517	.0505	7.054	.7289	-.0001
Stddev	.0002	.0001	.0021	.0022	.049	.0016	.044	.0040	.0001
%RSD	38.30	13.82	822.0	1.315	3.220	3.181	.6235	.5538	52.44
#1	.0007	.0008	-.0026	.1699	1.461	.0501	7.026	.7290	-.0000
#2	.0005	.0006	.0007	.1663	1.551	.0492	7.032	.7248	-.0001
#3	.0003	.0008	.0012	.1703	1.539	.0523	7.105	.7329	-.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 487.8	.0029	.0103	-.0004	.3119	.0028	-.0025	1.625	.0001
Stddev	7.3	.0003	.0026	.0006	.0074	.0016	.0011	.021	.0002
%RSD	1.488	11.06	25.70	136.2	2.369	57.01	42.79	1.313	383.8
#1	479.7	.0027	.0134	-.0009	.3034	.0010	-.0022	1.601	.0002
#2	489.7	.0032	.0087	-.0006	.3171	.0041	-.0037	1.635	-.0002
#3	493.9	.0027	.0088	.0002	.3151	.0034	-.0016	1.640	.0002
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18570-D-2-D Acquired: 8/17/2016 15:06:55 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1549	.0083	.0090	-.0009	-.0205	-.0036	.0078
Stddev	.0006	.0021	.0013	.0012	.0042	.0049	.0002
%RSD	.4163	24.80	14.71	138.7	20.48	134.2	2.172
#1	.1549	.0092	.0087	-.0023	-.0243	-.0063	.0076
#2	.1542	.0098	.0078	-.0004	-.0160	-.0066	.0077
#3	.1555	.0060	.0104	.0000	-.0212	.0020	.0079
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12387.	1761.3
Stddev	112.	66.3
%RSD	.90314	3.7614
#1	12449.	1821.6
#2	12454.	1772.0
#3	12258.	1690.4

Sample Name: 160-18430-B-2-B@2 Acquired: 8/17/2016 15:11:39 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007	.2072	.0005	.0214	.0243	-.0000	.0009	10.54	.0132
Stddev	.0008	.0155	.0010	.0046	.0005	.0001	.0025	.26	.0004
%RSD	125.4	7.499	226.0	21.59	1.968	1263.	288.8	2.482	2.800
#1	.0001	.2183	.0015	.0245	.0248	-.0002	-.0002	10.48	.0131
#2	.0003	.1894	.0004	.0161	.0238	.0000	.0037	10.32	.0128
#3	.0016	.2138	-.0006	.0236	.0244	.0001	-.0009	10.83	.0136
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0991	.0021	.1133	.3274	1.386	.0475	.9938	.0501	.0349
Stddev	.0025	.0001	.0037	.0063	.084	.0037	.0296	.0008	.0009
%RSD	2.535	4.434	3.281	1.938	6.064	7.727	2.978	1.555	2.668
#1	.0984	.0021	.1103	.3347	1.473	.0496	1.028	.0510	.0346
#2	.0970	.0020	.1121	.3232	1.306	.0497	.9786	.0495	.0341
#3	.1019	.0022	.1175	.3243	1.378	.0433	.9749	.0499	.0359
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 269.2	.0242	.1907	.0018	.6484	.0043	.0011	.5410	.0002
Stddev	9.6	.0006	.0054	.0006	.0168	.0016	.0022	.0041	.0007
%RSD	3.552	2.470	2.840	32.56	2.590	37.21	208.6	.7646	355.2
#1	275.2	.0241	.1896	.0022	.6434	.0034	-.0015	.5453	.0006
#2	258.2	.0237	.1860	.0020	.6347	.0061	.0023	.5408	-.0006
#3	274.2	.0249	.1967	.0011	.6672	.0034	.0024	.5370	.0006
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18430-B-2-B@2 Acquired: 8/17/2016 15:11:39 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0367	.0080	.0001	-.0007	-.0106	.0013	.9223
Stddev	.0003	.0024	.0005	.0007	.0109	.0011	.0247
%RSD	.7167	30.15	410.4	104.8	103.3	88.20	2.674
#1	.0370	.0093	.0006	-.0004	-.0020	.0022	.9146
#2	.0366	.0052	-.0002	-.0015	-.0229	.0016	.9024
#3	.0366	.0094	-.0001	-.0002	-.0069	.0000	.9499
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13264.	1819.4
Stddev	160.	55.9
%RSD	1.2094	3.0734
#1	13254.	1755.2
#2	13429.	1845.4
#3	13109.	1857.5

Sample Name: 160-18430-B-2-C MS@2 Acquired: 8/17/2016 15:16:19 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1126	5.305	.4947	1.044	.5300	.5243	.4983	15.64	.5108
Stddev	.0007	.054	.0171	.004	.0031	.0029	.0197	.46	.0168
%RSD	.5992	1.010	3.466	.3637	.5916	.5466	3.950	2.946	3.283
#1	.1130	5.263	.4781	1.047	.5270	.5210	.4800	15.23	.4952
#2	.1129	5.366	.4937	1.040	.5332	.5263	.4959	15.55	.5088
#3	.1118	5.288	.5124	1.045	.5299	.5255	.5191	16.14	.5285
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6081	.5100	.6097	5.391	6.480	.5676	6.007	.5493	.2801
Stddev	.0190	.0162	.0212	.030	.096	.0004	.066	.0040	.0090
%RSD	3.131	3.168	3.476	.5567	1.488	.0782	1.090	.7327	3.217
#1	.5904	.4952	.5896	5.363	6.540	.5678	5.983	.5470	.2720
#2	.6058	.5076	.6078	5.422	6.532	.5679	6.080	.5539	.2784
#3	.6282	.5272	.6318	5.388	6.369	.5671	5.956	.5469	.2898
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 274.8	.5378	.7518	.5009	5.662	.2636	.2514	3.006	.4995
Stddev	8.7	.0169	.0250	.0143	.199	.0088	.0062	.013	.0167
%RSD	3.173	3.148	3.327	2.860	3.519	3.345	2.465	.4336	3.340
#1	269.9	.5226	.7286	.4874	5.481	.2562	.2475	2.999	.4848
#2	284.8	.5347	.7484	.4995	5.630	.2612	.2483	2.998	.4961
#3	269.6	.5561	.7783	.5159	5.875	.2733	.2586	3.021	.5177
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18430-B-2-C MS@2 Acquired: 8/17/2016 15:16:19 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5493	.5184	.5102	.0988	.4927	.5174	1.426
Stddev	.0040	.0017	.0044	.0041	.0268	.0031	.047
%RSD	.7210	.3261	.8710	4.192	5.434	.6030	3.271
#1	.5456	.5180	.5059	.0944	.4946	.5160	1.383
#2	.5535	.5202	.5148	.0994	.5185	.5210	1.419
#3	.5487	.5169	.5099	.1026	.4651	.5153	1.476
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12993.	1750.7
Stddev	206.	8.7
%RSD	1.5829	.49522
#1	13107.	1749.3
#2	13116.	1759.9
#3	12755.	1742.7

Sample Name: 160-18430-B-2-DMSD@2 Acquired: 8/17/2016 15:20:39 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1116	5.290	.4878	1.040	.5311	.5245	.4880	15.50	.5063
Stddev	.0009	.069	.0042	.008	.0040	.0041	.0044	.15	.0052
%RSD	.7629	1.297	.8595	.7695	.7540	.7757	.9092	.9491	1.034
#1	.1124	5.212	.4924	1.035	.5265	.5198	.4924	15.66	.5118
#2	.1107	5.322	.4868	1.036	.5334	.5266	.4881	15.49	.5060
#3	.1117	5.338	.4841	1.049	.5333	.5271	.4835	15.36	.5013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6027	.5054	.6022	5.387	6.432	.5656	5.979	.5478	.2781
Stddev	.0057	.0046	.0072	.034	.070	.0020	.050	.0038	.0025
%RSD	.9438	.9196	1.188	.6375	1.081	.3586	.8379	.6969	.9074
#1	.6082	.5103	.6092	5.349	6.352	.5654	5.923	.5434	.2807
#2	.6030	.5050	.6023	5.415	6.460	.5637	5.996	.5503	.2779
#3	.5968	.5010	.5949	5.396	6.483	.5677	6.018	.5497	.2756
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 266.9	.5328	.7451	.4963	5.590	.2622	.2476	2.986	.4945
Stddev	2.0	.0054	.0067	.0046	.052	.0036	.0023	.020	.0041
%RSD	.7425	1.013	.8927	.9267	.9249	1.384	.9312	.6794	.8242
#1	269.0	.5384	.7525	.5011	5.646	.2655	.2503	2.966	.4987
#2	265.1	.5323	.7432	.4959	5.581	.2627	.2464	2.985	.4943
#3	266.5	.5276	.7396	.4919	5.543	.2583	.2462	3.006	.4905
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18430-B-2-DMSD@2 Acquired: 8/17/2016 15:20:39 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5505	.5195	.5140	.0975	.4853	.5172	1.412
Stddev	.0048	.0057	.0022	.0005	.0258	.0111	.013
%RSD	.8692	1.098	.4221	.5521	5.321	2.146	.9143
#1	.5450	.5170	.5120	.0972	.4806	.5047	1.425
#2	.5538	.5155	.5135	.0971	.4622	.5259	1.410
#3	.5526	.5260	.5163	.0981	.5132	.5210	1.400
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12982.	1789.6
Stddev	138.	19.6
%RSD	1.0650	1.0952
#1	12880.	1767.0
#2	12927.	1798.9
#3	13139.	1802.8

Sample Name: CCVL Acquired: 8/17/2016 15:25:02 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0105	.2070	.0083	.1050	.0507	.0051	.2054	1.053	.0048
Stddev	.0005	.0057	.0004	.0064	.0004	.0002	.0069	.022	.0001
%RSD	4.888	2.760	5.314	6.132	.7841	4.324	3.383	2.059	2.849
#1	.0100	.2005	.0079	.1111	.0512	.0054	.1976	1.030	.0047
#2	.0104	.2094	.0088	.0982	.0504	.0050	.2074	1.073	.0050
#3	.0110	.2112	.0082	.1055	.0505	.0050	.2111	1.055	.0048
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0518	.0102	.0267	.1017	5.368	.0524	.9896	.0150	.0396
Stddev	.0010	.0001	.0017	.0063	.097	.0015	.0442	.0004	.0011
%RSD	1.971	1.255	6.565	6.167	1.811	2.805	4.462	2.967	2.880
#1	.0506	.0101	.0249	.0992	5.478	.0511	.9804	.0154	.0383
#2	.0526	.0103	.0267	.1088	5.329	.0522	1.038	.0150	.0405
#3	.0521	.0102	.0284	.0971	5.296	.0540	.9507	.0145	.0399
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1.338	.0417	.2505	.0104	4.638	.0100	.0130	.3857	.1001
Stddev	.030	.0008	.0064	.0007	.132	.0005	.0024	.0034	.0027
%RSD	2.250	1.824	2.545	7.021	2.853	4.778	18.64	.8710	2.719
#1	1.367	.0408	.2434	.0104	4.492	.0095	.0102	.3827	.0977
#2	1.341	.0423	.2556	.0112	4.749	.0104	.0147	.3851	.1031
#3	1.307	.0419	.2525	.0097	4.673	.0101	.0139	.3893	.0995
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	1.000								
Range	30.00%								

Sample Name: CCVL Acquired: 8/17/2016 15:25:02 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0052	.1898	.0210	.0222	.4834	.0520	.0194
Stddev	.0001	.0005	.0002	.0015	.0053	.0011	.0004
%RSD	.9837	.2574	.7401	6.764	1.105	2.148	2.280
#1	.0051	.1893	.0209	.0215	.4773	.0507	.0189
#2	.0052	.1900	.0212	.0239	.4862	.0523	.0197
#3	.0051	.1902	.0209	.0212	.4868	.0529	.0196
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13609.	1719.8
Stddev	113.	31.6
%RSD	.83106	1.8353
#1	13668.	1684.6
#2	13680.	1729.0
#3	13478.	1745.7

Sample Name: CCV Acquired: 8/17/2016 15:29:34 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.078	51.39	4.730	1.034	5.109	5.210	4.824	49.27	4.807
Stddev	.010	.20	.047	.009	.019	.014	.042	.39	.047
%RSD	.8958	.3846	.9913	.8687	.3689	.2614	.8608	.7864	.9834
#1	1.080	51.62	4.694	1.044	5.130	5.225	4.794	49.12	4.779
#2	1.068	51.26	4.783	1.029	5.102	5.199	4.872	49.71	4.861
#3	1.087	51.28	4.713	1.029	5.094	5.207	4.808	48.98	4.780
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.883	4.879	4.807	50.36	52.04	5.218	51.47	5.051	.9697
Stddev	.043	.041	.059	.20	.11	.014	.24	.019	.0090
%RSD	.8733	.8494	1.224	.3982	.2164	.2711	.4586	.3839	.9299
#1	4.860	4.855	4.768	50.59	52.17	5.234	51.71	5.071	.9638
#2	4.933	4.926	4.874	50.27	51.95	5.213	51.24	5.051	.9801
#3	4.858	4.854	4.778	50.22	52.01	5.208	51.46	5.032	.9652
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.54	4.874	49.69	4.853	47.70	.9671	.9408	5.215	4.814
Stddev	.11	.044	.43	.046	.48	.0135	.0107	.024	.045
%RSD	.2074	.8957	.8646	.9534	1.007	1.401	1.133	.4506	.9314
#1	51.66	4.849	49.43	4.826	47.38	.9601	.9339	5.224	4.794
#2	51.44	4.924	50.19	4.907	48.25	.9828	.9531	5.232	4.866
#3	51.54	4.847	49.46	4.827	47.48	.9586	.9355	5.188	4.783
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCV Acquired: 8/17/2016 15:29:34 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.183	5.060	5.089	.9920	5.047	5.142	4.849
Stddev	.014	.047	.011	.0117	.044	.024	.042
%RSD	.2742	.9194	.2188	1.183	.8737	.4604	.8634
#1	5.199	5.092	5.102	.9859	5.064	5.168	4.824
#2	5.172	5.007	5.084	1.005	4.997	5.121	4.897
#3	5.178	5.082	5.082	.9844	5.081	5.138	4.826
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13136.	1724.6
Stddev	64.	4.2
%RSD	.48680	.24486
#1	13116.	1726.2
#2	13085.	1719.8
#3	13208.	1727.8

Sample Name: CCB Acquired: 8/17/2016 15:33:44 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0006	.0130	.0010	.0061	.0004	.0001	.0000	.0041	.0000
Stddev	.0007	.0346	.0002	.0072	.0003	.0003	.0020	.0015	.0003
%RSD	104.0	266.8	21.26	118.1	67.97	188.2	4422.	35.44	916.9
#1	-.0012	.0491	.0010	.0131	.0007	.0005	-.0018	.0025	-.0002
#2	.0001	.0097	.0013	-.0012	.0005	.0001	.0022	.0045	-.0001
#3	-.0007	-.0199	.0008	.0063	.0001	-.0001	-.0002	.0054	.0003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002	.0003	.0004	.0034	.0334	.0032	-.0088	.0007	.0000
Stddev	.0005	.0002	.0013	.0052	.1009	.0015	.0296	.0004	.0002
%RSD	216.2	85.72	324.0	156.0	302.3	46.14	336.9	60.66	788.6
#1	-.0002	.0000	.0016	.0085	.1008	.0015	.0064	.0009	-.0000
#2	.0001	.0004	-.0010	-.0020	.0820	.0043	-.0428	.0002	.0002
#3	.0007	.0004	.0006	.0035	-.0827	.0037	.0101	.0010	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1638	.0002	.0019	.0000	.0108	.0012	-.0031	-.0055	.0004
Stddev	.0329	.0003	.0024	.0005	.0020	.0012	.0009	.0051	.0002
%RSD	20.07	154.4	128.3	1199.	18.67	98.94	27.93	93.31	51.24
#1	.1568	-.0001	-.0009	-.0006	.0085	.0019	-.0023	-.0099	.0002
#2	.1350	.0003	.0031	.0003	.0121	-.0002	-.0041	.0002	.0006
#3	.1997	.0003	.0035	.0004	.0118	.0019	-.0030	-.0068	.0003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: CCB Acquired: 8/17/2016 15:33:44 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0001	-.0010	.0009	-.0008	-.0127	.0040	.0001
Stddev	.0001	.0025	.0019	.0003	.0069	.0035	.0001
%RSD	187.8	254.7	219.3	37.07	54.14	87.40	168.2
#1	.0000	-.0019	.0011	-.0011	-.0085	.0080	-.0000
#2	-.0002	-.0029	.0026	-.0007	-.0206	.0015	.0001
#3	-.0000	.0019	-.0011	-.0005	-.0089	.0025	.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13715.	1704.0
Stddev	161.	22.8
%RSD	1.1720	1.3396
#1	13555.	1697.3
#2	13713.	1685.2
#3	13877.	1729.4

Sample Name: 160-18430-B-3-B@2 Acquired: 8/17/2016 15:38:24 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002	.1502	-.0005	.0161	.0145	-.0001	-.0003	7.220	.0189
Stddev	.0004	.0095	.0008	.0071	.0004	.0001	.0014	.018	.0005
%RSD	156.7	6.319	174.9	43.92	2.702	149.4	462.1	.2460	2.886
#1	.0006	.1471	.0003	.0200	.0148	.0000	.0007	7.240	.0188
#2	.0003	.1426	-.0004	.0079	.0141	-.0001	.0003	7.211	.0185
#3	-.0002	.1608	-.0014	.0203	.0147	-.0001	-.0019	7.208	.0195
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0232	.0012	.1006	.2009	.9530	.0212	.8281	.0288	.0227
Stddev	.0003	.0003	.0024	.0019	.0757	.0041	.0144	.0008	.0004
%RSD	1.255	28.10	2.415	.9525	7.938	19.48	1.741	2.836	1.590
#1	.0230	.0009	.0983	.1989	.8909	.0178	.8345	.0279	.0231
#2	.0231	.0010	.1003	.2009	.9309	.0199	.8116	.0295	.0225
#3	.0236	.0015	.1031	.2028	1.037	.0258	.8381	.0290	.0225
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 263.8	.0161	.1114	.0025	.5573	.0047	.0038	.9233	.0006
Stddev	2.7	.0005	.0053	.0011	.0026	.0013	.0015	.0074	.0009
%RSD	1.006	2.882	4.755	42.89	.4691	28.72	38.35	.8061	148.0
#1	266.2	.0158	.1084	.0033	.5591	.0037	.0035	.9304	.0012
#2	260.9	.0158	.1083	.0013	.5543	.0062	.0025	.9155	-.0004
#3	264.2	.0166	.1176	.0028	.5585	.0041	.0054	.9241	.0010
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18430-B-3-B@2 Acquired: 8/17/2016 15:38:24 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0234	.0096	-.0001	-.0024	-.0114	-.0012	.5933
Stddev	.0003	.0007	.0003	.0004	.0040	.0075	.0016
%RSD	1.438	7.205	315.7	16.08	35.11	601.7	.2721
#1	.0236	.0104	-.0001	-.0020	-.0095	.0073	.5952
#2	.0230	.0094	.0002	-.0028	-.0086	-.0044	.5927
#3	.0235	.0091	-.0004	-.0025	-.0160	-.0066	.5921
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13007.	1782.4
Stddev	75.	17.8
%RSD	.57599	.99865
#1	13057.	1764.5
#2	13043.	1782.8
#3	12921.	1800.1

Sample Name: 160-18570-E-3-D Acquired: 8/17/2016 15:43:00 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002	.0708	-.0002	.0567	.1050	.0002	-.0024	16.72	.0001
Stddev	.0007	.0054	.0004	.0043	.0004	.0001	.0009	.38	.0003
%RSD	391.6	7.693	165.3	7.605	.3839	53.18	37.11	2.274	195.1
#1	.0009	.0730	-.0001	.0526	.1045	.0002	-.0028	16.72	-.0000
#2	-.0005	.0645	-.0006	.0612	.1052	.0001	-.0014	16.34	-.0000
#3	.0001	.0747	.0001	.0564	.1052	.0002	-.0030	17.10	.0004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0004	.0008	.0001	.0140	1.014	.0138	1.910	.2063	-.0001
Stddev	.0003	.0002	.0010	.0010	.108	.0026	.039	.0018	.0002
%RSD	79.21	20.07	723.5	7.141	10.60	18.57	2.020	.8915	161.9
#1	.0002	.0006	-.0010	.0138	1.058	.0108	1.955	.2047	.0001
#2	.0008	.0008	.0010	.0151	.8918	.0149	1.888	.2058	-.0003
#3	.0002	.0009	.0004	.0131	1.093	.0155	1.888	.2083	-.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 496.3	.0021	.0090	.0001	.3589	.0036	-.0013	.8673	.0005
Stddev	28.8	.0002	.0004	.0016	.0067	.0020	.0025	.0114	.0006
%RSD	5.806	10.76	3.998	1298.	1.875	55.99	202.1	1.311	117.1
#1	519.8	.0019	.0093	.0004	.3575	.0013	-.0009	.8639	-.0002
#2	464.1	.0022	.0086	.0015	.3530	.0052	.0011	.8800	.0007
#3	505.0	.0023	.0091	-.0016	.3663	.0043	-.0040	.8580	.0010
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18570-E-3-D Acquired: 8/17/2016 15:43:00 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0411	.0111	-.0006	-.0016	-.0173	.0019	.0096
Stddev	.0002	.0019	.0018	.0010	.0110	.0052	.0002
%RSD	.5448	17.52	279.6	59.67	63.39	279.6	1.920
#1	.0413	.0115	-.0016	-.0016	-.0276	.0050	.0096
#2	.0411	.0090	.0014	-.0007	-.0058	.0048	.0095
#3	.0409	.0128	-.0017	-.0026	-.0186	-.0041	.0098
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12494.	1764.7
Stddev	282.	43.6
%RSD	2.2609	2.4705
#1	12405.	1720.8
#2	12810.	1808.0
#3	12267.	1765.3

Sample Name: 160-18570-C-4-D Acquired: 8/17/2016 15:47:46 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000	.0705	-.0004	.0514	.1361	.0002	.0014	15.73	.0001
Stddev	.0003	.0127	.0008	.0024	.0015	.0001	.0020	.21	.0001
%RSD	891.9	18.02	216.2	4.594	1.127	35.17	147.9	1.361	97.61
#1	.0004	.0783	-.0001	.0537	.1345	.0001	.0037	15.80	.0002
#2	-.0002	.0773	-.0013	.0514	.1361	.0003	.0004	15.89	.0001
#3	-.0001	.0558	.0003	.0490	.1376	.0002	.0000	15.49	.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007	.0003	.0011	.0194	1.003	.0126	1.806	.5422	.0000
Stddev	.0001	.0001	.0002	.0026	.070	.0014	.052	.0100	.0001
%RSD	8.940	34.75	19.40	13.56	7.028	11.28	2.882	1.844	5025.
#1	.0006	.0005	.0009	.0164	.9423	.0112	1.767	.5358	.0001
#2	.0008	.0004	.0011	.0205	.9874	.0140	1.786	.5371	-.0001
#3	.0007	.0002	.0013	.0212	1.081	.0126	1.865	.5537	-.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 464.0	.0036	.0086	.0008	.2402	.0005	-.0012	.8727	.0002
Stddev	7.4	.0003	.0012	.0005	.0030	.0013	.0010	.0144	.0002
%RSD	1.588	7.017	13.59	60.77	1.268	242.1	84.32	1.644	72.04
#1	458.7	.0038	.0082	.0013	.2428	-.0004	-.0001	.8585	.0004
#2	461.0	.0037	.0077	.0005	.2409	-.0001	-.0015	.8726	.0002
#3	472.4	.0033	.0099	.0005	.2368	.0020	-.0021	.8872	.0001
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18570-C-4-D Acquired: 8/17/2016 15:47:46 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0383	.0096	.0005	-.0027	-.0154	-.0024	.0051
Stddev	.0005	.0037	.0012	.0005	.0130	.0034	.0001
%RSD	1.199	38.22	245.2	18.51	84.52	145.4	1.073
#1	.0379	.0113	.0006	-.0022	-.0167	.0016	.0051
#2	.0383	.0121	.0016	-.0029	-.0277	-.0047	.0050
#3	.0388	.0054	-.0007	-.0031	-.0018	-.0039	.0051
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12519.	1838.1
Stddev	92.	52.9
%RSD	.73692	2.8763
#1	12522.	1896.6
#2	12425.	1824.2
#3	12610.	1793.6

Sample Name: 160-18521-B-1-E Acquired: 8/17/2016 15:52:32 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0003	.1049	.0004	.0510	.3720	-.0001	-.0013	F 227.8	.0031
Stddev	.0002	.0163	.0015	.0018	.0002	.0003	.0020	5.4	.0002
%RSD	59.68	15.52	339.4	3.469	.0622	212.9	149.1	2.368	5.631
#1	-.0003	.1224	-.0000	.0516	.3723	.0001	-.0017	232.0	.0032
#2	-.0001	.1022	-.0008	.0524	.3719	-.0001	-.0032	229.6	.0032
#3	-.0004	.0901	.0021	.0490	.3718	-.0004	.0008	221.7	.0029
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit								100.0	
Low Limit								-500.0	

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002	.0008	.0036	.0313	1.310	.1288	5.394	.3314	.0008
Stddev	.0004	.0001	.0009	.0027	.040	.0037	.053	.0006	.0003
%RSD	150.0	17.77	24.82	8.588	3.084	2.839	.9846	.1677	36.39
#1	.0004	.0008	.0029	.0309	1.337	.1329	5.398	.3311	.0009
#2	.0005	.0009	.0046	.0341	1.264	.1259	5.339	.3311	.0005
#3	-.0002	.0006	.0032	.0288	1.330	.1276	5.445	.3321	.0010
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 496.6	.0113	.0320	-.0002	.2454	.0024	.0003	.4928	-.0007
Stddev	4.5	.0005	.0006	.0006	.0088	.0007	.0018	.0079	.0009
%RSD	.9038	4.235	1.717	277.5	3.592	28.94	522.2	1.598	140.1
#1	497.9	.0115	.0315	-.0009	.2526	.0018	-.0007	.5016	-.0005
#2	491.6	.0116	.0321	.0003	.2481	.0021	-.0007	.4865	.0002
#3	500.3	.0107	.0326	-.0001	.2356	.0031	.0024	.4902	-.0017
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18521-B-1-E Acquired: 8/17/2016 15:52:32 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3163	.0069	.0041	-.0029	.0230	.0004	.0899
Stddev	.0017	.0030	.0013	.0003	.0051	.0047	.0029
%RSD	.5439	44.41	32.52	11.72	22.07	1077.	3.271
#1	.3183	.0102	.0028	-.0032	.0280	-.0010	.0923
#2	.3153	.0061	.0042	-.0029	.0232	.0056	.0909
#3	.3154	.0043	.0055	-.0026	.0178	-.0033	.0866
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12452.	1720.4
Stddev	325.	3.4
%RSD	2.6113	.20046
#1	12247.	1716.7
#2	12282.	1721.1
#3	12827.	1723.5

Sample Name: 160-18521-D-2-E Acquired: 8/17/2016 15:57:25 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007	.0838	-.0009	.0614	.2774	-.0000	.0000	F 141.9	.0003
Stddev	.0010	.0214	.0007	.0032	.0018	.0000	.0020	.3	.0002
%RSD	146.2	25.51	80.90	5.199	.6324	11.14	5866.	.2168	46.74
#1	.0015	.0788	-.0007	.0598	.2772	-.0001	-.0007	142.2	.0002
#2	.0008	.1072	-.0003	.0594	.2792	-.0000	-.0016	141.8	.0003
#3	-.0004	.0653	-.0016	.0651	.2757	-.0000	.0023	141.6	.0005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit								100.0	
Low Limit								-500.0	

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	.0004	.0002	.0175	1.864	.0671	18.35	.0255	.0000
Stddev	.0004	.0000	.0010	.0059	.033	.0026	.00	.0005	.0001
%RSD	311.2	5.385	679.9	33.71	1.781	3.910	.0065	1.944	903.6
#1	-.0003	.0004	.0013	.0116	1.881	.0643	18.35	.0259	-.0000
#2	.0004	.0004	-.0004	.0234	1.885	.0674	18.35	.0249	.0001
#3	.0003	.0004	-.0005	.0175	1.826	.0695	18.35	.0256	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 469.0	.0010	.0090	-.0007	.1648	.0039	-.0014	.7779	-.0002
Stddev	5.3	.0002	.0009	.0008	.0018	.0017	.0035	.0031	.0006
%RSD	1.129	16.03	10.46	101.7	1.066	43.08	245.3	.3933	299.8
#1	475.1	.0009	.0099	-.0003	.1640	.0027	.0022	.7774	-.0007
#2	465.3	.0011	.0091	-.0003	.1668	.0058	-.0048	.7812	.0004
#3	466.6	.0012	.0080	-.0016	.1636	.0031	-.0016	.7751	-.0002
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18521-D-2-E Acquired: 8/17/2016 15:57:25 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2108	.0116	.0020	-.0024	-.0218	.0002	.0085
Stddev	.0007	.0022	.0019	.0012	.0232	.0028	.0001
%RSD	.3490	18.84	91.43	51.79	106.5	1172.	.8342
#1	.2110	.0126	.0009	-.0016	-.0287	.0020	.0086
#2	.2114	.0091	.0011	-.0017	.0041	.0016	.0085
#3	.2100	.0131	.0042	-.0038	-.0408	-.0029	.0085
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12684.	1838.1
Stddev	11.	28.7
%RSD	.09039	1.5641
#1	12685.	1837.3
#2	12672.	1867.3
#3	12695.	1809.8

Sample Name: LB 160-262767/1-D@10 Acquired: 8/17/2016 16:02:11 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment: 265075

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	.0032	-.0000	.0035	.0006	-.0001	.0007	.0185	-.0001
Stddev	.0007	.0109	.0005	.0041	.0001	.0001	.0010	.0022	.0000
%RSD	677.4	346.1	4168.	116.0	12.58	114.8	146.1	11.94	66.62
#1	-.0007	-.0093	.0003	-.0012	.0006	-.0002	.0018	.0172	-.0000
#2	.0005	.0113	.0003	.0059	.0005	-.0002	.0002	.0172	-.0001
#3	.0006	.0074	-.0006	.0058	.0007	.0000	.0000	.0210	-.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000	-.0001	.0001	.0058	.1248	-.0002	.0056	.0003	-.0001
Stddev	.0003	.0001	.0018	.0001	.0375	.0015	.0367	.0006	.0003
%RSD	609.2	153.2	1665.	2.173	30.04	611.1	660.9	194.9	470.6
#1	-.0002	-.0001	-.0018	.0059	.0889	.0013	-.0331	-.0004	-.0003
#2	-.0001	.0000	.0003	.0056	.1637	-.0005	.0099	.0007	-.0001
#3	.0004	-.0002	.0018	.0058	.1220	-.0015	.0399	.0007	.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 203.6	.0000	.0007	.0001	.0095	-.0003	-.0016	.0041	.0001
Stddev	1.6	.0002	.0001	.0003	.0017	.0010	.0003	.0027	.0009
%RSD	.7660	500.9	15.41	386.7	17.49	409.6	16.47	67.11	1212.
#1	201.8	.0001	.0008	.0002	.0114	-.0011	-.0018	.0022	.0011
#2	204.2	.0002	.0006	-.0003	.0090	-.0005	-.0013	.0027	-.0005
#3	204.7	-.0002	.0006	.0003	.0082	.0009	-.0018	.0072	-.0004
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: LB 160-262767/1-D@10 Acquired: 8/17/2016 16:02:11 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment: 265075

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	.0050	.0015	-.0013	.0013	-.0034	.0004
Stddev	.0001	.0019	.0012	.0003	.0050	.0020	.0001
%RSD	100.3	38.62	78.33	24.56	386.5	59.31	29.47
#1	.0002	.0057	.0029	-.0009	.0041	-.0037	.0003
#2	.0000	.0028	.0011	-.0014	-.0044	-.0012	.0005
#3	.0000	.0065	.0006	-.0015	.0042	-.0052	.0003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13362.	1819.8
Stddev	75.	22.9
%RSD	.56207	1.2561
#1	13355.	1803.4
#2	13290.	1810.0
#3	13440.	1845.9

Sample Name: LCS 160-265075/2A@10 Acquired: 8/17/2016 16:06:52 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0209	.9704	.0938	.1911	.0974	.0993	.0966	.9854	.0947
Stddev	.0003	.0089	.0007	.0077	.0016	.0010	.0026	.0065	.0004
%RSD	1.342	.9201	.7776	4.007	1.635	1.024	2.737	.6583	.3851
#1	.0212	.9759	.0940	.1968	.0992	.1004	.0995	.9923	.0951
#2	.0207	.9752	.0944	.1942	.0971	.0992	.0962	.9846	.0946
#3	.0208	.9601	.0929	.1824	.0960	.0984	.0943	.9795	.0945
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0976	.0968	.0946	.9781	1.025	.0984	.9333	.0944	.0469
Stddev	.0007	.0007	.0013	.0048	.090	.0028	.0233	.0009	.0003
%RSD	.6975	.7202	1.375	.4868	8.784	2.842	2.495	.9437	.7115
#1	.0983	.0975	.0949	.9835	1.104	.0983	.9405	.0954	.0470
#2	.0976	.0967	.0932	.9744	.9268	.0956	.9073	.0940	.0466
#3	.0969	.0961	.0957	.9764	1.044	.1011	.9522	.0938	.0472
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 185.9	.0972	.1077	.0963	.9497	.0488	.0461	.4764	.0964
Stddev	2.9	.0005	.0002	.0023	.0045	.0007	.0032	.0041	.0008
%RSD	1.580	.5521	.2066	2.366	.4739	1.489	7.038	.8678	.8316
#1	189.2	.0978	.1077	.0989	.9535	.0479	.0455	.4803	.0968
#2	185.0	.0969	.1074	.0950	.9447	.0492	.0432	.4721	.0969
#3	183.5	.0968	.1079	.0949	.9508	.0492	.0496	.4769	.0954
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: LCS 160-265075/2A@10 Acquired: 8/17/2016 16:06:52 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0984	.0998	.0956	.0192	.0886	.0983	.0965
Stddev	.0013	.0026	.0021	.0007	.0135	.0037	.0006
%RSD	1.303	2.577	2.226	3.903	15.21	3.758	.6607
#1	.0999	.0971	.0970	.0184	.0811	.1020	.0972
#2	.0977	.1022	.0966	.0193	.1042	.0982	.0961
#3	.0976	.1000	.0932	.0199	.0806	.0946	.0961
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13906.	1912.9
Stddev	246.	37.9
%RSD	1.7667	1.9817
#1	13730.	1869.1
#2	13802.	1936.5
#3	14186.	1932.9

Sample Name: 160-18348-E-1-F@10 Acquired: 8/17/2016 16:11:21 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003	1.439	.0032	.0279	.1096	.0001	.0017	27.15	.0027
Stddev	.0003	.012	.0011	.0043	.0008	.0001	.0017	.42	.0001
%RSD	81.01	.8469	34.72	15.37	.7741	97.36	100.5	1.530	5.150
#1	.0006	1.442	.0024	.0231	.1102	.0003	.0021	26.95	.0026
#2	.0003	1.449	.0045	.0315	.1086	.0000	.0033	27.63	.0028
#3	.0001	1.425	.0028	.0291	.1100	.0001	-.0002	26.87	.0028
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0079	.0203	.6178	5.958	.4566	.0151	4.040	.3808	.0009
Stddev	.0001	.0004	.0103	.012	.1060	.0010	.041	.0011	.0002
%RSD	1.433	1.944	1.665	.2036	23.21	6.461	1.022	.2906	21.93
#1	.0079	.0201	.6117	5.972	.4483	.0153	4.086	.3820	.0011
#2	.0079	.0207	.6297	5.951	.5666	.0160	4.027	.3798	.0008
#3	.0077	.0200	.6120	5.952	.3551	.0140	4.007	.3807	.0007
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 192.9	.0447	.1410	.9949	3.622	.0186	-.0010	2.123	.0073
Stddev	.9	.0008	.0012	.0143	.070	.0010	.0017	.011	.0003
%RSD	.4843	1.862	.8426	1.433	1.940	5.299	173.5	.4939	3.947
#1	194.0	.0443	.1399	.9882	3.588	.0177	.0010	2.129	.0075
#2	192.6	.0457	.1423	1.011	3.703	.0197	-.0021	2.111	.0070
#3	192.2	.0442	.1407	.9851	3.576	.0185	-.0017	2.129	.0075
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18348-E-1-F@10 Acquired: 8/17/2016 16:11:21 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1240	.0099	.0291	-.0001	.0032	.0162	1.444
Stddev	.0005	.0013	.0022	.0005	.0094	.0057	.025
%RSD	.4365	12.67	7.692	471.3	290.0	35.26	1.711
#1	.1246	.0102	.0310	-.0005	.0020	.0199	1.432
#2	.1235	.0110	.0297	-.0003	-.0055	.0096	1.472
#3	.1240	.0085	.0266	.0004	.0132	.0199	1.426
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13593.	1838.6
Stddev	84.	15.0
%RSD	.61902	.81410
#1	13647.	1822.1
#2	13496.	1851.3
#3	13637.	1842.3

Sample Name: 160-18348-E-1-FSD@50 Acquired: 8/17/2016 16:15:52 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	.3135	-.0002	.0030	.0227	-.0000	.0008	5.533	.0005
Stddev	.0006	.0021	.0019	.0043	.0005	.0001	.0005	.044	.0001
%RSD	547.1	.6734	1115.	141.6	2.172	180.6	68.09	.7906	18.36
#1	.0007	.3114	.0015	-.0016	.0232	-.0001	.0006	5.580	.0005
#2	-.0000	.3157	-.0022	.0069	.0223	.0000	.0014	5.494	.0004
#3	-.0004	.3135	.0002	.0038	.0226	-.0001	.0004	5.525	.0005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0014	.0041	.1269	1.237	.1351	.0022	.8464	.0798	.0001
Stddev	.0002	.0001	.0006	.006	.1109	.0018	.0165	.0008	.0001
%RSD	14.43	3.076	.4620	.5130	82.06	81.83	1.944	.9497	102.6
#1	.0015	.0042	.1273	1.244	.1682	.0012	.8637	.0806	.0002
#2	.0015	.0041	.1272	1.233	.2257	.0043	.8309	.0796	.0001
#3	.0011	.0040	.1262	1.234	.0115	.0011	.8445	.0792	.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	42.25	.0091	.0288	.2043	.7073	.0048	-.0007	.4412	.0011
Stddev	.44	.0001	.0005	.0016	.0032	.0007	.0012	.0050	.0003
%RSD	1.033	1.467	1.772	.7758	.4479	15.38	170.8	1.140	30.18
#1	42.75	.0092	.0285	.2061	.7107	.0041	.0002	.4460	.0008
#2	42.05	.0089	.0294	.2032	.7044	.0056	-.0021	.4415	.0014
#3	41.95	.0090	.0286	.2037	.7069	.0047	-.0003	.4360	.0009
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18348-E-1-FSD@50 Acquired: 8/17/2016 16:15:52 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0256	.0038	.0059	.0010	.0116	.0039	.2857
Stddev	.0002	.0008	.0008	.0007	.0162	.0050	.0017
%RSD	.9041	20.56	14.04	75.88	139.9	128.7	.5925
#1	.0257	.0047	.0059	.0018	-.0027	-.0016	.2875
#2	.0258	.0035	.0068	.0008	.0082	.0081	.2841
#3	.0253	.0033	.0051	.0003	.0291	.0050	.2854
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14078.	1824.4
Stddev	154.	42.2
%RSD	1.0907	2.3140
#1	13927.	1778.0
#2	14234.	1834.8
#3	14072.	1860.5

Sample Name: 160-18348-E-1-GMS@10 Acquired: 8/17/2016 16:20:27 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0212	2.467	.0991	.2237	.2035	.0990	.0960	28.34	.0990
Stddev	.0015	.043	.0028	.0043	.0034	.0016	.0032	.64	.0023
%RSD	7.058	1.749	2.787	1.912	1.664	1.578	3.316	2.245	2.312
#1	.0200	2.500	.0962	.2219	.2064	.1000	.0953	27.68	.0965
#2	.0208	2.483	.0993	.2286	.2045	.0998	.0933	28.39	.0993
#3	.0229	2.418	.1017	.2206	.1998	.0972	.0995	28.95	.1011
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1062	.1178	.7152	6.886	1.434	.1115	4.934	.4729	.0482
Stddev	.0025	.0026	.0163	.102	.089	.0015	.091	.0057	.0012
%RSD	2.396	2.210	2.278	1.485	6.179	1.340	1.840	1.196	2.427
#1	.1036	.1151	.6995	6.959	1.432	.1126	5.003	.4759	.0472
#2	.1063	.1178	.7142	6.929	1.524	.1120	4.969	.4764	.0480
#3	.1086	.1203	.7320	6.769	1.347	.1098	4.831	.4664	.0495
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 194.5	.1443	.2558	1.099	4.581	.0683	.0456	2.553	.1045
Stddev	3.1	.0037	.0070	.024	.121	.0035	.0017	.045	.0025
%RSD	1.596	2.587	2.742	2.168	2.635	5.066	3.670	1.778	2.360
#1	196.6	.1404	.2478	1.074	4.456	.0645	.0441	2.572	.1020
#2	195.9	.1447	.2588	1.103	4.589	.0692	.0474	2.586	.1046
#3	190.9	.1478	.2608	1.121	4.697	.0712	.0453	2.501	.1070
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18348-E-1-GMS@10 Acquired: 8/17/2016 16:20:27 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2242	.1058	.1260	.0187	.0948	.1201	1.554
Stddev	.0030	.0027	.0022	.0002	.0039	.0034	.037
%RSD	1.327	2.587	1.744	.9019	4.088	2.849	2.379
#1	.2262	.1074	.1285	.0187	.0988	.1234	1.516
#2	.2257	.1027	.1252	.0186	.0910	.1204	1.556
#3	.2208	.1074	.1243	.0189	.0946	.1165	1.590
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13452.	1854.9
Stddev	193.	31.9
%RSD	1.4312	1.7201
#1	13663.	1848.0
#2	13404.	1827.0
#3	13287.	1889.7

Sample Name: CCVL Acquired: 8/17/2016 16:24:52 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0100	.2030	.0083	.0909	.0480	.0048	.1942	.9921	.0045
Stddev	.0003	.0076	.0008	.0042	.0004	.0002	.0036	.0144	.0001
%RSD	2.949	3.766	9.766	4.602	.8354	3.300	1.878	1.450	1.687
#1	.0101	.2001	.0075	.0888	.0478	.0047	.1910	.9754	.0044
#2	.0097	.1971	.0085	.0957	.0478	.0047	.1982	1.000	.0044
#3	.0103	.2116	.0091	.0882	.0485	.0050	.1936	1.001	.0046
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0489	.0097	.0249	.0990	4.796	.0466	.9604	.0146	.0374
Stddev	.0008	.0001	.0009	.0103	.055	.0019	.0176	.0013	.0003
%RSD	1.716	1.030	3.493	10.38	1.140	3.976	1.833	9.175	.8716
#1	.0480	.0096	.0248	.0921	4.749	.0445	.9807	.0142	.0371
#2	.0492	.0097	.0241	.0940	4.784	.0473	.9509	.0134	.0378
#3	.0496	.0098	.0258	.1108	4.856	.0481	.9495	.0160	.0374
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1.328	.0392	.2397	.0107	4.357	.0094	.0119	.3617	.0954
Stddev	.154	.0005	.0045	.0006	.064	.0030	.0023	.0056	.0009
%RSD	11.62	1.182	1.882	5.202	1.474	31.58	19.58	1.549	.9712
#1	1.214	.0387	.2346	.0102	4.284	.0061	.0097	.3557	.0944
#2	1.266	.0396	.2431	.0106	4.385	.0103	.0143	.3628	.0956
#3	1.503	.0394	.2414	.0113	4.402	.0118	.0116	.3668	.0962
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	1.000								
Range	30.00%								

Sample Name: CCVL Acquired: 8/17/2016 16:24:52 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0050	.1836	.0183	.0212	.4795	.0456	.0182
Stddev	.0001	.0004	.0005	.0009	.0174	.0042	.0002
%RSD	2.716	.1947	2.851	4.019	3.627	9.208	1.053
#1	.0048	.1834	.0177	.0221	.4927	.0482	.0180
#2	.0050	.1833	.0185	.0208	.4859	.0408	.0183
#3	.0051	.1840	.0187	.0205	.4598	.0479	.0184
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14182.	1946.4
Stddev	177.	30.7
%RSD	1.2515	1.5773
#1	14387.	1981.4
#2	14085.	1924.1
#3	14075.	1933.6

Sample Name: CCV Acquired: 8/17/2016 16:29:25 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.062	49.65	4.755	.9819	4.913	5.043	4.818	49.10	4.813
Stddev	.007	.26	.062	.0006	.021	.018	.067	.60	.063
%RSD	.6271	.5264	1.301	.0623	.4331	.3554	1.397	1.220	1.299
#1	1.056	49.43	4.826	.9825	4.891	5.023	4.892	49.78	4.885
#2	1.060	49.57	4.726	.9820	4.916	5.048	4.799	48.88	4.787
#3	1.069	49.94	4.713	.9813	4.933	5.057	4.762	48.64	4.769
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.874	4.873	4.827	48.56	49.96	5.002	49.33	4.826	.9702
Stddev	.060	.062	.066	.21	.24	.015	.14	.028	.0127
%RSD	1.228	1.278	1.359	.4421	.4860	.2930	.2923	.5827	1.309
#1	4.943	4.944	4.902	48.33	49.85	4.989	49.25	4.794	.9848
#2	4.847	4.843	4.800	48.74	49.80	4.999	49.25	4.839	.9645
#3	4.833	4.830	4.780	48.62	50.24	5.018	49.50	4.846	.9614
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.53	4.871	50.29	4.879	47.68	.9563	.9493	4.966	4.849
Stddev	.24	.061	.69	.059	.75	.0134	.0163	.010	.068
%RSD	.4877	1.251	1.370	1.214	1.565	1.406	1.714	.2091	1.394
#1	49.30	4.941	51.08	4.946	48.52	.9694	.9675	4.974	4.927
#2	49.51	4.845	49.98	4.857	47.39	.9570	.9444	4.954	4.817
#3	49.78	4.828	49.82	4.834	47.12	.9425	.9361	4.969	4.803
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCV Acquired: 8/17/2016 16:29:25 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.013	4.958	4.900	.9886	4.982	4.934	4.838
Stddev	.022	.024	.027	.0117	.040	.033	.063
%RSD	.4324	.4883	.5432	1.187	.7934	.6669	1.304
#1	4.990	4.937	4.870	1.002	4.958	4.907	4.910
#2	5.015	4.954	4.916	.9811	4.961	4.924	4.810
#3	5.033	4.985	4.915	.9826	5.028	4.970	4.794
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13296.	1792.2
Stddev	49.	10.3
%RSD	.36719	.57464
#1	13242.	1784.8
#2	13307.	1804.0
#3	13338.	1788.0

Sample Name: CCB Acquired: 8/17/2016 16:33:34 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0001	.0083	.0003	.0029	.0003	.0001	.0018	.0016	-.0001
Stddev	.0002	.0110	.0002	.0060	.0002	.0002	.0011	.0006	.0001
%RSD	218.8	133.4	71.43	207.0	57.10	154.5	64.26	37.03	141.0
#1	.0002	-.0035	.0002	.0096	.0005	.0001	.0017	.0022	.0001
#2	-.0002	.0099	.0005	.0011	.0001	.0003	.0007	.0013	-.0001
#3	-.0003	.0184	.0002	-.0020	.0004	-.0000	.0029	.0012	-.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0000	.0000	.0008	-.0010	-.0666	.0008	-.0178	-.0000	-.0000
Stddev	.0002	.0001	.0003	.0038	.0551	.0030	.0206	.0002	.0001
%RSD	1147.	5759.	33.77	399.5	82.70	368.4	115.8	875.9	893.8
#1	.0002	.0000	.0005	-.0029	-.0090	.0005	.0048	-.0001	.0000
#2	-.0001	-.0001	.0010	-.0035	-.1189	-.0020	-.0225	-.0002	.0001
#3	-.0002	.0001	.0009	.0035	-.0720	.0040	-.0356	.0002	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1066	.0000	-.0006	.0000	.0049	.0007	-.0033	-.0108	-.0003
Stddev	.0071	.0002	.0008	.0008	.0009	.0013	.0019	.0066	.0007
%RSD	6.660	782.7	133.8	2900.	18.00	193.0	57.73	61.61	261.1
#1	.1122	-.0002	-.0012	.0004	.0053	.0021	-.0024	-.0061	.0005
#2	.0986	.0002	.0003	.0006	.0056	-.0005	-.0056	-.0078	-.0006
#3	.1090	.0002	-.0010	-.0009	.0039	.0005	-.0020	-.0184	-.0006
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: CCB Acquired: 8/17/2016 16:33:34 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0001	.0001	-.0012	-.0003	-.0033	-.0039	-.0001
Stddev	.0002	.0012	.0012	.0009	.0076	.0014	.0001
%RSD	234.7	1443.	105.2	355.2	232.0	35.64	168.5
#1	-.0001	.0010	-.0026	.0002	-.0041	-.0041	.0000
#2	.0001	.0006	-.0004	-.0013	-.0105	-.0051	-.0001
#3	-.0002	-.0013	-.0005	.0004	.0047	-.0024	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14293.	1820.4
Stddev	148.	6.2
%RSD	1.0385	.34166
#1	14135.	1827.4
#2	14429.	1815.5
#3	14316.	1818.4

Sample Name: 160-18348-E-1HMSD@10 Acquired: 8/17/2016 16:38:17 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0226	2.413	.1012	.2279	.2053	.1042	.0996	26.81	.1011
Stddev	.0007	.015	.0020	.0031	.0013	.0006	.0007	.16	.0003
%RSD	3.131	.6072	2.009	1.364	.6275	.6200	.7372	.6143	.3458
#1	.0225	2.410	.1032	.2252	.2044	.1041	.1004	27.00	.1015
#2	.0221	2.400	.0991	.2273	.2047	.1036	.0993	26.68	.1009
#3	.0234	2.429	.1014	.2313	.2068	.1049	.0990	26.76	.1010
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1086	.1195	.6856	6.740	1.404	.1175	4.847	.4667	.0494
Stddev	.0005	.0006	.0045	.002	.105	.0012	.033	.0005	.0001
%RSD	.4189	.5334	.6533	.0237	7.474	.9928	.6847	.1120	.2984
#1	.1092	.1202	.6908	6.741	1.395	.1178	4.870	.4662	.0496
#2	.1084	.1190	.6832	6.738	1.513	.1163	4.862	.4672	.0493
#3	.1084	.1193	.6828	6.740	1.304	.1186	4.809	.4668	.0493
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 192.2	.1442	.2494	1.048	4.414	.0693	.0485	2.511	.1063
Stddev	.3	.0007	.0030	.007	.018	.0029	.0009	.008	.0005
%RSD	.1395	.5060	1.193	.6399	.4041	4.194	1.949	.3321	.4522
#1	192.1	.1450	.2528	1.056	4.434	.0695	.0474	2.511	.1066
#2	192.5	.1436	.2475	1.045	4.406	.0721	.0492	2.503	.1058
#3	192.0	.1440	.2478	1.044	4.401	.0663	.0489	2.519	.1066
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18348-E-1HMSD@10 Acquired: 8/17/2016 16:38:17 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2221	.1102	.1301	.0200	.0994	.1169	1.479
Stddev	.0013	.0005	.0013	.0009	.0123	.0058	.008
%RSD	.6013	.4739	.9709	4.606	12.33	4.992	.5567
#1	.2217	.1107	.1306	.0209	.0863	.1172	1.488
#2	.2210	.1097	.1286	.0200	.1011	.1109	1.474
#3	.2236	.1100	.1310	.0191	.1107	.1225	1.474
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13429.	1814.7
Stddev	135.	23.5
%RSD	1.0066	1.2951
#1	13297.	1807.5
#2	13567.	1795.7
#3	13422.	1841.0

Sample Name: 160-18348-E-1FPDS@10 Acquired: 8/17/2016 16:42:42 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0953	3.178	.0924	.9019	.5467	.0464	1.784	34.57	.0471
Stddev	.0006	.006	.0014	.0110	.0021	.0004	.020	.39	.0006
%RSD	.6437	.1763	1.534	1.224	.3912	.7829	1.131	1.115	1.265
#1	.0947	3.184	.0923	.9139	.5476	.0468	1.804	34.86	.0477
#2	.0959	3.177	.0938	.8922	.5443	.0461	1.763	34.13	.0465
#3	.0955	3.173	.0910	.8995	.5483	.0464	1.786	34.70	.0471
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4671	.1108	.8104	6.461	45.52	.4698	12.56	.4854	.3683
Stddev	.0053	.0013	.0099	.024	.42	.0016	.06	.0022	.0043
%RSD	1.138	1.199	1.222	.3721	.9121	.3499	.4766	.4434	1.159
#1	.4717	.1120	.8158	6.476	45.94	.4681	12.63	.4859	.3717
#2	.4613	.1093	.7990	6.433	45.11	.4700	12.52	.4830	.3635
#3	.4683	.1110	.8165	6.474	45.51	.4714	12.53	.4872	.3697
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 191.3	.4090	2.611	1.027	48.21	.1012	.1351	5.426	.9152
Stddev	1.4	.0048	.031	.013	.56	.0017	.0021	.047	.0115
%RSD	.7516	1.171	1.198	1.241	1.158	1.651	1.539	.8687	1.257
#1	192.9	.4132	2.641	1.037	48.78	.1001	.1368	5.460	.9242
#2	190.2	.4038	2.578	1.013	47.67	.1004	.1356	5.372	.9022
#3	190.8	.4100	2.614	1.031	48.17	.1031	.1327	5.446	.9191
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18348-E-1FPDS@10 Acquired: 8/17/2016 16:42:42 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1625	1.763	.2097	.1898	4.322	.4748	1.540
Stddev	.0001	.005	.0030	.0037	.021	.0023	.018
%RSD	.0715	.2963	1.451	1.952	.4862	.4830	1.150
#1	.1626	1.763	.2117	.1913	4.325	.4774	1.556
#2	.1624	1.758	.2062	.1855	4.342	.4732	1.521
#3	.1624	1.769	.2112	.1924	4.300	.4738	1.544
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13118.	1798.7
Stddev	187.	35.4
%RSD	1.4282	1.9700
#1	13126.	1758.5
#2	13302.	1825.3
#3	12927.	1812.3

Sample Name: 160-18348-E-2-G@10 Acquired: 8/17/2016 16:46:58 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0003	1.269	.0031	.0257	.1053	.0000	.0042	25.22	.0027
Stddev	.0012	.014	.0008	.0009	.0014	.0002	.0008	.10	.0001
%RSD	386.8	1.063	24.27	3.648	1.310	402.1	19.01	.4003	3.936
#1	.0010	1.272	.0031	.0249	.1039	-.0001	.0050	25.12	.0026
#2	-.0011	1.255	.0038	.0256	.1056	-.0000	.0034	25.32	.0027
#3	-.0008	1.282	.0023	.0267	.1066	.0002	.0042	25.24	.0028
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0079	.0211	.6157	6.735	.2893	.0131	3.624	.3854	.0007
Stddev	.0003	.0002	.0012	.094	.0713	.0021	.065	.0069	.0002
%RSD	3.944	1.142	.1941	1.397	24.65	15.83	1.786	1.799	23.24
#1	.0079	.0210	.6144	6.637	.3648	.0125	3.575	.3813	.0007
#2	.0076	.0214	.6167	6.743	.2231	.0153	3.600	.3815	.0008
#3	.0082	.0211	.6160	6.824	.2799	.0113	3.698	.3934	.0005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 190.4	.0417	.1425	.9173	3.338	.0131	-.0016	2.011	.0105
Stddev	1.8	.0001	.0004	.0030	.014	.0006	.0008	.021	.0006
%RSD	.9619	.2789	.2837	.3218	.4136	4.909	50.38	1.028	5.716
#1	188.9	.0418	.1429	.9154	3.336	.0126	-.0015	1.996	.0107
#2	189.9	.0418	.1421	.9207	3.353	.0130	-.0009	2.002	.0098
#3	192.5	.0416	.1425	.9158	3.325	.0138	-.0025	2.034	.0109
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18348-E-2-G@10 Acquired: 8/17/2016 16:46:58 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1141	.0116	.0295	-.0004	-.0041	.0187	1.205
Stddev	.0018	.0029	.0003	.0004	.0136	.0052	.005
%RSD	1.543	24.93	.9980	83.01	335.8	28.03	.4219
#1	.1126	.0084	.0298	-.0009	.0092	.0241	1.202
#2	.1136	.0123	.0293	-.0002	-.0180	.0183	1.211
#3	.1160	.0140	.0294	-.0002	-.0034	.0136	1.202
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13305.	1877.8
Stddev	92.	25.4
%RSD	.68844	1.3504
#1	13398.	1855.8
#2	13301.	1905.6
#3	13215.	1872.1

Sample Name: 160-18348-E-3-D@10 Acquired: 8/17/2016 16:51:29 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0004	1.226	.0023	.0221	.1157	.0001	.0004	24.94	.0023
Stddev	.0007	.017	.0019	.0036	.0005	.0001	.0015	.24	.0001
%RSD	159.7	1.358	84.44	16.39	.4384	90.28	375.1	.9452	5.629
#1	-.0009	1.245	.0028	.0261	.1163	.0002	-.0013	24.97	.0024
#2	.0004	1.217	.0001	.0211	.1153	.0001	.0009	25.16	.0022
#3	-.0007	1.216	.0039	.0191	.1156	.0000	.0016	24.70	.0022
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0076	.0196	.4145	5.686	.3796	.0121	3.361	.3710	.0013
Stddev	.0001	.0002	.0056	.021	.0721	.0012	.025	.0027	.0002
%RSD	1.858	1.172	1.348	.3751	18.99	9.929	.7469	.7202	13.78
#1	.0076	.0197	.4124	5.708	.3528	.0107	3.377	.3741	.0012
#2	.0078	.0198	.4208	5.666	.3248	.0125	3.332	.3694	.0015
#3	.0075	.0194	.4103	5.682	.4612	.0130	3.373	.3695	.0013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 196.3	.0386	.1293	1.068	2.899	.0117	-.0039	1.977	.0070
Stddev	1.4	.0004	.0006	.011	.034	.0007	.0019	.010	.0001
%RSD	.7382	.9387	.4803	1.023	1.187	6.064	49.39	.4898	1.887
#1	197.9	.0388	.1294	1.066	2.898	.0118	-.0054	1.987	.0071
#2	195.8	.0389	.1299	1.079	2.934	.0123	-.0017	1.968	.0069
#3	195.1	.0382	.1287	1.058	2.865	.0109	-.0045	1.977	.0069
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18348-E-3-D@10 Acquired: 8/17/2016 16:51:29 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1127	.0114	.0278	-.0012	-.0014	.0202	.9773
Stddev	.0003	.0029	.0008	.0006	.0014	.0024	.0094
%RSD	.2617	25.02	2.797	49.38	93.39	11.94	.9585
#1	.1131	.0122	.0287	-.0005	-.0008	.0192	.9766
#2	.1125	.0138	.0272	-.0017	-.0006	.0185	.9870
#3	.1125	.0083	.0277	-.0013	-.0030	.0230	.9683
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13155.	1803.1
Stddev	81.	18.7
%RSD	.61870	1.0393
#1	13113.	1781.7
#2	13104.	1816.4
#3	13249.	1811.1

Sample Name: 160-18348-F-4-D@10 Acquired: 8/17/2016 16:56:00 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	1.154	.0036	.0216	.1012	.0001	.0019	22.96	.0027
Stddev	.0003	.025	.0006	.0037	.0029	.0001	.0012	.45	.0001
%RSD	257.9	2.188	15.23	16.96	2.822	96.72	62.59	1.969	3.174
#1	-.0002	1.155	.0039	.0239	.1028	.0002	.0034	23.44	.0027
#2	.0002	1.178	.0030	.0174	.1030	.0001	.0013	22.90	.0028
#3	.0003	1.128	.0040	.0235	.0979	-.0000	.0012	22.55	.0026
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0071	.0151	.3602	5.250	.4051	.0126	3.298	.3532	.0006
Stddev	.0002	.0002	.0085	.116	.0645	.0026	.116	.0069	.0001
%RSD	2.781	1.486	2.357	2.205	15.93	20.91	3.503	1.963	23.74
#1	.0072	.0153	.3697	5.336	.4586	.0145	3.300	.3559	.0008
#2	.0069	.0151	.3578	5.295	.3334	.0138	3.412	.3584	.0005
#3	.0070	.0149	.3532	5.118	.4232	.0096	3.181	.3453	.0005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 179.6	.0368	.1306	.6818	2.789	.0134	-.0031	1.875	.0126
Stddev	4.3	.0007	.0042	.0141	.072	.0003	.0022	.047	.0005
%RSD	2.373	1.826	3.252	2.073	2.581	2.011	72.38	2.499	3.828
#1	181.8	.0376	.1341	.6976	2.864	.0131	-.0053	1.909	.0130
#2	182.4	.0366	.1319	.6777	2.782	.0136	-.0008	1.895	.0127
#3	174.7	.0363	.1259	.6702	2.721	.0136	-.0031	1.822	.0121
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18348-F-4-D@10 Acquired: 8/17/2016 16:56:00 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1082	.0101	.0263	-.0001	-.0052	.0174	1.186
Stddev	.0023	.0020	.0003	.0004	.0121	.0058	.025
%RSD	2.106	19.38	1.323	277.8	233.0	33.44	2.121
#1	.1094	.0098	.0267	-.0000	.0015	.0111	1.212
#2	.1096	.0083	.0264	.0002	.0020	.0186	1.182
#3	.1055	.0122	.0260	-.0006	-.0191	.0225	1.162
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13317.	1820.7
Stddev	122.	23.6
%RSD	.91891	1.2944
#1	13176.	1794.4
#2	13399.	1827.6
#3	13375.	1840.0

Sample Name: 160-18348-G-5-D@10 Acquired: 8/17/2016 17:00:30 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	1.342	.0041	.0270	.1075	.0000	.0018	25.01	.0029
Stddev	.0008	.012	.0017	.0020	.0010	.0002	.0014	.46	.0000
%RSD	561.4	.8678	42.10	7.466	.9404	709.5	78.69	1.843	1.582
#1	.0010	1.337	.0055	.0255	.1065	-.0001	.0034	24.51	.0029
#2	-.0001	1.335	.0047	.0293	.1085	-.0001	.0005	25.11	.0029
#3	-.0005	1.356	.0022	.0262	.1076	.0002	.0016	25.41	.0030
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0083	.0219	.4879	6.434	.4013	.0109	3.748	.3902	.0012
Stddev	.0004	.0004	.0103	.102	.0009	.0019	.063	.0049	.0003
%RSD	4.849	1.781	2.113	1.579	.2301	17.46	1.691	1.245	22.78
#1	.0079	.0214	.4766	6.323	.4023	.0098	3.725	.3858	.0009
#2	.0084	.0220	.4902	6.523	.4008	.0131	3.820	.3955	.0014
#3	.0087	.0222	.4968	6.456	.4007	.0098	3.700	.3894	.0013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 196.2	.0409	.1806	.8681	3.470	.0135	-.0031	2.057	.0079
Stddev	2.1	.0007	.0033	.0182	.084	.0015	.0026	.021	.0003
%RSD	1.081	1.614	1.843	2.101	2.419	11.31	83.47	1.009	3.786
#1	194.6	.0402	.1770	.8488	3.379	.0119	-.0059	2.033	.0080
#2	198.6	.0409	.1815	.8703	3.486	.0149	-.0029	2.074	.0081
#3	195.4	.0415	.1835	.8851	3.544	.0138	-.0007	2.063	.0075
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.0								
Low Limit	-500.0								

Sample Name: 160-18348-G-5-D@10 Acquired: 8/17/2016 17:00:30 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1189	.0118	.0288	-.0014	.0026	.0161	1.546
Stddev	.0014	.0008	.0016	.0011	.0134	.0046	.034
%RSD	1.191	7.073	5.479	77.42	519.8	28.80	2.164
#1	.1176	.0127	.0270	-.0002	-.0124	.0138	1.510
#2	.1204	.0110	.0296	-.0016	.0067	.0131	1.552
#3	.1187	.0117	.0298	-.0024	.0135	.0214	1.576
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13365.	1893.2
Stddev	71.	32.0
%RSD	.52931	1.6904
#1	13446.	1920.4
#2	13337.	1857.9
#3	13313.	1901.3

Sample Name: MB 160-264902/1-A Acquired: 8/17/2016 17:05:00 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment: 264902

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0008	.0665	-.0006	-.0011	.0007	.0001	.0004	.0354	-.0001
Stddev	.0005	.0154	.0017	.0042	.0002	.0001	.0028	.0004	.0001
%RSD	65.79	23.20	305.4	373.5	25.65	99.59	747.7	1.113	108.8
#1	-.0002	.0843	-.0023	-.0015	.0007	.0001	.0034	.0349	-.0000
#2	-.0009	.0574	-.0005	-.0051	.0005	.0002	-.0021	.0356	-.0002
#3	-.0013	.0577	.0011	.0033	.0009	.0000	-.0002	.0356	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0003	.0003	-.0004	.0085	-.0406	.0017	-.0244	.0000	.0003
Stddev	.0002	.0001	.0003	.0032	.0235	.0023	.0212	.0006	.0001
%RSD	53.31	21.44	85.51	37.21	58.03	137.1	86.82	1665.	22.08
#1	-.0002	.0003	-.0000	.0089	-.0575	-.0005	-.0420	-.0006	.0002
#2	-.0002	.0004	-.0006	.0051	-.0137	.0015	-.0303	-.0000	.0003
#3	-.0005	.0003	-.0005	.0114	-.0505	.0040	-.0009	.0007	.0003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3102	.0004	.0159	.0004	.0297	.0010	-.0016	.0096	.0151
Stddev	.0091	.0000	.0012	.0006	.0025	.0013	.0009	.0039	.0007
%RSD	2.936	8.586	7.342	170.0	8.287	131.8	53.68	40.26	4.437
#1	.3201	.0004	.0154	-.0002	.0287	.0022	-.0025	.0134	.0143
#2	.3021	.0004	.0172	.0002	.0279	-.0004	-.0007	.0097	.0154
#3	.3086	.0004	.0150	.0011	.0325	.0013	-.0016	.0057	.0154
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: MB 160-264902/1-A Acquired: 8/17/2016 17:05:00 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment: 264902

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000	.0027	.0003	-.0001	.0185	.0039	.0007
Stddev	.0001	.0012	.0008	.0006	.0068	.0036	.0000
%RSD	554.7	44.69	276.6	641.5	36.76	94.42	4.207
#1	.0002	.0037	-.0005	.0004	.0230	.0080	.0007
#2	.0000	.0014	.0011	-.0007	.0219	.0026	.0007
#3	-.0001	.0029	.0002	.0000	.0107	.0010	.0007
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14644.	1901.0
Stddev	122.	4.7
%RSD	.83282	.24763
#1	14779.	1906.1
#2	14613.	1900.0
#3	14541.	1896.8

Sample Name: LCS 160-264902/2-A Acquired: 8/17/2016 17:09:41 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2117	9.824	.9065	1.891	.9641	.9829	.9560	9.925	.9302
Stddev	.0007	.038	.0118	.016	.0028	.0020	.0114	.099	.0101
%RSD	.3533	.3845	1.306	.8231	.2863	.2051	1.195	1.001	1.090
#1	.2126	9.794	.9195	1.881	.9609	.9806	.9687	10.03	.9409
#2	.2114	9.812	.9036	1.882	.9651	.9840	.9528	9.917	.9290
#3	.2111	9.866	.8964	1.909	.9662	.9841	.9466	9.829	.9207
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9790	.9663	.9440	9.656	9.657	.9965	9.576	.9472	.4666
Stddev	.0112	.0104	.0116	.021	.125	.0045	.019	.0034	.0056
%RSD	1.149	1.072	1.232	.2190	1.291	.4544	.1947	.3576	1.201
#1	.9908	.9774	.9548	9.632	9.523	.9920	9.561	.9463	.4728
#2	.9778	.9647	.9455	9.662	9.679	.9966	9.572	.9444	.4652
#3	.9683	.9568	.9317	9.673	9.769	1.001	9.597	.9510	.4619
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.03	.9822	1.061	.9861	9.003	.4710	.4543	3.562	.9866
Stddev	.02	.0111	.013	.0120	.104	.0055	.0055	.005	.0113
%RSD	.1545	1.129	1.243	1.220	1.152	1.160	1.218	.1346	1.144
#1	10.01	.9941	1.075	.9996	9.115	.4767	.4607	3.565	.9986
#2	10.04	.9803	1.061	.9821	8.982	.4706	.4511	3.563	.9850
#3	10.03	.9722	1.049	.9766	8.911	.4658	.4511	3.556	.9763
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: LCS 160-264902/2-A Acquired: 8/17/2016 17:09:41 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9842	.9795	.9638	.2039	1.010	.9614	.9335
Stddev	.0032	.0047	.0026	.0022	.007	.0082	.0104
%RSD	.3277	.4751	.2745	1.086	.6581	.8511	1.117
#1	.9805	.9846	.9608	.2065	1.017	.9567	.9444
#2	.9861	.9782	.9652	.2028	1.004	.9708	.9324
#3	.9860	.9756	.9655	.2025	1.010	.9566	.9237
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13831.	1890.9
Stddev	102.	26.2
%RSD	.73529	1.3839
#1	13725.	1878.2
#2	13842.	1921.0
#3	13927.	1873.5

Sample Name: 160-18336-A-1-G@10 Acquired: 8/17/2016 17:13:54 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0003	7.915	.0040	.0017	.0773	.0004	-.0004	8.445	.0002
Stddev	.0009	.046	.0008	.0049	.0006	.0001	.0019	.085	.0000
%RSD	347.2	.5866	21.01	284.8	.7665	22.47	467.3	1.012	3.178
#1	-.0008	7.912	.0048	-.0032	.0766	.0005	.0008	8.377	.0002
#2	.0008	7.962	.0031	.0067	.0777	.0004	-.0026	8.541	.0002
#3	-.0007	7.870	.0041	.0017	.0775	.0004	.0006	8.416	.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0082	.0133	.0114	17.45	1.487	.0144	5.316	.3029	.0001
Stddev	.0001	.0003	.0017	.10	.022	.0012	.038	.0008	.0002
%RSD	1.742	2.519	14.54	.5771	1.460	8.450	.7161	.2735	166.8
#1	.0081	.0129	.0132	17.34	1.477	.0140	5.282	.3023	-.0001
#2	.0082	.0135	.0112	17.50	1.512	.0158	5.308	.3025	.0001
#3	.0084	.0134	.0099	17.53	1.472	.0135	5.357	.3038	.0004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2508	.0142	.5366	.0054	.0389	.0027	-.0014	.2394	-.0006
Stddev	.0326	.0003	.0072	.0007	.0014	.0013	.0011	.0057	.0003
%RSD	12.98	2.130	1.337	13.75	3.507	50.01	77.87	2.371	56.33
#1	.2588	.0139	.5314	.0046	.0385	.0042	-.0005	.2455	-.0009
#2	.2786	.0142	.5448	.0057	.0405	.0017	-.0011	.2342	-.0006
#3	.2150	.0145	.5337	.0060	.0378	.0021	-.0026	.2385	-.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18336-A-1-G@10 Acquired: 8/17/2016 17:13:54 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0359	.0289	.8331	-.0005	.0283	.0321	.0350
Stddev	.0002	.0020	.0068	.0015	.0131	.0010	.0006
%RSD	.6575	6.769	.8216	270.5	46.29	3.138	1.573
#1	.0358	.0312	.8292	.0011	.0353	.0313	.0345
#2	.0362	.0278	.8410	-.0012	.0132	.0332	.0356
#3	.0358	.0278	.8290	-.0016	.0364	.0316	.0349
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14372.	1866.6
Stddev	45.	12.2
%RSD	.31181	.65475
#1	14381.	1868.9
#2	14324.	1853.4
#3	14412.	1877.5

Sample Name: 160-18336-A-1-GSD@50 Acquired: 8/17/2016 17:18:29 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	.0015	-.0015	-.0047	-.0002	-.0000	.0011	.0033	-.0001
Stddev	.0003	.0193	.0009	.0041	.0001	.0002	.0010	.0004	.0001
%RSD	432.4	1275.	62.17	87.03	74.91	1704.	92.24	10.94	102.6
#1	.0000	.0181	-.0025	-.0075	-.0003	-.0000	.0002	.0030	-.0001
#2	.0004	-.0196	-.0010	-.0066	-.0000	-.0002	.0022	.0037	-.0003
#3	-.0002	.0060	-.0009	-.0000	-.0002	.0002	.0009	.0031	.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0001	-.0000	-.0011	.0011	-.1002	-.0029	-.0291	.0002	.0000
Stddev	.0002	.0002	.0019	.0019	.0238	.0021	.0097	.0006	.0001
%RSD	156.4	403.0	174.0	182.4	23.72	73.74	33.39	249.5	394.5
#1	.0001	-.0000	.0006	.0014	-.0753	-.0007	-.0292	-.0003	.0001
#2	-.0004	.0001	-.0031	.0028	-.1027	-.0049	-.0387	.0008	.0001
#3	-.0001	-.0002	-.0007	-.0010	-.1226	-.0031	-.0193	.0002	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0809	-.0001	-.0011	-.0001	.0022	.0012	-.0014	-.0050	-.0002
Stddev	.0078	.0002	.0006	.0008	.0022	.0011	.0023	.0024	.0003
%RSD	9.607	317.8	49.43	647.2	101.0	95.22	165.3	48.27	167.3
#1	.0893	.0001	-.0013	.0003	.0027	.0017	-.0039	-.0073	-.0006
#2	.0795	-.0003	-.0016	.0004	-.0002	.0020	.0003	-.0025	.0001
#3	.0739	-.0000	-.0005	-.0011	.0040	-.0001	-.0005	-.0050	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18336-A-1-GSD@50 Acquired: 8/17/2016 17:18:29 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0001	-.0005	-.0002	.0002	-.0039	-.0029	-.0002
Stddev	.0001	.0025	.0010	.0002	.0179	.0038	.0002
%RSD	78.74	496.9	535.3	115.4	463.6	131.8	93.47
#1	-.0002	.0020	.0001	.0001	-.0020	-.0057	-.0002
#2	-.0001	-.0005	.0006	.0005	.0130	.0014	-.0003
#3	-.0000	-.0030	-.0013	-.0000	-.0226	-.0043	-.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14308.	1890.3
Stddev	103.	31.7
%RSD	.72323	1.6751
#1	14349.	1894.4
#2	14384.	1919.7
#3	14190.	1856.8

Sample Name: CCVL Acquired: 8/17/2016 17:23:10 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0105	.2050	.0085	.0960	.0490	.0050	.1969	1.004	.0045
Stddev	.0005	.0037	.0017	.0058	.0003	.0002	.0014	.010	.0002
%RSD	4.776	1.789	20.65	6.068	.5270	4.053	.7290	.9619	4.133
#1	.0110	.2041	.0065	.0913	.0490	.0050	.1960	.9926	.0044
#2	.0104	.2091	.0097	.1025	.0492	.0048	.1986	1.010	.0044
#3	.0100	.2019	.0092	.0942	.0487	.0052	.1962	1.008	.0047
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0493	.0097	.0241	.0962	4.874	.0486	.9557	.0145	.0380
Stddev	.0007	.0001	.0011	.0030	.073	.0025	.0152	.0004	.0001
%RSD	1.402	1.127	4.694	3.138	1.507	5.179	1.586	3.070	.3878
#1	.0485	.0096	.0250	.0996	4.938	.0505	.9394	.0139	.0378
#2	.0497	.0098	.0245	.0941	4.889	.0457	.9583	.0148	.0381
#3	.0496	.0097	.0228	.0948	4.794	.0496	.9694	.0146	.0380
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.102	.0398	.2454	.0102	4.424	.0088	.0114	.3625	.0970
Stddev	.014	.0006	.0016	.0004	.045	.0011	.0020	.0041	.0017
%RSD	1.269	1.398	.6364	3.722	1.017	12.91	17.77	1.122	1.799
#1	1.112	.0391	.2438	.0098	4.373	.0083	.0104	.3593	.0951
#2	1.107	.0400	.2469	.0106	4.458	.0100	.0101	.3612	.0972
#3	1.086	.0402	.2455	.0100	4.440	.0079	.0138	.3671	.0986
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCVL Acquired: 8/17/2016 17:23:10 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0049	.1856	.0197	.0228	.4859	.0455	.0186
Stddev	.0002	.0024	.0004	.0010	.0129	.0018	.0001
%RSD	4.016	1.281	1.883	4.414	2.658	3.871	.7909
#1	.0049	.1879	.0197	.0220	.4948	.0473	.0184
#2	.0047	.1832	.0193	.0239	.4919	.0437	.0186
#3	.0051	.1857	.0200	.0224	.4711	.0456	.0187
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14295.	1871.2
Stddev	181.	37.3
%RSD	1.2678	1.9931
#1	14486.	1841.4
#2	14275.	1859.1
#3	14125.	1913.0

Sample Name: CCV Acquired: 8/17/2016 17:27:45 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.083	49.79	4.893	.9810	4.953	5.089	4.930	50.42	4.938
Stddev	.004	.20	.072	.0059	.030	.025	.073	.56	.070
%RSD	.3778	.3982	1.479	.5993	.6144	.4828	1.481	1.121	1.420
#1	1.086	49.58	4.839	.9761	4.922	5.064	4.879	50.12	4.893
#2	1.085	49.98	4.865	.9875	4.983	5.113	4.898	50.07	4.902
#3	1.079	49.80	4.975	.9793	4.954	5.090	5.014	51.07	5.018
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.003	5.010	4.964	49.50	50.05	5.015	49.56	4.885	.9990
Stddev	.065	.067	.078	.21	.23	.030	.21	.021	.0138
%RSD	1.303	1.338	1.569	.4294	.4655	.5977	.4198	.4303	1.377
#1	4.962	4.968	4.913	49.27	49.78	4.982	49.32	4.862	.9901
#2	4.968	4.974	4.925	49.70	50.22	5.040	49.69	4.903	.9921
#3	5.078	5.087	5.053	49.51	50.14	5.023	49.67	4.891	1.015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.94	5.005	52.15	5.020	48.77	.9710	.9781	5.008	5.009
Stddev	.16	.063	.69	.065	.77	.0137	.0133	.004	.060
%RSD	.3148	1.255	1.321	1.285	1.574	1.410	1.359	.0853	1.195
#1	49.78	4.965	51.68	4.978	48.23	.9644	.9675	5.005	4.970
#2	50.10	4.973	51.82	4.987	48.43	.9619	.9737	5.005	4.978
#3	49.96	5.077	52.94	5.094	49.65	.9868	.9930	5.012	5.078
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCV Acquired: 8/17/2016 17:27:45 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.047	5.023	4.956	1.016	5.090	4.942	4.960
Stddev	.032	.032	.033	.012	.037	.035	.064
%RSD	.6321	.6344	.6650	1.138	.7342	.7053	1.292
#1	5.015	5.021	4.923	1.011	5.123	4.906	4.916
#2	5.078	5.056	4.989	1.009	5.098	4.975	4.931
#3	5.047	4.992	4.955	1.030	5.050	4.945	5.034
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12936.	1795.6
Stddev	99.	22.3
%RSD	.76751	1.2404
#1	12900.	1774.9
#2	13048.	1819.1
#3	12859.	1792.7

Sample Name: CCB Acquired: 8/17/2016 17:31:54 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	.0081	-.0003	.0011	-.0005	.0001	.0017	.0037	.0001
Stddev	.0001	.0086	.0011	.0084	.0004	.0001	.0004	.0028	.0003
%RSD	167.9	106.3	323.4	770.4	82.48	167.3	25.86	75.35	473.5
#1	.0000	.0176	-.0001	.0022	-.0009	-.0000	.0023	.0068	.0004
#2	.0000	.0061	-.0016	-.0078	-.0001	.0002	.0015	.0022	-.0002
#3	.0003	.0007	.0006	.0089	-.0005	.0000	.0015	.0019	-.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000	.0002	.0011	-.0025	-.0634	-.0021	-.0270	.0002	.0001
Stddev	.0001	.0003	.0008	.0007	.0638	.0007	.0162	.0005	.0003
%RSD	197.5	105.8	74.03	27.61	100.6	32.07	59.98	236.1	369.5
#1	.0001	.0005	.0002	-.0032	-.1214	-.0015	-.0306	.0000	-.0003
#2	.0001	.0001	.0014	-.0018	-.0739	-.0021	-.0412	-.0002	.0002
#3	-.0001	.0001	.0018	-.0024	.0050	-.0028	-.0093	.0007	.0004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0497	.0002	.0030	.0007	.0046	.0016	.0000	.0062	-.0004
Stddev	.0169	.0002	.0036	.0001	.0031	.0014	.0007	.0036	.0002
%RSD	34.08	95.26	122.1	12.90	66.71	87.35	15760.	58.72	47.16
#1	.0327	.0005	.0071	.0006	.0078	.0031	.0003	.0043	-.0006
#2	.0499	.0000	.0008	.0008	.0042	.0005	-.0008	.0104	-.0003
#3	.0665	.0002	.0010	.0008	.0017	.0010	.0005	.0039	-.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: CCB Acquired: 8/17/2016 17:31:54 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000	.0029	.0002	.0002	.0080	-.0048	.0000
Stddev	.0001	.0022	.0006	.0008	.0114	.0024	.0004
%RSD	1014.	77.62	317.9	433.2	142.1	49.26	6220.
#1	-.0000	.0006	-.0004	-.0007	-.0041	-.0067	.0004
#2	.0001	.0031	.0008	.0007	.0096	-.0022	-.0003
#3	-.0000	.0050	.0002	.0006	.0186	-.0055	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14118.	1833.7
Stddev	97.	39.6
%RSD	.69056	2.1590
#1	14224.	1879.3
#2	14099.	1807.9
#3	14031.	1813.8

Sample Name: 160-18336-A-1-HMS@10 Acquired: 8/17/2016 17:36:35 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0223	10.49	.1025	.1905	.1831	.1025	.1057	9.795	.1030
Stddev	.0002	.11	.0034	.0064	.0023	.0011	.0027	.198	.0022
%RSD	.9948	1.034	3.338	3.371	1.236	1.074	2.515	2.016	2.116
#1	.0220	10.39	.0987	.1839	.1814	.1015	.1028	9.594	.1010
#2	.0224	10.46	.1039	.1910	.1822	.1022	.1063	9.803	.1028
#3	.0225	10.60	.1051	.1967	.1857	.1037	.1080	9.988	.1053
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1170	.1224	.1199	18.72	2.612	.1148	6.664	.4131	.0506
Stddev	.0026	.0024	.0027	.16	.064	.0003	.065	.0043	.0012
%RSD	2.228	1.997	2.259	.8561	2.454	.2231	.9692	1.047	2.432
#1	.1142	.1200	.1170	18.59	2.596	.1145	6.603	.4104	.0494
#2	.1173	.1223	.1204	18.67	2.557	.1150	6.656	.4107	.0507
#3	.1194	.1249	.1224	18.90	2.682	.1149	6.732	.4181	.0518
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.228	.1221	.6482	.1151	1.028	.0376	.0499	.3732	.1052
Stddev	.015	.0028	.0128	.0023	.025	.0020	.0018	.0114	.0021
%RSD	1.221	2.286	1.971	2.013	2.469	5.236	3.677	3.054	2.041
#1	1.220	.1193	.6348	.1129	1.002	.0353	.0520	.3603	.1030
#2	1.218	.1221	.6497	.1148	1.031	.0384	.0485	.3818	.1054
#3	1.245	.1249	.6602	.1175	1.052	.0390	.0491	.3777	.1073
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18336-A-1-HMS@10 Acquired: 8/17/2016 17:36:35 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1399	.1359	1.145	.0210	.1300	.1343	.1403
Stddev	.0017	.0050	.014	.0017	.0068	.0041	.0028
%RSD	1.212	3.666	1.254	7.989	5.254	3.024	2.011
#1	.1388	.1341	1.135	.0192	.1366	.1301	.1374
#2	.1391	.1320	1.138	.0215	.1230	.1344	.1404
#3	.1418	.1415	1.162	.0224	.1304	.1382	.1431
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14283.	1933.1
Stddev	65.	38.1
%RSD	.45640	1.9693
#1	14209.	1970.9
#2	14307.	1894.8
#3	14332.	1933.6

Sample Name: 160-18336-A-1IMSD@10 Acquired: 8/17/2016 17:40:58 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0230	10.98	.0997	.1976	.1825	.1050	.1006	10.32	.0977
Stddev	.0012	.13	.0025	.0030	.0016	.0010	.0005	.02	.0004
%RSD	5.089	1.146	2.534	1.528	.9036	.9941	.5383	.2057	.3808
#1	.0241	10.86	.1025	.1946	.1809	.1039	.1000	10.33	.0977
#2	.0217	10.97	.0977	.2006	.1824	.1051	.1005	10.30	.0974
#3	.0231	11.11	.0989	.1974	.1842	.1060	.1011	10.33	.0981
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1110	.1150	.1106	18.79	2.689	.1221	7.159	.4172	.0475
Stddev	.0004	.0003	.0013	.12	.103	.0036	.107	.0031	.0001
%RSD	.3630	.2596	1.169	.6500	3.826	2.936	1.493	.7410	.1240
#1	.1110	.1152	.1121	18.67	2.570	.1234	7.060	.4136	.0476
#2	.1106	.1146	.1096	18.79	2.749	.1181	7.145	.4187	.0475
#3	.1114	.1150	.1103	18.92	2.748	.1248	7.272	.4192	.0475
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.284	.1159	.6936	.1081	.9733	.0356	.0466	.3914	.0991
Stddev	.027	.0003	.0013	.0009	.0020	.0011	.0011	.0083	.0004
%RSD	2.090	.2521	.1938	.8564	.2092	3.073	2.304	2.126	.4510
#1	1.263	.1162	.6938	.1070	.9756	.0351	.0467	.3956	.0996
#2	1.314	.1157	.6922	.1085	.9717	.0369	.0476	.3967	.0988
#3	1.274	.1159	.6949	.1087	.9725	.0350	.0454	.3818	.0989
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18336-A-1IMSD@10 Acquired: 8/17/2016 17:40:58 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1428	.1329	1.122	.0207	.1435	.1410	.1345
Stddev	.0012	.0014	.008	.0001	.0098	.0029	.0002
%RSD	.8517	1.025	.7406	.7096	6.845	2.054	.1418
#1	.1417	.1343	1.114	.0209	.1462	.1443	.1346
#2	.1426	.1328	1.122	.0206	.1326	.1387	.1343
#3	.1441	.1316	1.131	.0207	.1516	.1401	.1347
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14875.	1903.9
Stddev	20.	11.9
%RSD	.13214	.62597
#1	14872.	1917.2
#2	14896.	1900.1
#3	14857.	1894.3

Sample Name: 160-18336-A-2-H@10 Acquired: 8/17/2016 17:45:23 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0008	4.555	.0013	.0007	.0511	.0001	-.0032	3.706	.0001
Stddev	.0003	.087	.0012	.0060	.0010	.0000	.0010	.005	.0001
%RSD	43.70	1.911	90.12	811.6	1.954	24.65	31.34	.1364	112.2
#1	-.0011	4.488	.0006	-.0008	.0508	.0001	-.0033	3.709	-.0000
#2	-.0008	4.525	.0027	-.0043	.0502	.0001	-.0042	3.708	.0002
#3	-.0004	4.653	.0006	.0073	.0522	.0001	-.0022	3.700	.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0106	.0053	.0135	17.55	.5445	.0025	3.026	.2109	.0001
Stddev	.0001	.0001	.0011	.17	.0320	.0033	.025	.0023	.0001
%RSD	1.065	.9389	7.907	.9827	5.871	133.5	.8158	1.068	106.0
#1	.0106	.0054	.0128	17.41	.5191	-.0013	3.040	.2092	.0003
#2	.0106	.0053	.0147	17.49	.5340	.0044	3.040	.2101	.0000
#3	.0104	.0054	.0130	17.74	.5804	.0044	2.997	.2135	.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3950	.0078	.8272	.0031	.0614	.0007	.0009	.1638	-.0022
Stddev	.0078	.0000	.0035	.0007	.0035	.0006	.0027	.0158	.0003
%RSD	1.967	.6368	.4183	22.36	5.713	84.67	293.4	9.626	13.89
#1	.4022	.0078	.8312	.0029	.0576	.0015	-.0009	.1463	-.0019
#2	.3868	.0078	.8256	.0038	.0621	.0004	-.0004	.1683	-.0024
#3	.3960	.0078	.8249	.0025	.0645	.0003	.0040	.1768	-.0024
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18336-A-2-H@10 Acquired: 8/17/2016 17:45:23 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0190	.0444	1.969	-.0031	.0247	.0553	.0318
Stddev	.0003	.0016	.023	.0016	.0079	.0069	.0002
%RSD	1.329	3.625	1.156	50.66	32.15	12.50	.6537
#1	.0188	.0429	1.950	-.0026	.0176	.0479	.0320
#2	.0189	.0441	1.962	-.0019	.0233	.0563	.0318
#3	.0193	.0461	1.994	-.0049	.0333	.0617	.0316
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14890.	1948.8
Stddev	21.	15.1
%RSD	.14096	.77554
#1	14886.	1947.8
#2	14871.	1964.4
#3	14912.	1934.3

Sample Name: 160-18336-A-3-C@10 Acquired: 8/17/2016 17:49:57 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0002	7.819	.0041	-.0021	.0717	.0002	.0002	8.414	-.0000
Stddev	.0004	.037	.0009	.0055	.0001	.0001	.0004	.108	.0001
%RSD	186.0	.4714	21.18	260.6	.1882	26.61	182.9	1.281	290.4
#1	-.0007	7.844	.0039	-.0081	.0716	.0002	.0007	8.359	.0000
#2	.0000	7.776	.0033	.0028	.0718	.0003	-.0000	8.538	.0000
#3	.0000	7.835	.0050	-.0010	.0716	.0002	-.0000	8.345	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0093	.0111	.0112	17.68	1.307	.0118	5.132	.3354	-.0003
Stddev	.0002	.0003	.0009	.02	.037	.0009	.018	.0009	.0002
%RSD	2.260	2.510	8.415	.1246	2.859	7.864	.3425	.2766	65.00
#1	.0091	.0110	.0114	17.70	1.339	.0119	5.134	.3364	-.0003
#2	.0095	.0114	.0102	17.69	1.317	.0109	5.149	.3348	-.0001
#3	.0093	.0109	.0120	17.65	1.266	.0127	5.114	.3348	-.0004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2020	.0129	.5645	.0041	.0313	.0016	-.0016	.2851	-.0007
Stddev	.0210	.0001	.0052	.0011	.0022	.0011	.0022	.0074	.0007
%RSD	10.39	.7946	.9198	25.94	6.939	67.92	140.7	2.598	100.2
#1	.1909	.0128	.5599	.0050	.0308	.0027	.0006	.2796	-.0003
#2	.2262	.0128	.5701	.0044	.0336	.0016	-.0039	.2935	-.0015
#3	.1888	.0130	.5635	.0029	.0294	.0005	-.0015	.2822	-.0003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18336-A-3-C@10 Acquired: 8/17/2016 17:49:57 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0357	.0326	1.006	-.0019	.0385	.0347	.0353
Stddev	.0002	.0022	.003	.0014	.0044	.0081	.0006
%RSD	.6187	6.739	.3196	69.80	11.36	23.27	1.692
#1	.0355	.0346	1.002	-.0028	.0433	.0379	.0350
#2	.0357	.0303	1.007	-.0004	.0374	.0406	.0360
#3	.0359	.0329	1.008	-.0026	.0348	.0255	.0350
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14310.	1950.2
Stddev	178.	35.3
%RSD	1.2456	1.8081
#1	14292.	1913.3
#2	14142.	1954.0
#3	14497.	1983.5

Sample Name: 160-18336-A-5-C@10 Acquired: 8/17/2016 17:54:32 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0008	7.572	.0033	-.0013	.0872	.0002	-.0021	9.750	-.0000
Stddev	.0006	.076	.0009	.0034	.0012	.0002	.0010	.120	.0000
%RSD	77.22	1.003	28.56	259.2	1.420	75.28	46.66	1.233	13370.
#1	-.0001	7.498	.0037	-.0041	.0863	.0001	-.0031	9.776	-.0000
#2	-.0013	7.568	.0022	.0024	.0867	.0004	-.0012	9.855	.0000
#3	-.0010	7.649	.0039	-.0022	.0887	.0001	-.0019	9.619	.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0109	.0133	.0126	17.98	1.367	.0137	4.853	.3967	-.0000
Stddev	.0002	.0002	.0023	.25	.039	.0023	.094	.0039	.0002
%RSD	1.433	1.706	18.06	1.387	2.846	17.04	1.933	.9736	871.4
#1	.0111	.0134	.0110	17.81	1.322	.0142	4.869	.3944	.0001
#2	.0109	.0133	.0152	17.86	1.392	.0112	4.751	.3945	-.0002
#3	.0108	.0130	.0116	18.26	1.387	.0158	4.937	.4011	.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2136	.0130	.6200	.0055	.0309	.0007	-.0011	.3530	-.0012
Stddev	.0153	.0004	.0069	.0003	.0012	.0010	.0013	.0066	.0008
%RSD	7.164	2.813	1.109	4.828	4.007	146.7	122.8	1.856	64.58
#1	.2313	.0131	.6218	.0055	.0300	.0000	-.0023	.3603	-.0013
#2	.2043	.0133	.6259	.0057	.0323	.0002	-.0013	.3508	-.0004
#3	.2053	.0126	.6125	.0052	.0303	.0019	.0003	.3478	-.0019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18336-A-5-C@10 Acquired: 8/17/2016 17:54:32 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0350	.0351	1.169	-.0018	.0396	.0413	.0397
Stddev	.0005	.0012	.015	.0006	.0117	.0048	.0007
%RSD	1.303	3.332	1.284	34.52	29.59	11.69	1.663
#1	.0347	.0344	1.160	-.0013	.0350	.0362	.0398
#2	.0348	.0365	1.161	-.0016	.0529	.0457	.0403
#3	.0355	.0345	1.187	-.0025	.0309	.0422	.0390
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14655.	1917.8
Stddev	122.	18.1
%RSD	.83252	.94276
#1	14545.	1926.0
#2	14635.	1897.0
#3	14786.	1930.3

Sample Name: 160-18336-A-7-C@10 Acquired: 8/17/2016 17:59:07 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002	9.779	.0053	-.0022	.0534	.0003	-.0004	6.903	.0001
Stddev	.0005	.070	.0002	.0021	.0003	.0002	.0009	.116	.0002
%RSD	202.7	.7185	4.429	94.88	.5313	50.10	232.2	1.675	173.5
#1	-.0003	9.763	.0055	-.0006	.0534	.0002	.0003	6.770	.0000
#2	.0005	9.719	.0050	-.0047	.0532	.0005	-.0000	6.980	.0003
#3	.0006	9.856	.0052	-.0014	.0537	.0002	-.0014	6.960	-.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0096	.0152	.0167	20.42	1.163	.0106	6.805	.3212	-.0000
Stddev	.0002	.0002	.0008	.05	.050	.0027	.046	.0013	.0001
%RSD	2.000	1.278	4.920	.2656	4.284	25.88	.6824	.4130	261.9
#1	.0095	.0150	.0159	20.37	1.157	.0135	6.752	.3198	.0000
#2	.0098	.0153	.0167	20.43	1.215	.0081	6.839	.3214	-.0002
#3	.0094	.0154	.0175	20.48	1.116	.0101	6.824	.3224	-.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2600	.0175	.4903	.0075	.0163	.0029	.0001	.1932	.0001
Stddev	.0039	.0003	.0075	.0002	.0008	.0007	.0028	.0002	.0001
%RSD	1.497	1.757	1.532	3.074	5.173	23.85	2027.	.1206	39.46
#1	.2642	.0172	.4816	.0073	.0164	.0037	-.0031	.1934	.0002
#2	.2591	.0178	.4953	.0074	.0155	.0028	.0017	.1933	.0002
#3	.2566	.0176	.4939	.0077	.0172	.0023	.0017	.1929	.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18336-A-7-C@10 Acquired: 8/17/2016 17:59:07 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0355	.0284	.6281	-.0015	.0373	.0366	.0390
Stddev	.0003	.0043	.0037	.0007	.0068	.0039	.0007
%RSD	.9114	15.12	.5896	44.18	18.13	10.56	1.821
#1	.0357	.0236	.6245	-.0011	.0323	.0384	.0382
#2	.0352	.0299	.6279	-.0012	.0346	.0391	.0394
#3	.0358	.0318	.6319	-.0023	.0450	.0321	.0394
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14573.	1960.4
Stddev	132.	7.4
%RSD	.90432	.37694
#1	14725.	1954.7
#2	14494.	1957.9
#3	14500.	1968.8

Sample Name: MB 160-264898/1-A Acquired: 8/17/2016 18:03:41 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment: 264898

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0003	.0139	-.0000	-.0018	.0003	.0001	-.0001	.0278	.0000
Stddev	.0009	.0189	.0011	.0021	.0003	.0001	.0007	.0013	.0001
%RSD	326.9	135.3	2438.	113.8	106.2	191.5	570.8	4.541	803.4
#1	.0007	.0065	.0002	.0004	.0001	-.0000	-.0009	.0270	.0001
#2	-.0010	.0354	-.0012	-.0037	.0002	.0002	.0004	.0293	-.0000
#3	-.0006	-.0000	.0009	-.0023	.0007	-.0000	.0002	.0272	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0004	.0002	.0003	.0086	-.2663	-.0012	-.0077	.0002	.0002
Stddev	.0002	.0001	.0006	.0013	.0572	.0007	.0080	.0008	.0002
%RSD	44.71	66.11	221.4	15.20	21.47	54.84	103.3	327.3	111.1
#1	-.0004	.0003	.0009	.0098	-.2285	-.0005	.0013	-.0006	.0003
#2	-.0005	.0002	-.0003	.0072	-.2383	-.0013	-.0107	.0008	.0002
#3	-.0002	.0001	.0002	.0086	-.3321	-.0019	-.0139	.0005	-.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0012	.0002	.0028	-.0003	.0070	.0014	.0002	.0161	.0002
Stddev	.0231	.0002	.0004	.0001	.0024	.0020	.0039	.0070	.0003
%RSD	1918.	121.3	12.86	40.77	35.03	137.5	2461.	43.63	142.5
#1	-.0260	.0001	.0025	-.0002	.0084	.0037	-.0026	.0142	-.0001
#2	.0198	.0004	.0027	-.0004	.0041	.0003	-.0016	.0238	.0004
#3	.0026	.0000	.0032	-.0002	.0083	.0003	.0047	.0101	.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: MB 160-264898/1-A Acquired: 8/17/2016 18:03:41 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment: 264898

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0000	.0031	-.0004	-.0004	-.0014	.0014	.0005
Stddev	.0001	.0013	.0002	.0010	.0154	.0041	.0000
%RSD	371.4	43.17	39.06	229.7	1125.	290.3	5.589
#1	-.0000	.0044	-.0003	.0003	-.0151	.0056	.0005
#2	-.0002	.0032	-.0003	.0000	.0153	.0012	.0005
#3	.0001	.0017	-.0006	-.0015	-.0043	-.0025	.0005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14659.	1964.2
Stddev	198.	11.7
%RSD	1.3535	.59623
#1	14434.	1977.1
#2	14735.	1954.3
#3	14808.	1961.1

Sample Name: LCS 160-264898/2-A Acquired: 8/17/2016 18:08:22 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2152	10.09	.9091	1.959	1.003	1.019	.9569	9.969	.9309
Stddev	.0014	.16	.0240	.022	.015	.013	.0237	.263	.0245
%RSD	.6407	1.625	2.635	1.136	1.454	1.300	2.477	2.641	2.636
#1	.2163	10.28	.9298	1.983	1.019	1.034	.9792	10.19	.9516
#2	.2156	9.995	.9146	1.939	.9921	1.010	.9594	10.03	.9373
#3	.2136	9.989	.8829	1.955	.9969	1.013	.9320	9.680	.9038
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9803	.9680	.9400	10.02	10.03	1.031	9.946	.9868	.4701
Stddev	.0258	.0251	.0237	.14	.17	.012	.154	.0142	.0124
%RSD	2.636	2.593	2.524	1.439	1.689	1.190	1.545	1.442	2.636
#1	1.002	.9891	.9567	10.19	10.22	1.045	10.12	1.003	.4799
#2	.9875	.9746	.9504	9.946	9.912	1.024	9.835	.9774	.4743
#3	.9516	.9402	.9128	9.937	9.955	1.024	9.881	.9799	.4562
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.21	.9845	1.056	.9869	9.056	.4754	.4559	4.217	.9806
Stddev	.15	.0265	.028	.0262	.228	.0156	.0124	.044	.0258
%RSD	1.443	2.694	2.656	2.653	2.517	3.282	2.713	1.049	2.631
#1	10.37	1.006	1.079	1.007	9.254	.4893	.4625	4.265	1.000
#2	10.08	.9921	1.064	.9961	9.106	.4784	.4635	4.179	.9901
#3	10.17	.9550	1.025	.9573	8.807	.4585	.4416	4.207	.9514
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: LCS 160-264898/2-A Acquired: 8/17/2016 18:08:22 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.025	.9927	1.006	.2042	1.031	.9926	.9347
Stddev	.014	.0091	.011	.0054	.005	.0124	.0251
%RSD	1.399	.9126	1.117	2.649	.4840	1.250	2.681
#1	1.041	.9973	1.018	.2091	1.028	1.007	.9555
#2	1.015	.9986	.9968	.2051	1.028	.9856	.9418
#3	1.018	.9823	1.002	.1984	1.037	.9854	.9069
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14107.	1912.1
Stddev	376.	23.2
%RSD	2.6686	1.2115
#1	13815.	1896.0
#2	13975.	1901.7
#3	14532.	1938.7

Sample Name: 160-18390-A-1-A@5 Acquired: 8/17/2016 18:12:34 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0480	15.59	.2359	.6300	.3022	.3086	.0017	18.17	.0871
Stddev	.0010	.01	.0049	.0089	.0005	.0004	.0024	.33	.0014
%RSD	1.997	.0468	2.083	1.411	.1710	.1149	141.1	1.841	1.585
#1	.0479	15.59	.2411	.6399	.3016	.3083	.0009	18.51	.0886
#2	.0489	15.60	.2351	.6278	.3024	.3090	.0044	18.18	.0869
#3	.0470	15.59	.2314	.6225	.3025	.3085	-.0002	17.84	.0858
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2470	.1928	.1473	23.34	9.784	.4524	31.35	.4365	.1435
Stddev	.0047	.0035	.0029	.06	.035	.0007	.18	.0016	.0026
%RSD	1.899	1.792	1.995	.2435	.3552	.1618	.5666	.3597	1.797
#1	.2518	.1964	.1505	23.38	9.780	.4517	31.42	.4379	.1460
#2	.2468	.1927	.1466	23.36	9.821	.4523	31.48	.4369	.1436
#3	.2424	.1894	.1448	23.27	9.751	.4532	31.15	.4348	.1408
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.44	.1722	.7863	.4638	.5664	.0648	.5410	.4910	.1529
Stddev	.04	.0029	.0148	.0084	.0123	.0012	.0110	.0041	.0034
%RSD	.2451	1.710	1.881	1.820	2.167	1.879	2.031	.8314	2.227
#1	14.45	.1752	.8011	.4724	.5791	.0645	.5525	.4885	.1562
#2	14.47	.1719	.7864	.4635	.5655	.0661	.5397	.4957	.1532
#3	14.40	.1693	.7715	.4555	.5546	.0637	.5306	.4887	.1494
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18390-A-1-A@5 Acquired: 8/17/2016 18:12:34 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3320	.0368	.8294	.4576	.1876	.3195	.8446
Stddev	.0003	.0027	.0030	.0072	.0060	.0041	.0152
%RSD	.0858	7.400	.3576	1.580	3.199	1.294	1.805
#1	.3317	.0372	.8285	.4649	.1902	.3241	.8600
#2	.3321	.0338	.8328	.4575	.1807	.3184	.8442
#3	.3322	.0392	.8270	.4505	.1918	.3160	.8295
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	15373.	2046.6
Stddev	212.	17.8
%RSD	1.3769	.86790
#1	15198.	2027.1
#2	15312.	2061.9
#3	15608.	2050.7

Sample Name: 160-18390-A-1-ASD@25 Acquired: 8/17/2016 18:16:56 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0097	3.327	.0477	.1359	.0647	.0651	.0004	3.871	.0181
Stddev	.0009	.043	.0017	.0037	.0002	.0004	.0020	.075	.0002
%RSD	8.850	1.280	3.652	2.713	.3610	.6584	473.4	1.944	1.021
#1	.0103	3.296	.0466	.1316	.0646	.0651	-.0016	3.833	.0180
#2	.0101	3.311	.0467	.1379	.0645	.0646	.0004	3.823	.0180
#3	.0087	3.376	.0497	.1381	.0649	.0655	.0024	3.958	.0183
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0523	.0404	.0312	5.004	1.958	.0978	6.719	.0934	.0299
Stddev	.0010	.0008	.0019	.029	.056	.0026	.027	.0014	.0009
%RSD	1.980	1.943	5.933	.5691	2.841	2.685	.3980	1.546	2.847
#1	.0515	.0400	.0313	4.981	2.008	.0998	6.702	.0920	.0293
#2	.0519	.0400	.0294	4.993	1.898	.0948	6.706	.0934	.0297
#3	.0534	.0413	.0331	5.036	1.968	.0988	6.750	.0949	.0309
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.165	.0367	.1616	.1000	.1175	.0134	.1115	.1082	.0318
Stddev	.014	.0009	.0038	.0024	.0020	.0011	.0042	.0087	.0009
%RSD	.4393	2.347	2.328	2.384	1.669	8.406	3.807	8.076	2.950
#1	3.179	.0361	.1603	.0992	.1176	.0134	.1147	.1181	.0309
#2	3.151	.0363	.1587	.0982	.1155	.0122	.1067	.1015	.0319
#3	3.164	.0377	.1658	.1027	.1194	.0145	.1132	.1051	.0327
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18390-A-1-ASD@25 Acquired: 8/17/2016 18:16:56 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0710	.0091	.1754	.0997	.0487	.0688	.1759
Stddev	.0005	.0017	.0025	.0024	.0047	.0013	.0038
%RSD	.6454	18.22	1.406	2.394	9.611	1.946	2.147
#1	.0710	.0101	.1726	.0986	.0526	.0674	.1741
#2	.0705	.0100	.1768	.0980	.0435	.0701	.1735
#3	.0714	.0072	.1769	.1024	.0500	.0690	.1803
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	15074.	1975.0
Stddev	197.	22.4
%RSD	1.3088	1.1350
#1	15256.	1993.1
#2	15101.	1982.0
#3	14865.	1950.0

Sample Name: CCVL Acquired: 8/17/2016 18:21:27 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0100	.2026	.0086	.1002	.0487	.0050	.1965	1.011	.0047
Stddev	.0005	.0107	.0011	.0038	.0006	.0002	.0009	.004	.0000
%RSD	4.880	5.289	13.13	3.790	1.167	3.886	.4644	.4300	.3295
#1	.0105	.1924	.0073	.1037	.0487	.0050	.1956	1.007	.0047
#2	.0100	.2138	.0091	.0962	.0493	.0051	.1963	1.015	.0047
#3	.0095	.2017	.0094	.1008	.0482	.0048	.1974	1.009	.0047
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0498	.0098	.0258	.0998	4.972	.0510	.9771	.0144	.0381
Stddev	.0005	.0001	.0010	.0018	.037	.0023	.0081	.0005	.0003
%RSD	1.011	1.133	3.878	1.827	.7378	4.504	.8277	3.555	.7737
#1	.0496	.0097	.0253	.0977	4.966	.0524	.9747	.0138	.0378
#2	.0504	.0099	.0252	.1011	5.011	.0523	.9861	.0145	.0384
#3	.0494	.0098	.0270	.1005	4.938	.0484	.9705	.0148	.0382
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.046	.0400	.2485	.0098	4.439	.0103	.0106	.3751	.0976
Stddev	.012	.0001	.0010	.0004	.019	.0014	.0021	.0060	.0007
%RSD	1.128	.1268	.4012	4.253	.4322	13.70	19.64	1.589	.7282
#1	1.036	.0401	.2475	.0094	4.430	.0118	.0127	.3698	.0977
#2	1.059	.0400	.2495	.0098	4.461	.0090	.0104	.3815	.0983
#3	1.042	.0400	.2485	.0103	4.425	.0101	.0086	.3738	.0969
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCVL Acquired: 8/17/2016 18:21:27 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0051	.1845	.0201	.0214	.4868	.0498	.0187
Stddev	.0001	.0015	.0010	.0003	.0107	.0069	.0000
%RSD	1.627	.7877	4.997	1.527	2.199	13.91	.2350
#1	.0050	.1850	.0189	.0210	.4781	.0522	.0186
#2	.0051	.1857	.0206	.0215	.4836	.0552	.0187
#3	.0052	.1829	.0207	.0217	.4987	.0420	.0186
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14084.	1821.8
Stddev	68.	40.0
%RSD	.48192	2.1949
#1	14151.	1852.2
#2	14015.	1776.5
#3	14086.	1836.6

Sample Name: CCV Acquired: 8/17/2016 18:26:01 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.069	50.24	4.854	.9794	4.975	5.121	4.847	49.55	4.871
Stddev	.003	.29	.014	.0093	.023	.026	.012	.16	.013
%RSD	.2865	.5869	.2774	.9453	.4535	.4998	.2418	.3282	.2580
#1	1.069	50.57	4.856	.9899	5.000	5.151	4.853	49.58	4.879
#2	1.067	50.02	4.839	.9757	4.965	5.108	4.833	49.38	4.856
#3	1.073	50.11	4.866	.9725	4.958	5.104	4.855	49.70	4.877
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.926	4.937	4.918	49.33	49.98	5.030	49.10	4.841	.9848
Stddev	.013	.015	.015	.22	.29	.018	.30	.018	.0035
%RSD	.2614	.3022	.3065	.4411	.5879	.3550	.6100	.3810	.3587
#1	4.931	4.940	4.922	49.54	50.31	5.050	49.38	4.858	.9878
#2	4.912	4.921	4.902	49.34	49.76	5.019	49.12	4.843	.9809
#3	4.936	4.950	4.931	49.11	49.86	5.020	48.78	4.821	.9856
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.25	4.931	51.71	4.972	47.94	.9535	.9690	4.986	4.958
Stddev	.26	.012	.15	.011	.13	.0046	.0022	.022	.013
%RSD	.5244	.2478	.2979	.2198	.2608	.4791	.2316	.4519	.2644
#1	50.56	4.935	51.73	4.974	48.02	.9573	.9667	5.009	4.966
#2	50.11	4.917	51.55	4.960	47.79	.9484	.9712	4.985	4.943
#3	50.10	4.940	51.85	4.981	48.00	.9549	.9690	4.964	4.966
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCV Acquired: 8/17/2016 18:26:01 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.090	4.990	4.949	.9993	5.032	4.987	4.878
Stddev	.026	.022	.016	.0026	.027	.029	.014
%RSD	.5178	.4514	.3156	.2626	.5405	.5767	.2804
#1	5.121	5.009	4.966	.9986	5.001	5.019	4.884
#2	5.077	4.965	4.948	.9971	5.054	4.965	4.863
#3	5.073	4.996	4.935	1.002	5.039	4.976	4.889
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13157.	1810.2
Stddev	61.	6.4
%RSD	.46509	.35327
#1	13156.	1802.8
#2	13219.	1814.3
#3	13097.	1813.4

Sample Name: CCB Acquired: 8/17/2016 18:30:10 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0003	.0156	.0011	.0048	-.0002	.0002	.0020	.0050	.0004
Stddev	.0006	.0072	.0004	.0041	.0006	.0001	.0005	.0063	.0006
%RSD	173.2	46.07	33.46	85.02	269.6	69.11	24.36	125.8	168.9
#1	-.0008	.0082	.0007	.0031	.0000	.0003	.0023	.0008	-.0001
#2	.0003	.0160	.0010	.0019	-.0009	.0000	.0014	.0019	.0001
#3	-.0005	.0225	.0015	.0094	.0002	.0003	.0022	.0123	.0011
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003	.0003	.0001	.0020	-.0968	-.0011	-.0261	.0006	.0003
Stddev	.0008	.0005	.0005	.0014	.0725	.0015	.0398	.0004	.0001
%RSD	234.5	175.4	357.7	72.21	74.89	138.0	152.4	64.35	45.36
#1	.0001	-.0000	.0002	.0028	-.0136	.0001	-.0711	.0008	.0002
#2	-.0003	.0000	-.0004	.0028	-.1302	-.0029	.0045	.0002	.0002
#3	.0012	.0009	.0006	.0003	-.1465	-.0005	-.0118	.0007	.0005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0332	.0003	.0022	.0010	.0056	-.0001	-.0017	-.0003	-.0005
Stddev	.0039	.0007	.0072	.0014	.0078	.0007	.0006	.0074	.0006
%RSD	11.79	195.0	324.7	142.4	140.1	1065.	38.73	2177.	125.2
#1	.0291	-.0001	-.0035	-.0005	.0030	.0008	-.0023	-.0029	-.0008
#2	.0336	-.0000	-.0002	.0023	-.0006	-.0005	-.0010	-.0061	-.0008
#3	.0369	.0011	.0103	.0012	.0144	-.0005	-.0017	.0080	.0002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: CCB Acquired: 8/17/2016 18:30:10 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001	.0023	.0004	-.0003	-.0089	-.0005	.0002
Stddev	.0002	.0018	.0011	.0011	.0062	.0034	.0006
%RSD	242.9	79.79	275.6	313.9	69.29	646.4	349.6
#1	.0003	.0023	.0005	-.0005	-.0128	-.0023	-.0002
#2	-.0001	.0040	-.0008	-.0013	-.0122	-.0027	-.0002
#3	-.0000	.0004	.0015	.0008	-.0018	.0034	.0009
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13997.	1809.3
Stddev	57.	8.5
%RSD	.41072	.46758
#1	13962.	1811.3
#2	14063.	1816.6
#3	13965.	1800.0

Sample Name: 160-18390-A-1-B MS@5 Acquired: 8/17/2016 18:34:52 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0900	26.66	.4297	1.048	.5139	.5169	.1816	21.46	.2713
Stddev	.0010	.35	.0073	.015	.0057	.0054	.0031	.34	.0049
%RSD	1.130	1.295	1.694	1.449	1.103	1.042	1.703	1.587	1.807
#1	.0890	26.86	.4239	1.061	.5157	.5200	.1816	21.20	.2676
#2	.0901	26.26	.4379	1.031	.5076	.5107	.1847	21.84	.2769
#3	.0910	26.85	.4274	1.052	.5185	.5201	.1785	21.33	.2695
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4475	.3911	.3371	27.95	12.95	.6687	35.27	.6477	.2427
Stddev	.0072	.0065	.0067	.25	.21	.0115	.40	.0072	.0041
%RSD	1.604	1.653	1.994	.8937	1.635	1.722	1.123	1.118	1.706
#1	.4422	.3863	.3339	28.14	13.07	.6735	35.52	.6527	.2399
#2	.4557	.3985	.3449	27.67	12.71	.6556	34.82	.6394	.2475
#3	.4446	.3886	.3327	28.03	13.08	.6771	35.48	.6511	.2408
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	16.76	.3702	1.007	.6746	2.434	.1579	.6579	.9229	.3510
Stddev	.19	.0061	.017	.0104	.043	.0042	.0119	.0067	.0049
%RSD	1.112	1.638	1.725	1.549	1.781	2.634	1.810	.7250	1.400
#1	16.82	.3659	.9952	.6666	2.409	.1567	.6510	.9282	.3476
#2	16.55	.3772	1.027	.6864	2.484	.1625	.6716	.9154	.3566
#3	16.91	.3677	.9979	.6709	2.409	.1544	.6510	.9252	.3488
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18390-A-1-B MS@5 Acquired: 8/17/2016 18:34:52 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5478	.2331	1.291	.5216	.3812	.5336	1.086
Stddev	.0062	.0040	.015	.0073	.0119	.0060	.018
%RSD	1.125	1.709	1.185	1.396	3.111	1.132	1.636
#1	.5499	.2314	1.296	.5151	.3946	.5361	1.073
#2	.5408	.2303	1.273	.5295	.3719	.5267	1.106
#3	.5526	.2377	1.302	.5203	.3772	.5380	1.080
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14892.	2006.9
Stddev	175.	29.5
%RSD	1.1752	1.4709
#1	15085.	1976.5
#2	14745.	2035.5
#3	14844.	2008.7

Sample Name: 160-18390-A-1-CMSD@5 Acquired: 8/17/2016 18:39:06 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0919	26.69	.4302	1.039	.5313	.5129	.1776	21.94	.2742
Stddev	.0016	.06	.0012	.004	.0021	.0026	.0010	.05	.0009
%RSD	1.732	.2179	.2768	.3628	.4025	.5022	.5597	.2181	.3302
#1	.0918	26.65	.4299	1.037	.5289	.5103	.1787	21.89	.2731
#2	.0904	26.75	.4315	1.043	.5329	.5155	.1773	21.99	.2747
#3	.0936	26.65	.4292	1.036	.5321	.5130	.1768	21.95	.2747
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4504	.3927	.3360	28.67	12.98	.6688	35.51	.6470	.2443
Stddev	.0007	.0006	.0015	.09	.05	.0033	.11	.0038	.0005
%RSD	.1451	.1578	.4572	.3174	.3508	.5004	.3039	.5832	.1998
#1	.4506	.3921	.3373	28.58	12.94	.6652	35.51	.6454	.2438
#2	.4509	.3933	.3343	28.76	12.97	.6694	35.61	.6513	.2447
#3	.4496	.3928	.3363	28.68	13.03	.6719	35.40	.6442	.2445
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	17.51	.3703	1.036	.6786	2.429	.1555	.6779	.8333	.3478
Stddev	.06	.0006	.003	.0015	.009	.0016	.0021	.0073	.0015
%RSD	.3198	.1691	.2411	.2176	.3755	1.006	.3105	.8794	.4407
#1	17.48	.3696	1.033	.6772	2.419	.1538	.6786	.8289	.3466
#2	17.57	.3706	1.038	.6801	2.432	.1569	.6796	.8418	.3496
#3	17.47	.3707	1.037	.6783	2.436	.1557	.6755	.8292	.3474
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18390-A-1-CMSD@5 Acquired: 8/17/2016 18:39:06 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5479	.2252	1.315	.5329	.3687	.5270	1.110
Stddev	.0025	.0019	.005	.0035	.0067	.0000	.003
%RSD	.4476	.8438	.3602	.6544	1.807	.0093	.2834
#1	.5453	.2258	1.309	.5314	.3649	.5271	1.106
#2	.5502	.2230	1.316	.5369	.3648	.5270	1.112
#3	.5483	.2266	1.318	.5305	.3764	.5270	1.112
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	15097.	2041.8
Stddev	80.	25.0
%RSD	.53200	1.2220
#1	15079.	2013.2
#2	15026.	2058.8
#3	15184.	2053.5

Sample Name: 160-18390-A-1-A@10 Acquired: 8/17/2016 18:43:20 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0249	8.252	.1245	.3303	.1592	.1621	.0007	9.725	.0461
Stddev	.0002	.047	.0018	.0032	.0011	.0016	.0021	.149	.0007
%RSD	.9715	.5736	1.456	.9580	.6768	.9860	303.4	1.531	1.416
#1	.0251	8.264	.1250	.3267	.1598	.1627	-.0014	9.692	.0459
#2	.0248	8.200	.1224	.3317	.1579	.1603	.0029	9.596	.0457
#3	.0247	8.292	.1259	.3326	.1597	.1633	.0007	9.888	.0469
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1321	.1025	.0776	12.24	5.115	.2375	16.39	.2267	.0763
Stddev	.0021	.0016	.0014	.13	.039	.0049	.07	.0037	.0011
%RSD	1.603	1.594	1.841	1.080	.7589	2.055	.4176	1.627	1.435
#1	.1314	.1020	.0774	12.31	5.105	.2376	16.41	.2275	.0761
#2	.1304	.1011	.0763	12.08	5.082	.2325	16.31	.2227	.0753
#3	.1345	.1043	.0791	12.31	5.157	.2423	16.44	.2299	.0775
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.673	.0925	.4140	.2500	.3009	.0343	.2877	.2580	.0816
Stddev	.063	.0015	.0053	.0041	.0064	.0018	.0047	.0113	.0012
%RSD	.8255	1.662	1.284	1.653	2.136	5.168	1.640	4.391	1.411
#1	7.703	.0919	.4129	.2484	.2999	.0337	.2855	.2621	.0811
#2	7.600	.0914	.4094	.2470	.2951	.0329	.2845	.2667	.0808
#3	7.716	.0943	.4198	.2547	.3078	.0363	.2931	.2452	.0829
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18390-A-1-A@10 Acquired: 8/17/2016 18:43:20 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1755	.0215	.4316	.2483	.0912	.1661	.4479
Stddev	.0011	.0007	.0014	.0034	.0233	.0030	.0067
%RSD	.6251	3.454	.3230	1.380	25.51	1.825	1.492
#1	.1758	.0224	.4314	.2475	.0741	.1639	.4459
#2	.1743	.0210	.4303	.2454	.1177	.1696	.4425
#3	.1765	.0212	.4331	.2521	.0819	.1649	.4554
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14847.	1976.7
Stddev	225.	39.2
%RSD	1.5126	1.9834
#1	14762.	1987.2
#2	15101.	2009.6
#3	14677.	1933.3

Sample Name: 160-18390-A-1-ASD@50 Acquired: 8/17/2016 18:47:45 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0057	1.734	.0261	.0702	.0331	.0332	.0013	2.064	.0094
Stddev	.0009	.021	.0010	.0062	.0003	.0001	.0019	.019	.0002
%RSD	15.93	1.208	3.877	8.779	.8250	.1779	139.9	.9282	1.816
#1	.0048	1.711	.0272	.0772	.0330	.0332	-.0008	2.042	.0093
#2	.0066	1.751	.0252	.0680	.0329	.0332	.0023	2.073	.0093
#3	.0057	1.741	.0260	.0655	.0334	.0333	.0025	2.078	.0096
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0279	.0215	.0172	2.556	.9723	.0535	3.450	.0483	.0158
Stddev	.0004	.0003	.0004	.009	.0786	.0034	.026	.0004	.0003
%RSD	1.480	1.216	2.166	.3427	8.080	6.352	.7631	.8404	1.726
#1	.0275	.0212	.0174	2.546	.8845	.0574	3.420	.0479	.0155
#2	.0278	.0216	.0175	2.563	1.036	.0517	3.462	.0482	.0159
#3	.0283	.0217	.0168	2.558	.9966	.0513	3.468	.0487	.0160
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.627	.0196	.0844	.0524	.0638	.0066	.0562	.0592	.0168
Stddev	.015	.0001	.0020	.0016	.0033	.0009	.0029	.0027	.0008
%RSD	.9059	.3513	2.373	3.009	5.231	14.14	5.094	4.500	4.595
#1	1.632	.0196	.0824	.0506	.0607	.0077	.0579	.0621	.0173
#2	1.638	.0196	.0844	.0534	.0635	.0063	.0529	.0587	.0159
#3	1.610	.0195	.0864	.0533	.0673	.0059	.0578	.0569	.0172
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18390-A-1-ASD@50 Acquired: 8/17/2016 18:47:45 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0364	.0038	.0897	.0534	.0132	.0353	.0926
Stddev	.0002	.0012	.0009	.0007	.0164	.0021	.0010
%RSD	.5261	31.30	1.025	1.379	124.4	6.073	1.117
#1	.0362	.0035	.0901	.0526	.0290	.0376	.0915
#2	.0365	.0028	.0904	.0533	.0143	.0334	.0930
#3	.0365	.0051	.0887	.0541	-.0037	.0349	.0935
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14247.	1879.8
Stddev	184.	7.5
%RSD	1.2913	.40000
#1	14428.	1876.1
#2	14060.	1874.9
#3	14253.	1888.5

Sample Name: 160-18390-A-1-BMS@10 Acquired: 8/17/2016 18:52:20 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0454	13.68	.2200	.5326	.2625	.2646	.0950	11.17	.1390
Stddev	.0005	.06	.0016	.0007	.0011	.0014	.0016	.07	.0010
%RSD	1.108	.4641	.7177	.1271	.4319	.5206	1.733	.6458	.7247
#1	.0458	13.66	.2218	.5321	.2622	.2645	.0938	11.24	.1401
#2	.0449	13.74	.2197	.5323	.2637	.2660	.0969	11.17	.1390
#3	.0455	13.62	.2187	.5334	.2615	.2632	.0943	11.09	.1380
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2316	.2021	.1747	14.37	6.606	.3426	18.05	.3771	.1246
Stddev	.0017	.0015	.0020	.07	.039	.0040	.07	.0015	.0007
%RSD	.7360	.7514	1.174	.4653	.5828	1.167	.4055	.4041	.5592
#1	.2329	.2035	.1752	14.35	6.610	.3465	18.09	.3777	.1249
#2	.2321	.2024	.1764	14.45	6.643	.3427	18.09	.3783	.1250
#3	.2296	.2005	.1724	14.33	6.566	.3385	17.96	.3754	.1238
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.616	.1915	.5107	.3499	1.235	.0821	.3369	.4683	.1806
Stddev	.050	.0015	.0043	.0023	.011	.0034	.0039	.0113	.0014
%RSD	.5815	.8076	.8457	.6592	.8972	4.083	1.161	2.423	.7995
#1	8.624	.1929	.5124	.3513	1.242	.0836	.3366	.4803	.1821
#2	8.661	.1919	.5140	.3511	1.241	.0844	.3410	.4577	.1807
#3	8.562	.1899	.5058	.3472	1.222	.0782	.3331	.4668	.1792
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18390-A-1-BMS@10 Acquired: 8/17/2016 18:52:20 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2799	.1191	.6579	.2739	.1933	.2676	.5574
Stddev	.0020	.0028	.0052	.0017	.0046	.0020	.0039
%RSD	.7136	2.356	.7963	.6093	2.399	.7401	.6991
#1	.2799	.1215	.6619	.2734	.1959	.2679	.5610
#2	.2819	.1160	.6598	.2757	.1960	.2656	.5579
#3	.2779	.1197	.6519	.2725	.1879	.2695	.5532
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14620.	1944.5
Stddev	175.	16.4
%RSD	1.1994	.84194
#1	14418.	1939.1
#2	14732.	1962.9
#3	14710.	1931.5

Sample Name: 160-18390-A1CMSD@10 Acquired: 8/17/2016 18:56:43 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0478	14.01	.2265	.5433	.2765	.2676	.0941	11.71	.1441
Stddev	.0007	.05	.0018	.0076	.0010	.0008	.0015	.02	.0006
%RSD	1.546	.3579	.7765	1.398	.3452	.2936	1.543	.2059	.3849
#1	.0470	14.00	.2259	.5351	.2769	.2681	.0933	11.73	.1447
#2	.0484	14.06	.2285	.5501	.2772	.2680	.0958	11.70	.1440
#3	.0479	13.96	.2252	.5449	.2754	.2667	.0933	11.69	.1436
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2397	.2077	.1788	14.96	6.731	.3542	18.58	.3373	.1282
Stddev	.0009	.0006	.0022	.04	.086	.0052	.09	.0012	.0004
%RSD	.3604	.3116	1.258	.2743	1.284	1.466	.4971	.3437	.3248
#1	.2407	.2084	.1813	14.96	6.789	.3527	18.53	.3379	.1286
#2	.2394	.2077	.1780	15.00	6.632	.3600	18.68	.3360	.1280
#3	.2390	.2071	.1769	14.92	6.772	.3500	18.52	.3380	.1278
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.219	.1971	.5396	.3636	1.273	.0808	.3540	.4305	.1844
Stddev	.040	.0006	.0008	.0010	.005	.0021	.0025	.0127	.0004
%RSD	.4304	.3065	.1416	.2682	.4023	2.548	.7199	2.957	.2075
#1	9.221	.1977	.5403	.3645	1.278	.0828	.3568	.4408	.1846
#2	9.257	.1971	.5397	.3626	1.268	.0787	.3532	.4343	.1846
#3	9.178	.1965	.5388	.3637	1.272	.0811	.3519	.4163	.1839
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: 160-18390-A1CMSD@10 Acquired: 8/17/2016 18:56:43 Type: Unk
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2867	.1196	.6820	.2870	.1979	.2755	.5831
Stddev	.0015	.0017	.0029	.0008	.0213	.0035	.0019
%RSD	.5152	1.435	.4267	.2923	10.75	1.286	.3234
#1	.2871	.1178	.6799	.2877	.2064	.2722	.5851
#2	.2879	.1213	.6853	.2860	.1737	.2792	.5828
#3	.2850	.1197	.6808	.2873	.2137	.2751	.5813
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14528.	1953.3
Stddev	23.	23.9
%RSD	.15797	1.2237
#1	14553.	1978.1
#2	14509.	1930.4
#3	14522.	1951.2

Sample Name: CCVL Acquired: 8/17/2016 19:01:08 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0101	.2139	.0086	.0984	.0493	.0050	.1964	1.025	.0045
Stddev	.0001	.0169	.0009	.0055	.0005	.0001	.0026	.013	.0002
%RSD	1.403	7.918	9.997	5.633	1.051	1.619	1.299	1.221	4.865
#1	.0101	.1974	.0086	.0999	.0499	.0049	.1935	1.014	.0043
#2	.0103	.2313	.0077	.0923	.0489	.0050	.1982	1.023	.0045
#3	.0100	.2132	.0095	.1031	.0491	.0051	.1975	1.039	.0048
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0498	.0100	.0253	.0988	4.863	.0529	1.006	.0155	.0384
Stddev	.0009	.0001	.0023	.0065	.080	.0028	.036	.0004	.0006
%RSD	1.814	.9562	9.235	6.630	1.654	5.240	3.537	2.777	1.596
#1	.0489	.0101	.0228	.0921	4.781	.0497	.9808	.0157	.0378
#2	.0498	.0099	.0258	.1052	4.866	.0547	.9899	.0157	.0385
#3	.0507	.0100	.0274	.0989	4.941	.0542	1.046	.0150	.0390
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.050	.0406	.2504	.0104	4.486	.0104	.0108	.3692	.0986
Stddev	.029	.0008	.0028	.0008	.052	.0016	.0019	.0061	.0009
%RSD	2.755	1.908	1.105	7.360	1.153	15.23	17.48	1.647	.9187
#1	1.055	.0400	.2475	.0096	4.447	.0110	.0125	.3647	.0980
#2	1.019	.0403	.2507	.0110	4.467	.0086	.0088	.3668	.0981
#3	1.076	.0414	.2530	.0108	4.545	.0117	.0112	.3761	.0996
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCVL Acquired: 8/17/2016 19:01:08 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0051	.1869	.0186	.0211	.4798	.0536	.0188
Stddev	.0001	.0036	.0016	.0006	.0032	.0036	.0002
%RSD	1.528	1.913	8.605	2.677	.6749	6.760	1.229
#1	.0051	.1903	.0179	.0209	.4761	.0528	.0186
#2	.0052	.1832	.0204	.0207	.4817	.0504	.0189
#3	.0051	.1871	.0175	.0218	.4818	.0575	.0190
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	13917.	1834.6
Stddev	117.	19.3
%RSD	.83800	1.0505
#1	14040.	1836.0
#2	13902.	1853.2
#3	13808.	1814.7

Sample Name: CCV Acquired: 8/17/2016 19:05:42 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.066	51.30	4.894	.9902	5.022	5.163	4.916	50.46	4.936
Stddev	.004	.13	.028	.0051	.019	.016	.034	.23	.026
%RSD	.3617	.2470	.5627	.5191	.3867	.3051	.6847	.4525	.5355
#1	1.062	51.29	4.921	.9953	5.030	5.169	4.947	50.72	4.963
#2	1.068	51.18	4.866	.9850	5.000	5.145	4.880	50.29	4.910
#3	1.069	51.43	4.894	.9903	5.036	5.174	4.920	50.38	4.935
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.000	4.993	4.961	49.23	51.11	5.108	49.98	4.858	.9971
Stddev	.025	.025	.022	.25	.16	.020	.18	.023	.0051
%RSD	.5036	.5102	.4446	.5149	.3161	.3921	.3590	.4786	.5140
#1	5.026	5.020	4.978	49.39	51.05	5.112	50.08	4.871	1.002
#2	4.975	4.969	4.936	48.93	50.98	5.086	49.78	4.831	.9922
#3	4.999	4.991	4.968	49.35	51.29	5.125	50.09	4.871	.9965
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.13	5.001	52.32	5.036	48.74	.9725	.9761	5.007	4.993
Stddev	.19	.024	.28	.021	.30	.0039	.0060	.028	.025
%RSD	.3726	.4856	.5336	.4084	.6068	.4039	.6117	.5591	.5041
#1	51.24	5.027	52.63	5.058	49.00	.9745	.9815	5.020	5.022
#2	50.91	4.979	52.07	5.018	48.41	.9679	.9697	4.974	4.974
#3	51.23	4.998	52.28	5.031	48.80	.9750	.9770	5.025	4.984
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value									
Range									

Sample Name: CCV Acquired: 8/17/2016 19:05:42 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.155	5.025	4.986	1.013	4.968	5.077	4.950
Stddev	.014	.004	.018	.006	.025	.005	.025
%RSD	.2701	.0776	.3690	.5912	.5030	.1066	.5142
#1	5.161	5.029	4.997	1.019	4.953	5.082	4.976
#2	5.139	5.026	4.965	1.007	4.955	5.071	4.925
#3	5.164	5.021	4.997	1.014	4.997	5.078	4.950
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
Value							
Range							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	12853.	1729.1
Stddev	82.	9.5
%RSD	.64186	.54831
#1	12792.	1730.6
#2	12819.	1737.7
#3	12947.	1718.9

Sample Name: CCB Acquired: 8/17/2016 19:09:52 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280	Al3961	As1890	B_2496	Ba4554	Be3130	Bi2230	Ca1840	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.0001	.0047	.0007	.0039	.0005	.0007	.0006	.0024	.0000
Stddev	.0006	.0191	.0006	.0058	.0015	.0014	.0026	.0010	.0002
%RSD	424.1	405.1	82.81	147.9	280.6	202.4	442.1	40.33	7586.
#1	-.0001	-.0106	.0005	.0104	-.0003	-.0002	.0029	.0035	.0002
#2	-.0008	.0261	.0003	.0020	.0023	.0023	.0012	.0016	-.0002
#3	.0005	-.0013	.0013	-.0007	-.0004	-.0001	-.0023	.0021	.0000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Co2286	Cr2055	Cu2178	Fe2599	K_7664	Li6707	Mg2798	Mn2576	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002	.0001	.0003	.0048	-.0727	-.0001	.0007	.0014	.0001
Stddev	.0002	.0001	.0011	.0121	.0387	.0024	.0147	.0013	.0002
%RSD	118.7	113.7	384.4	253.6	53.17	2436.	2251.	94.81	146.1
#1	.0004	.0001	.0001	-.0021	-.0916	.0020	.0166	.0007	.0002
#2	.0001	.0000	.0015	.0188	-.0282	.0003	-.0023	.0028	.0003
#3	.0001	.0000	-.0007	-.0024	-.0982	-.0027	-.0124	.0005	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Elem	Na5895	Ni2216	P_1774	Pb2203	S_1820	Sb2068	Se1960	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0370	.0001	-.0006	.0005	.0033	.0014	-.0014	.0012	.0001
Stddev	.0158	.0002	.0011	.0004	.0020	.0011	.0015	.0126	.0007
%RSD	42.70	377.7	207.5	65.77	60.35	82.27	101.6	1073.	831.0
#1	.0191	.0001	.0007	.0001	.0056	.0025	-.0013	-.0090	.0007
#2	.0490	.0002	-.0015	.0007	.0019	.0002	-.0001	.0153	.0001
#3	.0429	-.0001	-.0009	.0007	.0025	.0014	-.0029	-.0028	-.0006
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit									
Low Limit									

Sample Name: CCB Acquired: 8/17/2016 19:09:52 Type: QC
Method: _2016(v44) Mode: CONC Corr. Factor: 1.000000
User: admin Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sr4077	Th2832	Ti3349	Tl1908	U_3670	V_2908	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0006	-.0013	-.0000	-.0013	.0098	-.0028	-.0000
Stddev	.0012	.0009	.0019	.0013	.0061	.0040	.0001
%RSD	188.0	69.07	6527.	104.0	62.02	142.0	350.0
#1	-.0001	-.0023	-.0008	-.0026	.0168	-.0055	.0001
#2	.0020	-.0007	.0021	-.0011	.0060	.0018	-.0001
#3	-.0000	-.0008	-.0014	-.0000	.0066	-.0047	-.0001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	None	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_3600	Y_3710
Units	Cts/S	Cts/S
Avg	14285.	1857.1
Stddev	106.	19.7
%RSD	.73971	1.0597
#1	14163.	1875.1
#2	14355.	1836.1
#3	14335.	1860.2

Element, Wavelength and Order	Date of Fit	Date of Cal.	Type of Fit	Weighting	A0	A1	A2	n (Exponent)
Ag 328.068 {103}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.001900	0.687535	0.000000	1.000000
Al 396.152 { 85}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.008726	0.271249	0.000000	1.000000
As 189.042 {478}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.000163	0.045656	0.000000	1.000000
B 249.678 {135}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.004695	0.251111	0.000000	1.000000
Ba 455.403 { 74}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.029005	12.960064	0.000000	1.000000
Be 313.042 {108}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.000783	17.129984	0.000000	1.000000
Bi 223.061 {451}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000221	0.057718	0.000000	1.000000
Ca 184.006 {483}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.000338	0.132281	0.000000	1.000000
Cd 228.802 {447}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000298	0.799664	0.000000	1.000000
Co 228.616 {448}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.000644	0.317321	0.000000	1.000000
Cr 205.560 {464}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000002	0.364962	0.000000	1.000000
Cu 217.894 {455}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000224	0.061418	0.000000	1.000000
Fe 259.940 {130}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.003325	0.344696	0.000000	1.000000
K 766.490 { 44}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.079061	0.066867	0.000000	1.000000
Li 670.784 { 50}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.030867	1.566899	0.000000	1.000000
Mg 279.806 {121}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.004672	0.043944	0.000000	1.000000
Mn 257.610 {131}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.004339	2.022057	0.000000	1.000000
Mo 202.030 {467}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000100	0.293054	0.000000	1.000000
Na 589.592 { 57}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.049108	0.219114	0.000000	1.000000
Ni 221.647 {452}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000091	0.498934	0.000000	1.000000
P 177.495 {490}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.001179	0.040787	0.000000	1.000000
Pb 220.353 {453}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000133	0.095094	0.000000	1.000000
S 182.034 {485}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.000201	0.024118	0.000000	1.000000
Sb 206.833 {463}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.000100	0.044603	0.000000	1.000000
Se 196.090 {472}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000125	0.033113	0.000000	1.000000
Si 251.611 {134}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.001897	0.150884	0.000000	1.000000
Sn 189.989 {478}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.000294	0.090940	0.000000	1.000000
Sr 407.771 { 83}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.006911	22.513813	0.000000	1.000000
Th 283.231 {119}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.002635	0.056295	0.000000	1.000000
Ti 334.941 {101}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.006002	1.677011	0.000000	1.000000
Tl 190.856 {477}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000421	0.052764	0.000000	1.000000
U 367.007 { 92}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.004099	0.049682	0.000000	1.000000
V 290.882 {116}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	0.003871	0.438356	0.000000	1.000000
Y 360.073 { 94}*	8/17/2016 13:41:21	8/17/2016 13:41:21	Linear	1/Conc	0.000000	0.000000	0.000000	1.000000
Y 371.030 { 91}*	8/17/2016 13:41:21	8/17/2016 13:41:21	Linear	1/Conc	0.000000	0.000000	0.000000	1.000000
Zn 213.856 {458}	8/17/2016 13:54:34	8/17/2016 13:54:34	Linear	1/Conc	-0.000031	0.874821	0.000000	1.000000

Element, Wavelength and Order	Correlation	Std Error of Est	Predicted MDL	Predicted MQL	Status	Reslope		QC Norm	
						Slope	Y-int	Slope factor	Offset
Ag 328.068 {103}	0.998481	0.000294	0.000786	0.002620	OK.	1.000000	0.000000	1	0
Al 396.152 { 85}	0.999986	0.000349	0.012143	0.040475	OK.	1.000000	0.000000	1	0
As 189.042 {478}	0.999836	0.000014	0.001511	0.005035	OK.	1.000000	0.000000	1	0
B 249.678 {135}	0.999922	0.000078	0.004306	0.014354	OK.	1.000000	0.000000	1	0
Ba 455.403 { 74}	0.999993	0.001844	0.000324	0.001078	OK.	1.000000	0.000000	1	0
Be 313.042 {108}	0.999874	0.003326	0.000108	0.000359	OK.	1.000000	0.000000	1	0
Bi 223.061 {451}	0.999900	0.000064	0.002105	0.007015	OK.	1.000000	0.000000	1	0
Ca 184.006 {483}	0.999996	0.000205	0.000500	0.001666	OK.	1.000000	0.000000	1	0
Cd 228.802 {447}	0.999897	0.000141	0.000157	0.000525	OK.	1.000000	0.000000	1	0
Co 228.616 {448}	0.999984	0.000069	0.000291	0.000970	OK.	1.000000	0.000000	1	0
Cr 205.560 {464}	0.999980	0.000040	0.000150	0.000501	OK.	1.000000	0.000000	1	0
Cu 217.894 {455}	0.999927	0.000020	0.001676	0.005588	OK.	1.000000	0.000000	1	0
Fe 259.940 {130}	0.999989	0.000279	0.003311	0.011036	OK.	1.000000	0.000000	1	0
K 766.490 { 44}	0.999912	0.001103	0.057941	0.193136	OK.	1.000000	0.000000	1	0
Li 670.784 { 50}	0.999999	0.000061	0.002693	0.008978	OK.	1.000000	0.000000	1	0
Mg 279.806 {121}	0.999988	0.000121	0.023682	0.078941	OK.	1.000000	0.000000	1	0
Mn 257.610 {131}	0.999997	0.000108	0.000524	0.001746	OK.	1.000000	0.000000	1	0
Mo 202.030 {467}	0.999887	0.000069	0.000288	0.000959	OK.	1.000000	0.000000	1	0
Na 589.592 { 57}	0.999992	0.000489	0.017165	0.057216	OK.	1.000000	0.000000	1	0
Ni 221.647 {452}	0.999992	0.000068	0.000239	0.000798	OK.	1.000000	0.000000	1	0
P 177.495 {490}	0.999995	0.000036	0.001359	0.004531	OK.	1.000000	0.000000	1	0
Pb 220.353 {453}	0.999998	0.000003	0.000999	0.003330	OK.	1.000000	0.000000	1	0
S 182.034 {485}	0.999406	0.001035	0.002529	0.008430	OK.	1.000000	0.000000	1	0
Sb 206.833 {463}	0.999722	0.000009	0.002202	0.007339	OK.	1.000000	0.000000	1	0
Se 196.090 {472}	0.999620	0.000009	0.002507	0.008356	OK.	1.000000	0.000000	1	0
Si 251.611 {134}	0.999716	0.000399	0.007321	0.024402	OK.	1.000000	0.000000	1	0
Sn 189.989 {478}	0.999968	0.000040	0.000629	0.002096	OK.	1.000000	0.000000	1	0
Sr 407.771 { 83}	0.999947	0.002847	0.000128	0.000427	OK.	1.000000	0.000000	1	0
Th 283.231 {119}	0.999913	0.000058	0.002675	0.008916	OK.	1.000000	0.000000	1	0
Ti 334.941 {101}	0.999986	0.000218	0.001168	0.003895	OK.	1.000000	0.000000	1	0
Tl 190.856 {477}	0.999979	0.000004	0.001296	0.004321	OK.	1.000000	0.000000	1	0
U 367.007 { 92}	0.999942	0.000076	0.015090	0.050301	OK.	1.000000	0.000000	1	0
V 290.882 {116}	0.999996	0.000047	0.003733	0.012443	OK.	1.000000	0.000000	1	0
Y 360.073 { 94}*	0.000000	0.000000	-1.000000	-1.000000	Warnin	1.000000	0.000000	1	0
Y 371.030 { 91}*	0.000000	0.000000	-1.000000	-1.000000	Warnin	1.000000	0.000000	1	0
Zn 213.856 {458}	0.999940	0.000237	0.000107	0.000358	OK.	1.000000	0.000000	1	0

LKJ 8/18/16 ~~File: 081816C1~~ LKJ 08/18/16 File: 081716C1 A.Batch: 265391

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2	Custom ID3
1	1001	3	1	1	Unk	LB 160-264502/1-D	265083			
2	1002	3	1	2	Unk	LCS 160-265083/2-A				
3	1003	3	1	3	Unk	160-18570-C-1-D				
4	1004	3	1	4	Unk	160-18570-C-1-DSD@5				
5	1005	3	1	5	Unk	160-18570-C-1-E MS				
6	1006	3	1	6	Unk	160-18570-C-1-F MSD				
7	1007	3	1	7	Unk	160-18570-D-2-D				
8	1008	3	1	8	Unk	160-18430-B-2-B@2	-All			
9	1009	3	1	9	Unk	160-18430-B-2-C MS@2				
10	1010	3	1	10	Unk	160-18430-B-2-DMSD@2				
11	1011	3	1	11	Unk	160-18430-B-3-B@2				
12	1012	3	1	12	Unk	160-18570-E-3-D				
13	1013	3	2	1	Unk	160-18570-C-4-D				
14	1014	3	2	2	Unk	160-18521-B-1-E				
15	1015	3	2	3	Unk	160-18521-D-2-E				
16	1016	3	2	4	Unk	LB 160-262767/1-D@10	265075			
17	1017	3	2	5	Unk	LCS 160-265075/2A@10				
18	1018	3	2	6	Unk	160-18348-E-1-F@10				
19	1019	3	2	7	Unk	160-18348-E-1-FSD@50				
20	1020	3	2	8	Unk	160-18348-E-1-GMS@10				
21	1021	3	2	9	Unk	160-18348-E-1HMSD@10				
22	1022	3	2	10	Unk	160-18348-E-1FPDS@10	-All			
23	1023	3	2	11	Unk	160-18348-E-2-G@10				
24	1024	3	2	12	Unk	160-18348-E-3-D@10				
25	1025	3	3	1	Unk	160-18348-F-4-D@10				
26	1026	3	3	2	Unk	160-18348-G-5-D@10				
27	1027	3	3	3	Unk	MB 160-264902/1-A	264902			
28	1028	3	3	4	Unk	LCS 160-264902/2-A	-All			
29	1029	3	3	5	Unk	160-18336-A-1-G@10				
30	1030	3	3	6	Unk	~~160-18336-A-1-GSD@50~~	LKJ 08/18/16			
31	1031	3	3	7	Unk	160-18336-A-1-HMS@10				
32	1032	3	3	8	Unk	160-18336-A-1IMSD@10				
33	1033	3	3	9	Unk	160-18336-A-2-H@10				
34	1034	3	3	10	Unk	160-18336-A-3-C@10	-All			
35	1035	3	3	11	Unk	160-18336-A-5-C@10				
36	1036	3	3	12	Unk	160-18336-A-7-C@10				
37	1037	3	4	1	Unk	MB 160-264898/1-A	264898			
38	1038	3	4	2	Unk	LCS 160-264898/2-A				
39	1039	3	4	3	Unk	160-18390-A-1-A@5				
40	1040	3	4	4	Unk	160-18390-A-1-ASD@25				
41	1041	3	4	5	Unk	160-18390-A-1-B MS@5	-All but Li			
42	1042	3	4	6	Unk	160-18390-A-1-CMSD@5				
43	1043	3	4	7	Unk	160-18390-A-1-A@10				
44	1044	3	4	8	Unk	160-18390-A-1-ASD@50				
45	1045	3	4	9	Unk	160-18390-A-1-BMS@10				
46	1046	3	4	10	Unk	160-18390-A1CMSD@10				

METALS BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264502 Batch Start Date: 08/11/16 13:18 Batch Analyst: Mcnutt, Joe W

Batch Method: 1311 Batch End Date: 08/12/16 12:31

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	NumbSolidPhases	NumbLiqPhases	NumbTotPhases	EFD_SampleWeight
LB 160-264502/1		1311, 3010A, 6010C			2000 mL		1	1	
160-18521-B-1	YMTFA74SE001	1311, 3010A, 6010C	P	100.65 g	2000 mL	1		1	5 g
160-18521-D-2	YMTFA75SE001	1311, 3010A, 6010C	P	100.33 g	2000 mL	1		1	5 g

Lab Sample ID	Client Sample ID	Method Chain	Basis	EFD_VolumeWaterAdd	EFD_InitialpH	EFD_AddHClpH>5	EFD_HeatHeld	EFD_SecondpHCheck	ExtractionFluidOne
LB 160-264502/1		1311, 3010A, 6010C							4.96 SU
160-18521-B-1	YMTFA74SE001	1311, 3010A, 6010C	P	96 mL	6.44 SU	3.50 mL	10 min	1.71 SU	4.96 SU
160-18521-D-2	YMTFA75SE001	1311, 3010A, 6010C	P	96 mL	6.44 SU	3.50 mL	10 min	1.61 SU	4.96 SU

Lab Sample ID	Client Sample ID	Method Chain	Basis	FiltCompDate	LeachatepH	LeachVolume	ExtractFluid	TCLP Fluid #1 00100	AnalysisComment
LB 160-264502/1		1311, 3010A, 6010C		8/12/16			1	2000 mL	pH<2 _M & _Hg
160-18521-B-1	YMTFA74SE001	1311, 3010A, 6010C	P	8/12/16	6.44 SU	10 mL	1	2000 mL	pH<2 _M & _Hg
160-18521-D-2	YMTFA75SE001	1311, 3010A, 6010C	P	8/12/16	5.80 SU	10 mL	1	2000 mL	pH<2 _M & _Hg

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264502 Batch Start Date: 08/11/16 13:18 Batch Analyst: Mcnutt, Joe W

Batch Method: 1311 Batch End Date: 08/12/16 12:31

Batch Notes	
1N HCl ID	901776
Balance ID	26950069
Batch Comment	(SPIKES) _M896089/896090 -Hg975881
Bottle Lot ID	06736
pH Buffer 1 ID	922485
pH Buffer 2 ID	922483
pH Buffer 3 ID	922484
First End time	08/12/16 9:18
Filter ID	1168557
Lot # of Nitric Acid	976042
pH Meter Calibration Slope	100.6
pH Meter ID	A111
Room Temperature Thermometer ID	91037040
Analyst ID - Spike Analyst	JWM
Analyst ID - Spike Witness Analyst	MFM
First Start time	08/11/16 1456
TCLP Fluid 1 ID	967739
TCLP Fluid 1 pH	4.96
Thermometer ID	0801024473
Tumbler Rotations per Minute	30
Uncorrected Maximum Temperature	24.2 Degrees C
Uncorrected Minimum Temperature	21.4 Degrees C

Basis	Basis Description
P	TCLP

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 265083 Batch Start Date: 08/16/16 15:50 Batch Analyst: Frye, Shelly F

Batch Method: 3010A Batch End Date: 08/17/16 09:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	MPREP1 00006	MPREP2 00005		
LB 160-264502/1-A		3010A, 6010C		20 mL	50 mL				
LCS 160-265083/2		3010A, 6010C		20 mL	50 mL	0.25 mL	0.25 mL		
160-18570-C-1-A MS		3010A, 6010C	P	20 mL	50 mL	0.25 mL	0.25 mL		
160-18570-C-1-A MSD		3010A, 6010C	P	20 mL	50 mL	0.25 mL	0.25 mL		
160-18521-B-1-B	YMTFA74SE001	3010A, 6010C	P	20 mL	50 mL				
160-18521-D-2-B	YMTFA75SE001	3010A, 6010C	P	20 mL	50 mL				

Batch Notes	
Balance ID	27150548
Final Hot Block Temperature	94.0 Degrees C
Lot # of hydrochloric acid	958351
Lot # of Nitric Acid	968664
Hot Block ID	HOTBLOCK 2
Initial Hot Block Temperature	94.3 Degrees C
Pipette ID	MET-12
Thermometer ID	111815886
Digestion Tube/Cup ID	247379-9884

Basis	Basis Description
P	TCLP

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG No.: Headworks/9720-8

Project: ORNL Y-12 Outfall 200 Characterization

Client Sample ID	Lab Sample ID
YMTFA74SE001	160-18521-1
YMTFA75SE001	160-18521-2

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG Number: Headworks/9720-8

Matrix: Solid Instrument ID: NOEQUIP

Method: Moisture RL Date: 01/28/2011 14:43

Analyte	Wavelength/ Mass	RL (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica St. Louis Job Number: 160-18521-1

SDG Number: Headworks/9720-8

Matrix: Solid Instrument ID: NOEQUIP

Method: Moisture XRL Date: 01/28/2011 14:42

Analyte	Wavelength/ Mass	XRL (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

FORM IX - IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Instrument ID: NOEQUIP Analysis Method: Moisture

Start Date: 08/09/2016 01:21 End Date: 08/09/2016 01:21

Lab Sample Id	D/F	Type	Time	Analytes																								
				% Sol	Moist																							
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
160-18461-A-2 DU	1	T	01:21	X	X																							
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
160-18521-1	1	T	01:21	X	X																							
160-18521-2	1	T	01:21	X	X																							
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									
ZZZZZZ			01:21																									

Prep Types:
T = Total/NA

FORM XIII-IN

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 263991 Batch Start Date: 08/09/16 01:21 Batch Analyst: Braatz, Steve D

Batch Method: Moisture Batch End Date: 08/09/16 12:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
160-18461-A-2 DU		Moisture	T	3	1.0035 g	13.3790 g	12.2690 g		
160-18521-D-1	YMTFA74SE001	Moisture	T	12	1.0178 g	14.9857 g	13.0131 g		
160-18521-B-2	YMTFA75SE001	Moisture	T	13	1.0144 g	9.2445 g	8.2253 g		

Batch Notes	
Balance ID	0034150065 No Unit
Batch Comment	TRAY C
Date samples were placed in the oven	8-9-16
Oven Temp In	103.5 Degrees C
Time samples were place in the oven	02:00
Date samples were removed from oven	8/9/16
Oven Temp Out	103.4 Degrees C
Time Samples were removed from oven	12:00
Oven ID	OA
Thermometer ID	A142186

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

ALPHA SPECTROSCOPY

Method A-01-R
Am+Cm

Isotopic Curium and/or Americium 241 (Alpha Spectrometry) by Method A-01-R

Prep Batch: 264041

Preparation, Extraction Chromatography Resin Actinide Separation

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264041

Lab ID: MB 160-264041/1-A
Client ID:
Sigma: 2

Analyzed: 08/16/16 16:19
Detector: AV227
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 400

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Americium-241	0.04711	0.0705	0.0707	U	pCi/g	1.00	0.121	265256

Tracer	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Americium-243	2.558	0.214	0.353		pCi/g	0.0359	6.01	42.6	30 - 110

Lab ID: LCS 160-264041/2-A
Client ID:
Sigma: 2

Analyzed: 08/16/16 16:19
Detector: AV228
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 400

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Americium-241	3.269	0.359	0.508		pCi/g	1.00	0.113	265229

Tracer	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Americium-243	2.833	0.225	0.384		pCi/g	0.0359	6.01	47.2	30 - 110

Lab ID: 160-18504-F-1-F DU
Client ID:
Sigma: 2

Analyzed: 08/16/16 16:19
Detector: AV230
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 400

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Americium-241	0.09345	0.0510	0.0520		pCi/g	1.00	0.0508	265231

Tracer	DU Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Americium-243	4.670	0.290	0.590		pCi/g	0.0434	6.00	77.9	30 - 110

Lab ID: 160-18521-1
Client ID: YMTFA74SE001
Sigma: 2

Analyzed: 08/16/16 16:19
Detector: AV235
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 400

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Americium-241	0.140	0.0625	0.0644		pCi/g	1.00	0.0475	265235

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Americium-243	4.18	0.272	0.534		pCi/g	0.0355	6.00	69.7	30 - 110

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264041

Lab ID:	160-18521-2	Analyzed:	08/16/16 16:19	Decay Corrected:	No
Client ID:	YMTFA75SE001	Detector:	AV236	Yield Truncated:	No
Sigma:	2	Dil Fac:	1	Ts:	400

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Americium-241	0.0434	0.0289	0.0293		pCi/g	1.00	0.0145	265236

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Americium-243	5.83	0.328	0.720		pCi/g	0.0422	6.00	97.2	30 - 110

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-264041/1-A	Americium-241			0.04711	U	pCi/g							1.33357185

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-264041/2-A	Americium-241		3.73	3.269		pCi/g	88	67 - 120					-1.201710925

Duplicate ID:	Analyte	Parent Result	Spike Added	DU Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18504-F-1-F DU	Americium-241	0.123		0.09345		pCi/g			27	0.26	0.73	1	

Glossary:

Ts = Count Duration, Sample

ALPHA SPECTROSCOPY BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264041 Batch Start Date: 08/09/16 10:32 Batch Analyst: Sherman, Austin T

Batch Method: ExtChrom Batch End Date: 08/15/16 08:51

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	Am-241 00010	Am-243 00014			
MB 160-264041/1		ExtChrom, A-01-R		1.0 g		0.2 mL			
LCS 160-264041/2		ExtChrom, A-01-R		1.0 g	0.1 mL	0.2 mL			
160-18504-F-1-A DU		ExtChrom, A-01-R	T	1.0014 g		0.2 mL			
160-18521-F-1-A	YMTFA74SE001	ExtChrom, A-01-R	T	1.0006 g		0.2 mL			
160-18521-F-2-A	YMTFA75SE001	ExtChrom, A-01-R	T	1.0012 g		0.2 mL			

Batch Notes	
Balance ID	1123433897
Analyst ID - Column	nmn
Column Date	8/12/16
Analyst ID - CoPrecipitation	nmn
CoPrecipitation Date	8/15/16
Pipette ID	rad104
Analyst ID - Reagent Drop Witness	scb
Analyst ID - Reagent Drop	ats
SOP Number	st-rc-0003, st-rc-0004, st-rc-0100, st-rc-0240

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:59:47PM 8/16/2016

Sample

Sample Name: MB 160-264041/1-A Type: Blank
Spectrum #1 Analysis #1
: MB 160-264041/1-A
Sample Collection Date: 8/15/2016 8:46:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264041
AnalysisResultsID: 174306
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

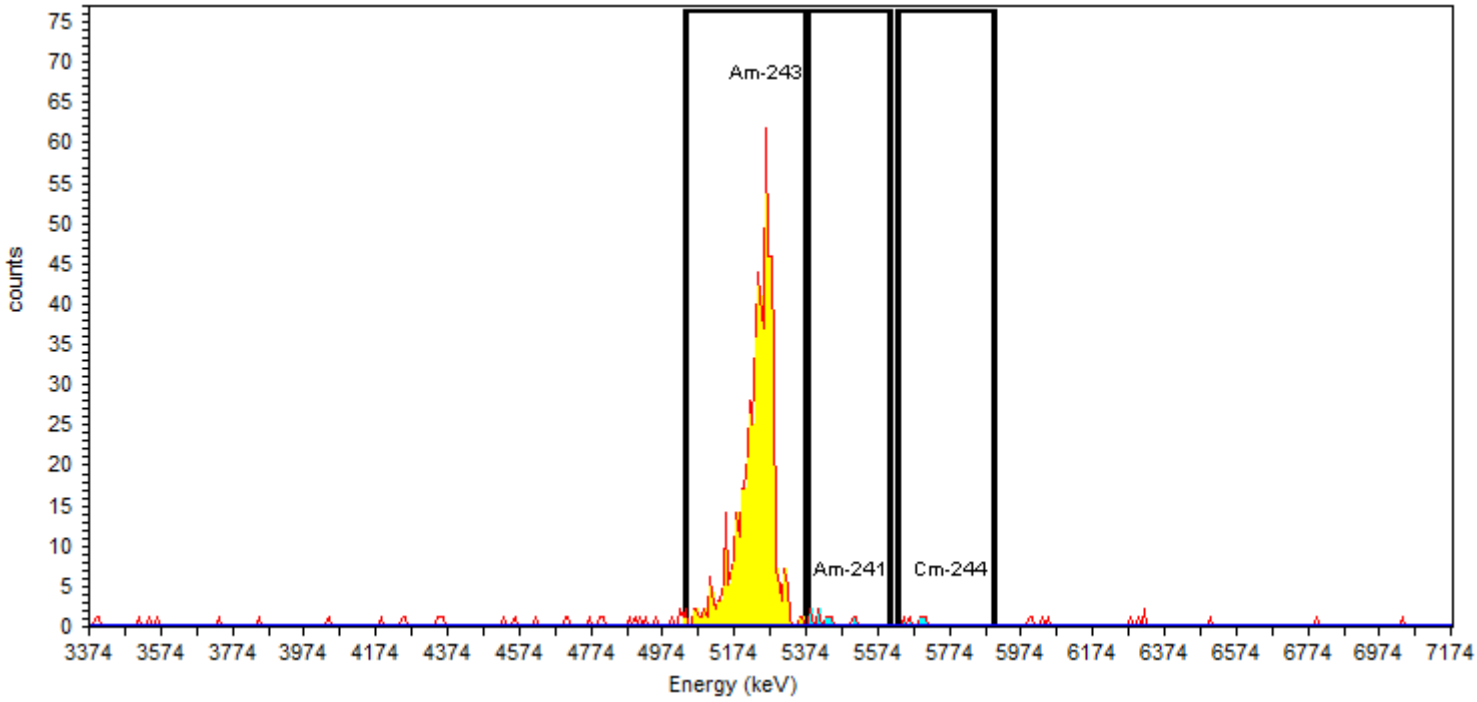
Tracer Name: Am-243_00014
Tracer Activity: 66.69 DPM / mL x (Vol.) 0.20 mL = 13.34 DPM
Tracer Ref. Date: 11/3/2009 2:25:46PM

Tracer Nuclide: Am-243
Tracer Recovery: 42.60%

Acquisition

Detector: AV227 SN: 50-120DD5
Acquisition Start Date: 8/16/2016 4:19:17PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 7/22/2016 3:43:46PM
Bkgd Info: Sample: ICB;AV227; Det: AV227; Spectrum #1; 7/22/2016 3:43:46 PM

Energy Calibration: IC-9817;AV227-20151018
Efficiency Calibration:IC-9817;AV227-20151018
Calibration Date: 10/18/2015 9:20:24PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.29% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction:8/16/2016 4:16:42PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5037.4	5373.0	73.7	100.0	576	1.6667	574.33	2.559E+000	pCi/g
Am-241	5499.8	5,485.7	14.1	5380.5	5611.7	66.4	98.0	9	4.5833	4.42	4.711E-002	pCi/g
Cm-244	5775.7	5,805.0	-29.3	5634.0	5902.5	81.6	100.0	5	2.9167	2.08	2.178E-002	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:59:53PM 8/16/2016

Sample

Sample Name: LCS 160-264041/2-A Type: Control
Spectrum #1 Analysis #1
: LCS 160-264041/2-A
Sample Collection Date: 8/15/2016 8:46:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264041
AnalysisResultsID: 174307
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

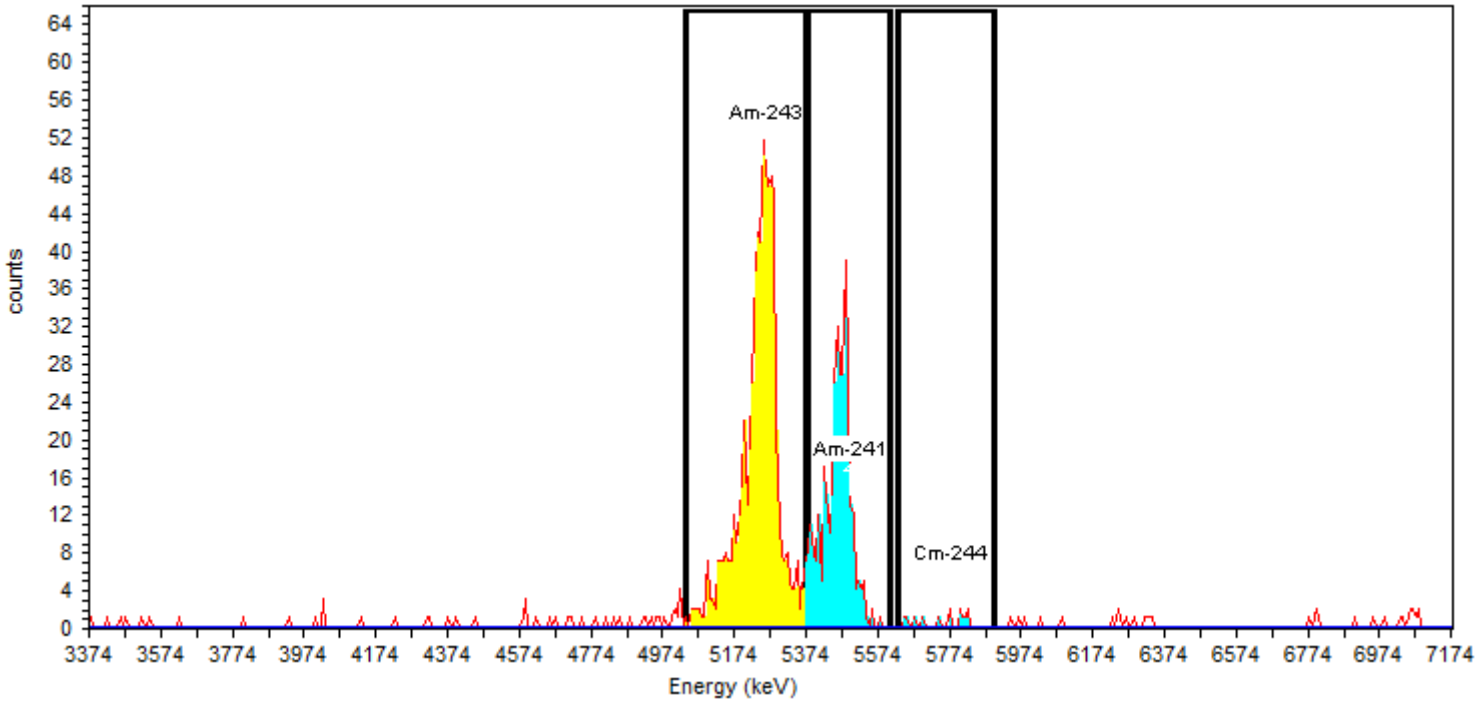
Tracer Name: Am-243_00014
Tracer Activity: 66.69 DPM / mL x (Vol.) 0.20 mL = 13.34 DPM
Tracer Ref. Date: 11/3/2009 2:25:46PM

Tracer Nuclide: Am-243
Tracer Recovery: 47.96%

Acquisition

Detector: AV228 SN: 51-005Q6
Acquisition Start Date: 8/16/2016 4:19:17PM
Live Time: 400.00 min.
Real Time: 400.02 min.
Background Date: 7/22/2016 3:43:46PM
Bkgd Info: Sample: ICB;AV228; Det: AV228; Spectrum #1; 7/22/2016 3:43:46 PM

Energy Calibration: IC-9884;AV228-20151018
Efficiency Calibration:IC-9884;AV228-20151018
Calibration Date: 10/18/2015 9:20:29PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.26% +/- 0.36% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction:8/16/2016 4:16:41PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5037.4	5373.0	71.6	100.0	648	2.0833	645.92	2.882E+000	pCi/g
Am-241	5499.8	5,485.7	14.1	5380.5	5611.7	50.1	98.0	331	3.7500	327.25	3.104E+000	pCi/g
Cm-244	5775.7	5,805.0	-29.3	5634.0	5902.5	197.2	100.0	13	2.9167	10.08	9.373E-002	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:35:15AM 8/17/2016

Sample

Sample Name: LCS 160-264041/2-A Type: Control
Spectrum #1 Analysis #1
: LCS 160-264041/2-A
Sample Collection Date: 8/15/2016 8:46:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264041
AnalysisResultsID: 174317
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

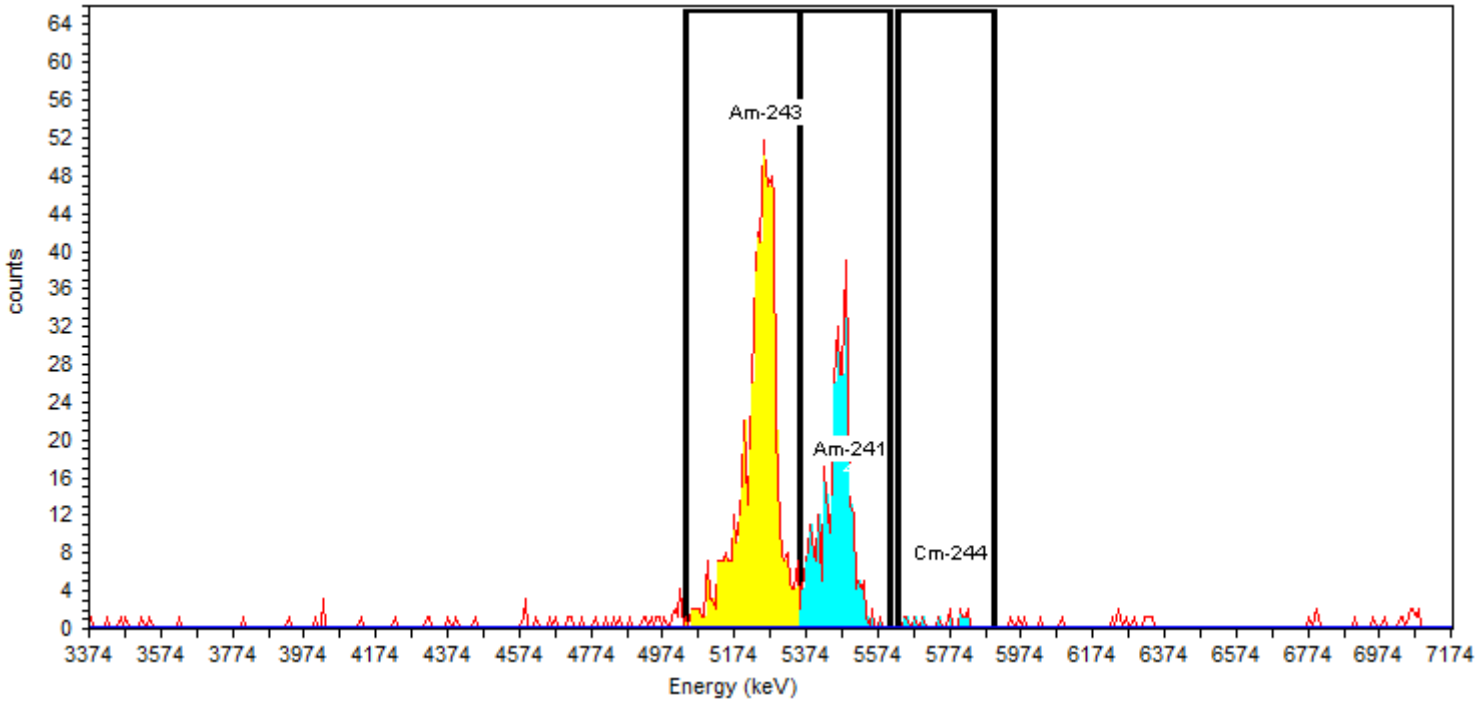
Tracer Name: Am-243_00014
Tracer Activity: 66.69 DPM / mL x (Vol.) 0.20 mL = 13.34 DPM
Tracer Ref. Date: 11/3/2009 2:25:46PM

Tracer Nuclide: Am-243
Tracer Recovery: 47.18%

Acquisition

Detector: AV228 SN: 51-005Q6
Acquisition Start Date: 8/16/2016 4:19:17PM
Live Time: 400.00 min.
Real Time: 400.02 min.
Background Date: 7/22/2016 3:43:46PM
Bkgd Info: Sample: ICB;AV228; Det: AV228; Spectrum #1; 7/22/2016 3:43:46 PM

Energy Calibration: IC-9884;AV228-20151018
Efficiency Calibration:IC-9884;AV228-20151018
Calibration Date: 10/18/2015 9:20:29PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.26% +/- 0.36% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:8/16/2016 4:16:41PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Americium
MDA Source: Background

Manual Integration for tailing
RTM 8/17/2016

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5037.4	5358.1	71.6	100.0	637	1.6667	635.33	2.834E+000	pCi/g
Am-241	5499.8	5,485.7	14.1	5358.1	5611.7	65.2	98.0	344	5.0000	339.00	3.269E+000	pCi/g
Cm-244	5775.7	5,805.0	-29.3	5634.0	5902.5	197.2	100.0	13	2.9167	10.08	9.529E-002	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:00:03PM 8/16/2016

Sample

Sample Name: 160-18504-F-1-F DU Type: Sample
Spectrum #1 Analysis #1
: 160-18504-F-1-F DU
Sample Collection Date: 8/4/2016 9:00:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264041
AnalysisResultsID: 174309
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

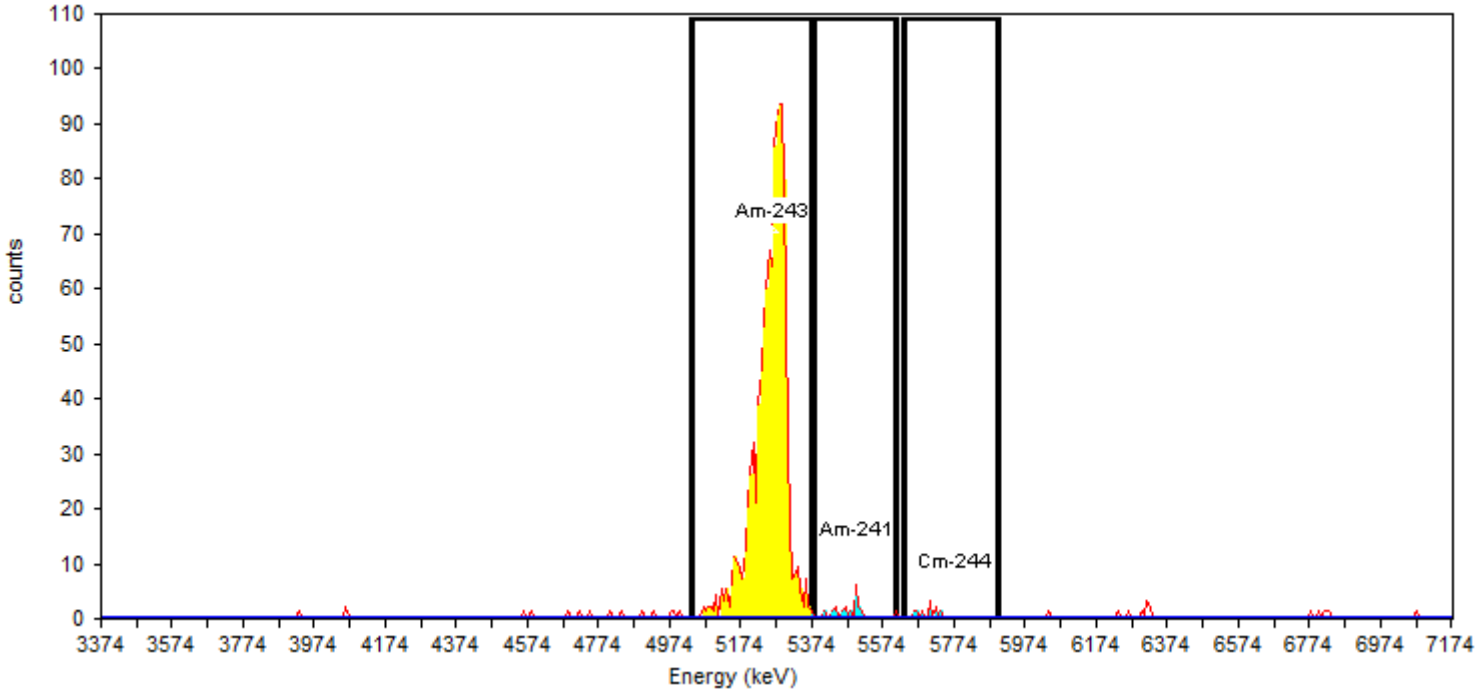
Tracer Name: Am-243_00014
Tracer Activity: 66.69 DPM / mL x (Vol.) 0.20 mL = 13.34 DPM
Tracer Ref. Date: 11/3/2009 2:25:46PM

Tracer Nuclide: Am-243
Tracer Recovery: 77.89%

Acquisition

Detector: AV230 SN: 49-045J5
Acquisition Start Date: 8/16/2016 4:19:18PM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 7/22/2016 3:43:47PM
Bkgd Info: Sample: ICB;AV230; Det: AV230; Spectrum #1; 7/22/2016 3:43:47 PM

Energy Calibration: IC-9886;AV230-20151018
Efficiency Calibration:IC-9886;AV230-20151018
Calibration Date: 10/18/2015 9:20:40PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.09% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction:8/16/2016 4:16:41PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5037.4	5373.0	72.6	100.0	1045	2.9167	1042.08	4.673E+000	pCi/g
Am-241	5499.8	5,485.7	14.1	5380.5	5611.7	20.1	98.0	18	2.0833	15.92	9.345E-002	pCi/g
Cm-244	5775.7	5,805.0	-29.3	5634.0	5902.5	61.9	100.0	9	3.7500	5.25	3.021E-002	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:59:40PM 8/16/2016

Sample

Sample Name: 160-18521-F-1-C Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-1-C
Sample Collection Date: 8/5/2016 7:50:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264041
AnalysisResultsID: 174305
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

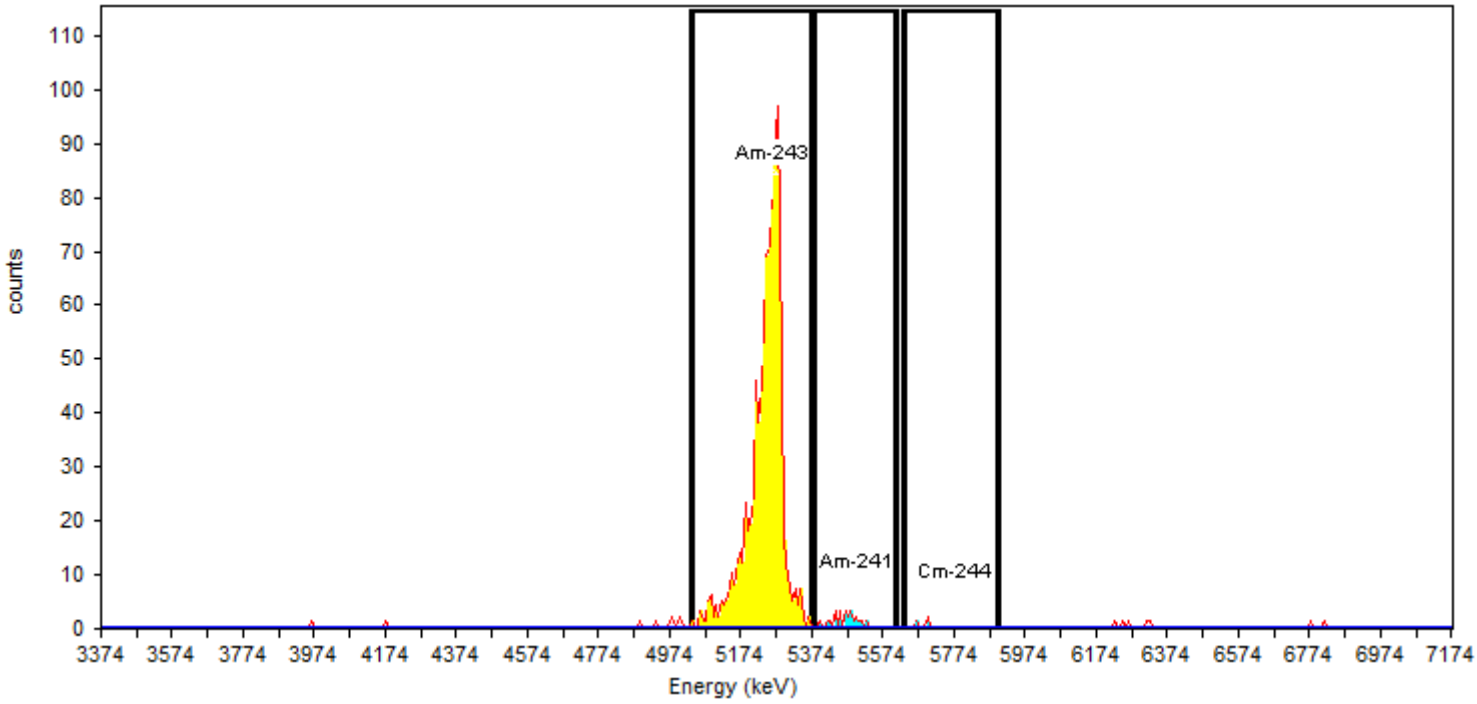
Tracer Name: Am-243_00014
Tracer Activity: 66.69 DPM / mL x (Vol.) 0.20 mL = 13.34 DPM
Tracer Ref. Date: 11/3/2009 2:25:46PM

Tracer Nuclide: Am-243
Tracer Recovery: 69.72%

Acquisition

Detector: AV235 SN: 51-005Q5
Acquisition Start Date: 8/16/2016 4:19:19PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 7/22/2016 3:43:48PM
Bkgd Info: Sample: ICB;AV235; Det: AV235; Spectrum #1; 7/22/2016 3:43:48 PM

Energy Calibration: IC-8877;AV235-20151018
Efficiency Calibration:IC-8877;AV235-20151018
Calibration Date: 10/19/2015 4:11:39PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.57% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction:8/16/2016 4:16:41PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5037.4	5373.0	67.7	100.0	952	1.6667	950.33	4.186E+000	pCi/g
Am-241	5499.8	5,485.7	14.1	5380.5	5611.7	54.9	98.0	23	1.2500	21.75	1.401E-001	pCi/g
Cm-244	5775.7	5,805.0	-29.3	5634.0	5902.5	50.0	100.0	3	2.5000	0.50	3.157E-003	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:59:39PM 8/16/2016

Sample

Sample Name: 160-18521-F-2-C Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-2-C
Sample Collection Date: 8/5/2016 9:25:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264041
AnalysisResultsID: 174304
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

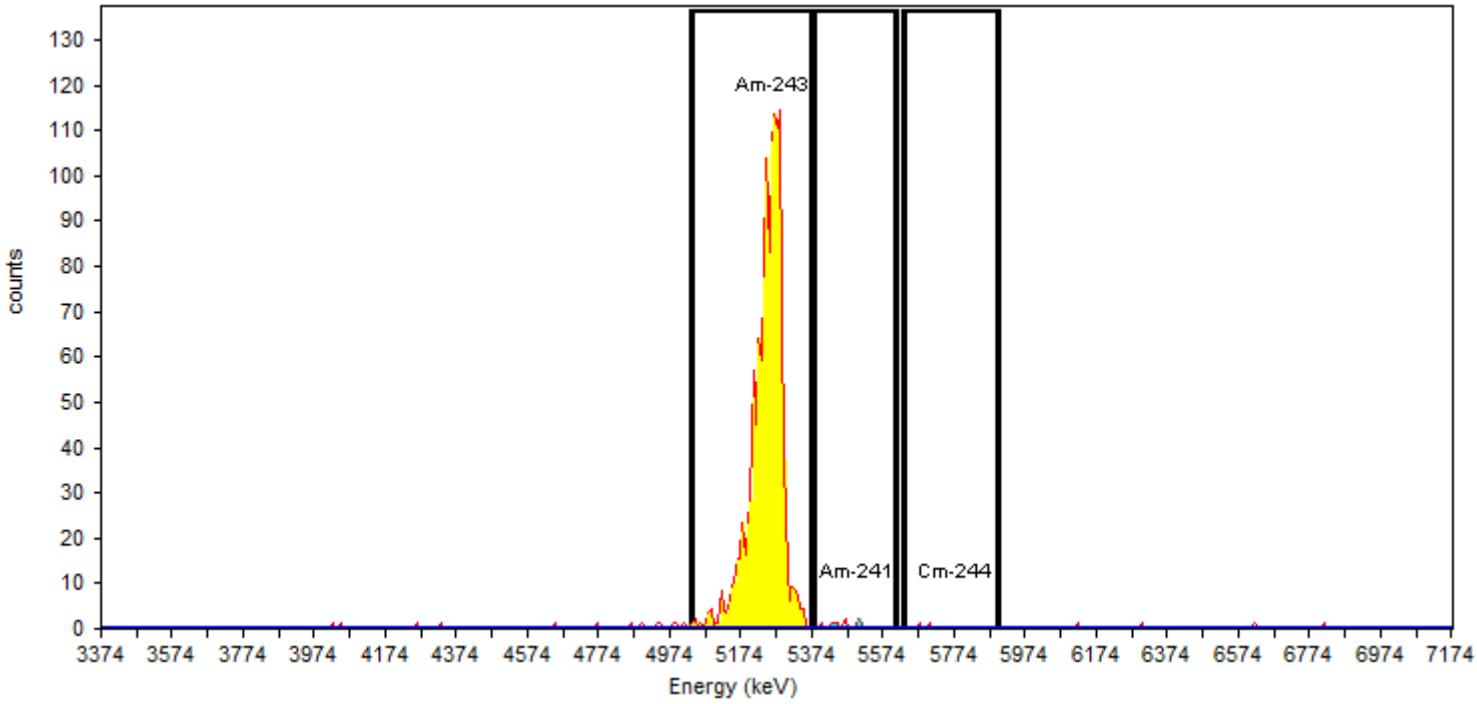
Tracer Name: Am-243_00014
Tracer Activity: 66.69 DPM / mL x (Vol.) 0.20 mL = 13.34 DPM
Tracer Ref. Date: 11/3/2009 2:25:46PM

Tracer Nuclide: Am-243
Tracer Recovery: 97.22%

Acquisition

Detector: AV236 SN: 51-005P3
Acquisition Start Date: 8/16/2016 4:19:19PM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 7/22/2016 3:43:48PM
Bkgd Info: Sample: ICB;AV236; Det: AV236; Spectrum #1; 7/22/2016 3:43:48 PM

Energy Calibration: IC-9520;AV236-20151018
Efficiency Calibration:IC-9520;AV236-20151018
Calibration Date: 10/19/2015 4:11:44PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.47% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = AmROI
Decay Correction:8/16/2016 4:16:41PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Americium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Am-243	5261.2	5,275.4	-14.2	5037.4	5373.0	75.7	100.0	1271	2.5000	1268.50	5.834E+000	pCi/g
Am-241	5499.8	5,485.7	14.1	5380.5	5611.7	86.3	98.0	9	0.0000	9.00	4.342E-002	pCi/g
Cm-244	5775.7	5,805.0	-29.3	5634.0	5902.5	37.0	100.0	2	2.0833	-0.08	-3.940E-004	pCi/g

Method A-01-R Np

Isotopic Neptunium (Alpha Spectrometry) by Method A-01-R

Prep Batch: 264040

Preparation, Extraction Chromatography Resin Actinide Separation

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264040

Lab ID: MB 160-264040/1-A
Client ID:
Sigma: 2

Analyzed: 08/12/16 16:30
Detector: AV237
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Neptunium-237	0.003880	0.0165	0.0165	U	pCi/g	1.00	0.0435	264848

Tracer	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Neptunium-239	0.01176				pCi/g		0.0121	97.2	30 - 110

Lab ID: LCS 160-264040/2-A
Client ID:
Sigma: 2

Analyzed: 08/12/16 16:30
Detector: AV238
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Neptunium-237	3.798	0.329	0.458		pCi/g	1.00	0.0533	264849

Tracer	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Neptunium-239	0.01312				pCi/g		0.0121	108	30 - 110

Lab ID: 160-18504-F-1-D DU
Client ID:
Sigma: 2

Analyzed: 08/12/16 16:30
Detector: AV240
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Neptunium-237	0.01784	0.0252	0.0253	U	pCi/g	1.00	0.0400	264851

Tracer	DU Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Neptunium-239	0.01238				pCi/g		0.0121	102	30 - 110

Lab ID: 160-18521-1
Client ID: YMTFA74SE001
Sigma: 2

Analyzed: 08/12/16 16:30
Detector: AV244
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Neptunium-237	0.0461	0.0395	0.0397		pCi/g	1.00	0.0388	264855

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Neptunium-239	0.0114				pCi/g		0.0121	94.1	30 - 110

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264040

Lab ID:	160-18521-2	Analyzed:	08/12/16 16:30	Decay Corrected:	No
Client ID:	YMTFA75SE001	Detector:	AV245	Yield Truncated:	No
Sigma:	2	Dil Fac:	1	Ts:	240

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Neptunium-237	0.0178	0.0282	0.0282	U	pCi/g	1.00	0.0489	264856

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Neptunium-239	0.0113				pCi/g		0.0121	93.5	30 - 110

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-264040/1-A	Neptunium-237			0.003880	U	pCi/g							.47131215

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-264040/2-A	Neptunium-237		3.88	3.798		pCi/g	98	39 - 134					-.2439459316

Duplicate ID:	Analyte	Parent Result	Spike Added	DU Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18504-F-1-D DU	Neptunium-237	0.0245		0.01784	U	pCi/g			31	0.11	0.31	1	

Glossary:

Ts = Count Duration, Sample

ALPHA SPECTROSCOPY BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264040 Batch Start Date: 08/09/16 10:28 Batch Analyst: Sherman, Austin T

Batch Method: A-01-R Batch End Date: 08/11/16 13:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	Np237ColDate	Am-243 00015			
160-18504-F-1-A DU		A-01-R, A-01-R	T	0.9996 g	08/11/2016 05:30	0.2 mL			
160-18521-F-1-A	YMTFA74SE001	A-01-R, A-01-R	T	0.9997 g	08/11/2016 05:30	0.2 mL			
160-18521-F-2-A	YMTFA75SE001	A-01-R, A-01-R	T	0.9999 g	08/11/2016 05:30	0.2 mL			

Batch Notes	
Balance ID	1123433897
Analyst ID - Column	nmn per scb
Column Date	8/11/16
Analyst ID - CoPrecipitation	scb
CoPrecipitation Date	8/11/16
Pipette ID	rad104
Analyst ID - Reagent Drop Witness	scb
Analyst ID - Reagent Drop	ats
SOP Number	st-rc-0003, st-rc-0004, st-rc-0400, st-rc-0232

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

ALPHA SPECTROSCOPY BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264040 Batch Start Date: 08/09/16 10:28 Batch Analyst: Sherman, Austin T

Batch Method: ExtChrom Batch End Date: 08/11/16 13:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	Np237ColDate	Am-243 00015	Np-237 00014		
MB 160-264040/1		ExtChrom, A-01-R		1.0 g	08/11/2016 05:30	0.2 mL			
LCS 160-264040/2		ExtChrom, A-01-R		1.0 g	08/11/2016 05:30	0.2 mL	0.1 mL		

Batch Notes	
Balance ID	1123433897
Analyst ID - Column	nmn per scb
Column Date	8/11/16
Analyst ID - CoPrecipitation	scb
CoPrecipitation Date	8/11/16
Pipette ID	rad104
Analyst ID - Reagent Drop Witness	scb
Analyst ID - Reagent Drop	ats
SOP Number	st-rc-0003, st-rc-0004, st-rc-0400, st-rc-0232

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:09:39PM 8/15/2016

Sample

Sample Name: MB 160-264040/1-A Type: Blank
Spectrum #1 Analysis #1
: MB 160-264040/1-A
Sample Collection Date: 8/11/2016 12:59:00PM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264040
AnalysisResultsID: 174094
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

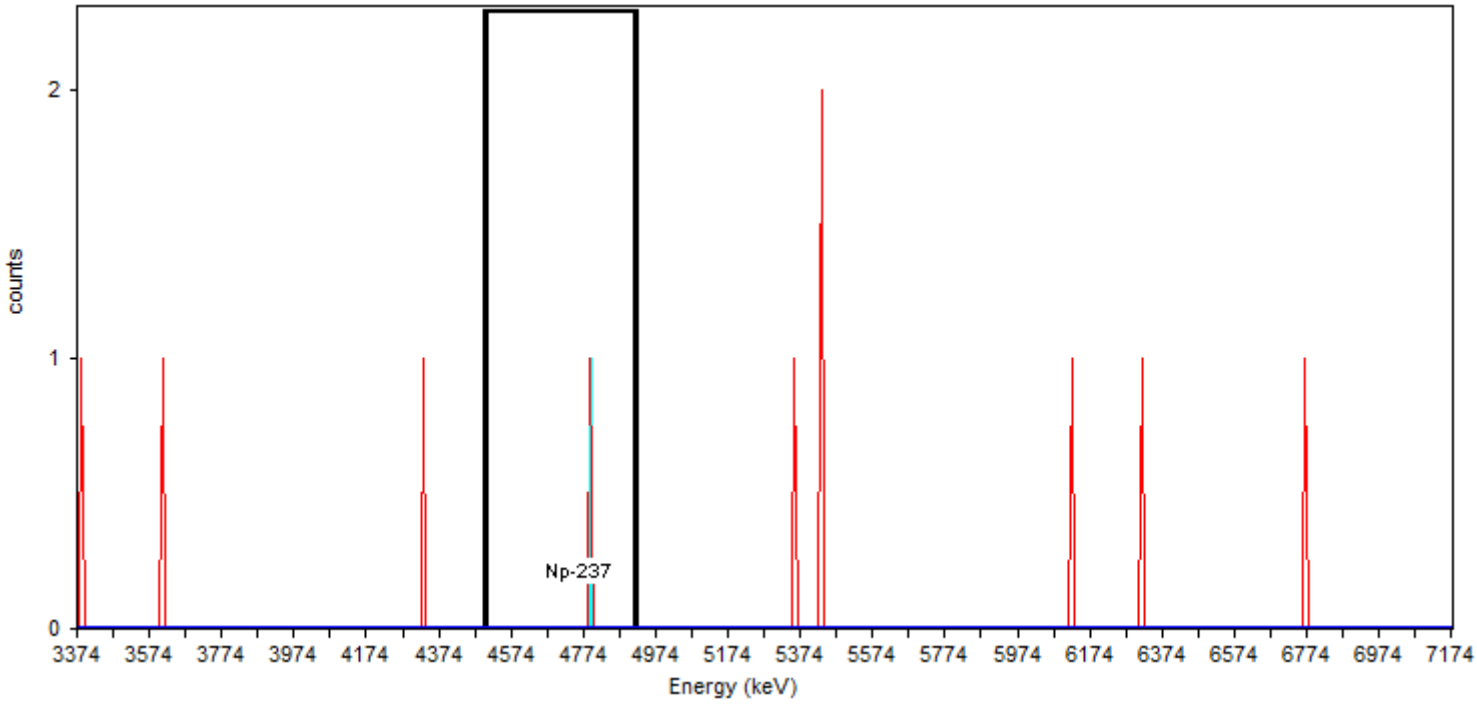
Tracer Name: Am-243_00015
Tracer Activity:
Tracer Ref. Date:

Tracer Nuclide: External Recovery
Tracer Recovery: 100.00%

Acquisition

Detector: AV237 SN: 50-120DD7
Acquisition Start Date: 8/12/2016 4:30:41PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:48PM
Bkgd Info: Sample: ICB;AV237; Det: AV237; Spectrum #1; 7/22/2016 3:43:48 PM

Energy Calibration: IC-9792;AV237-20151018
Efficiency Calibration:IC-9792;AV237-20151018
Calibration Date: 10/19/2015 4:11:48PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.87% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = NP_ROI
Decay Correction:8/12/2016 4:27:25PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Neptunium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Np-237	4761.5	4,788.1	-26.6	4500.5	4918.1	44.5	96.2	1	0.5000	0.50	3.772E-003	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:09:36PM 8/15/2016

Sample

Sample Name: LCS 160-264040/2-A Type: Control
Spectrum #1 Analysis #1
: LCS 160-264040/2-A
Sample Collection Date: 8/11/2016 12:59:00PM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264040
AnalysisResultsID: 174093
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

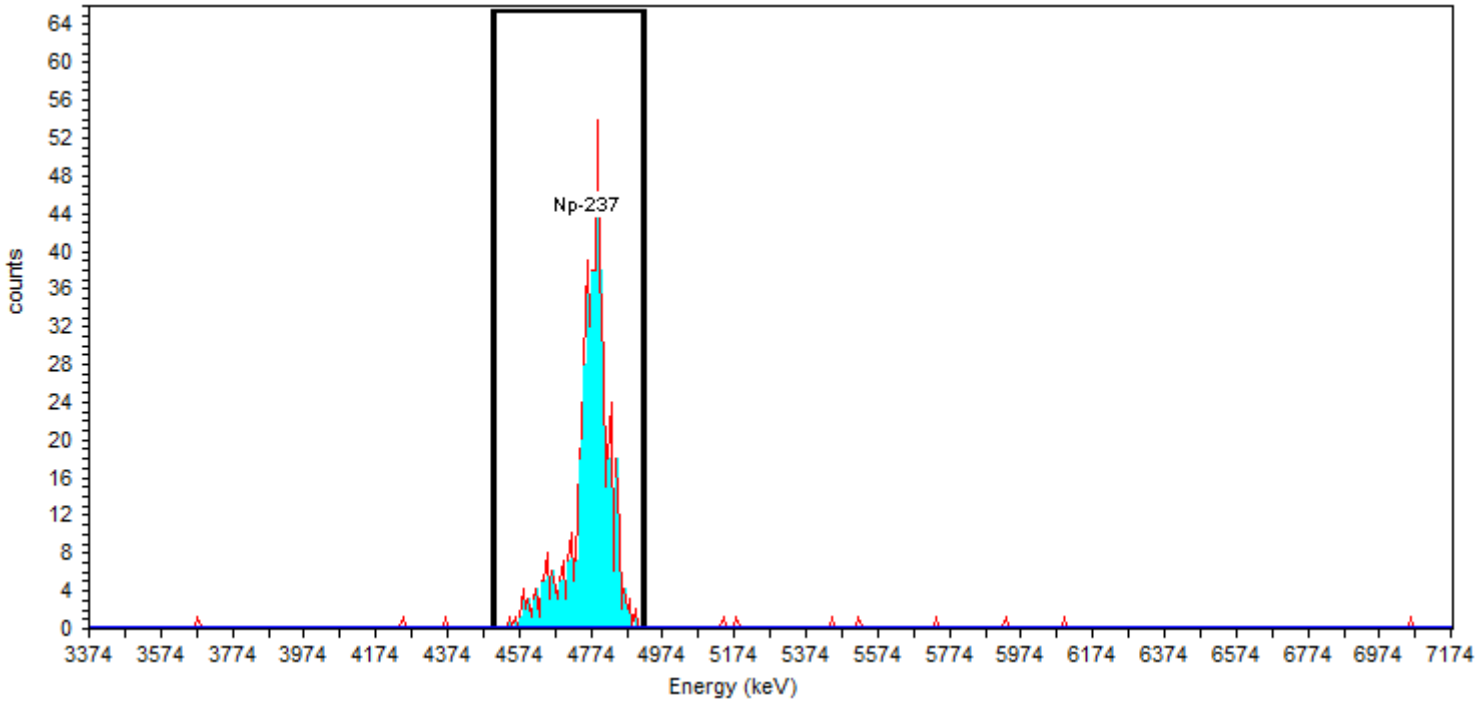
Tracer Name: Am-243_00015
Tracer Activity:
Tracer Ref. Date:

Tracer Nuclide: External Recovery
Tracer Recovery: 100.00%

Acquisition

Detector: AV238 SN: 51-005P7
Acquisition Start Date: 8/12/2016 4:30:41PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:48PM
Bkgd Info: Sample: ICB;AV238; Det: AV238; Spectrum #1; 7/22/2016 3:43:48 PM

Energy Calibration: IC-9793;AV238-20151018
Efficiency Calibration:IC-9793;AV238-20151018
Calibration Date: 10/19/2015 4:11:53PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.33% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = NP_ROI
Decay Correction:8/12/2016 4:27:24PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Neptunium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Np-237	4761.5	4,788.1	-26.6	4500.5	4918.1	74.7	96.2	536	1.5000	534.50	4.118E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:09:16PM 8/15/2016

Sample

Sample Name: 160-18504-F-1-D DU Type: Sample
Spectrum #1 Analysis #1
: 160-18504-F-1-D DU
Sample Collection Date: 8/4/2016 9:00:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264040
AnalysisResultsID: 174087
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

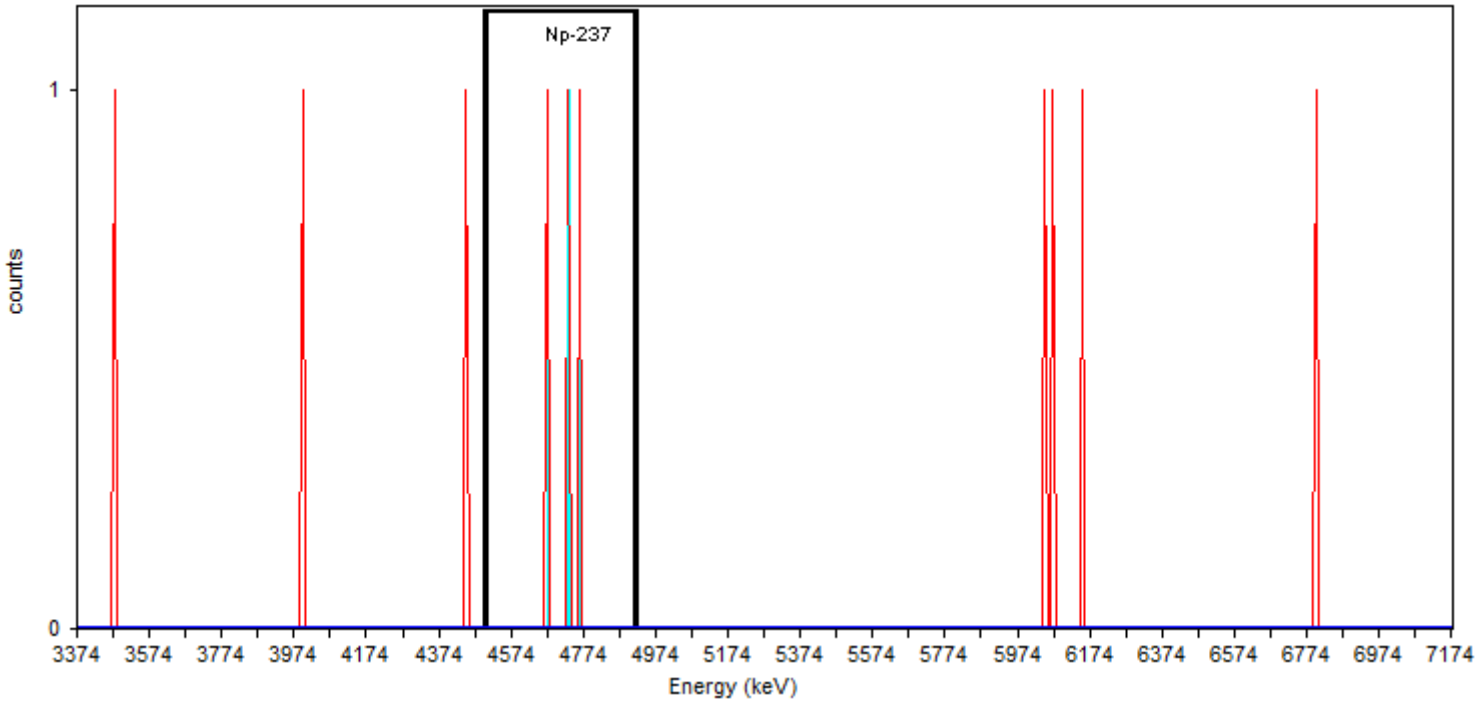
Tracer Name: Am-243_00015
Tracer Activity:
Tracer Ref. Date:

Tracer Nuclide: External Recovery
Tracer Recovery: 100.00%

Acquisition

Detector: AV240 SN: 51-005Q1
Acquisition Start Date: 8/12/2016 4:30:42PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:49PM
Bkgd Info: Sample: ICB;AV240; Det: AV240; Spectrum #1; 7/22/2016 3:43:49 PM

Energy Calibration: IC-9795;AV240-20151018
Efficiency Calibration:IC-9795;AV240-20151018
Calibration Date: 10/19/2015 4:12:02PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.76% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = NP_ROI
Decay Correction:8/12/2016 4:27:24PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Neptunium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Np-237	4761.5	4,788.1	-26.6	4500.5	4918.1	108.0	96.2	3	0.5000	2.50	1.824E-002	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:09:29PM 8/15/2016

Sample

Sample Name: 160-18521-F-1-B Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-1-B
Sample Collection Date: 8/5/2016 7:50:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264040
AnalysisResultsID: 174091
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

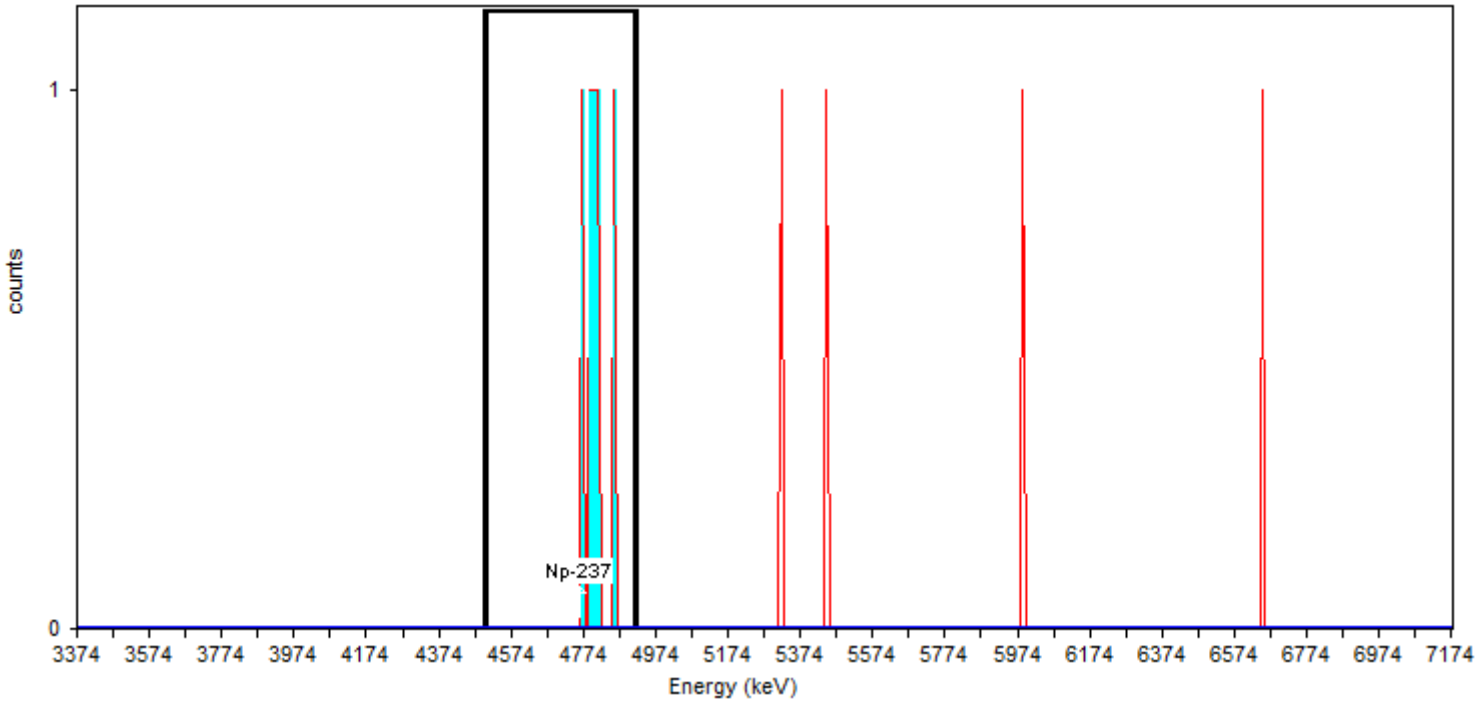
Tracer Name: Am-243_00015
Tracer Activity:
Tracer Ref. Date:

Tracer Nuclide: External Recovery
Tracer Recovery: 100.00%

Acquisition

Detector: AV244 SN: 51-005EE3
Acquisition Start Date: 8/12/2016 4:30:43PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:50PM
Bkgd Info: Sample: ICB;AV244; Det: AV244; Spectrum #1; 7/22/2016 3:43:50 PM

Energy Calibration: IC-9886;AV244-20151018
Efficiency Calibration:IC-9886;AV244-20151018
Calibration Date: 10/19/2015 4:12:20PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.87% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = NP_ROI
Decay Correction:8/12/2016 4:27:24PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Neptunium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Np-237	4761.5	4,788.1	-26.6	4500.5	4918.1	44.7	96.2	6	0.2500	5.75	4.340E-002	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:09:33PM 8/15/2016

Sample

Sample Name: 160-18521-F-2-B Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-2-B
Sample Collection Date: 8/5/2016 9:25:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264040
AnalysisResultsID: 174092
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

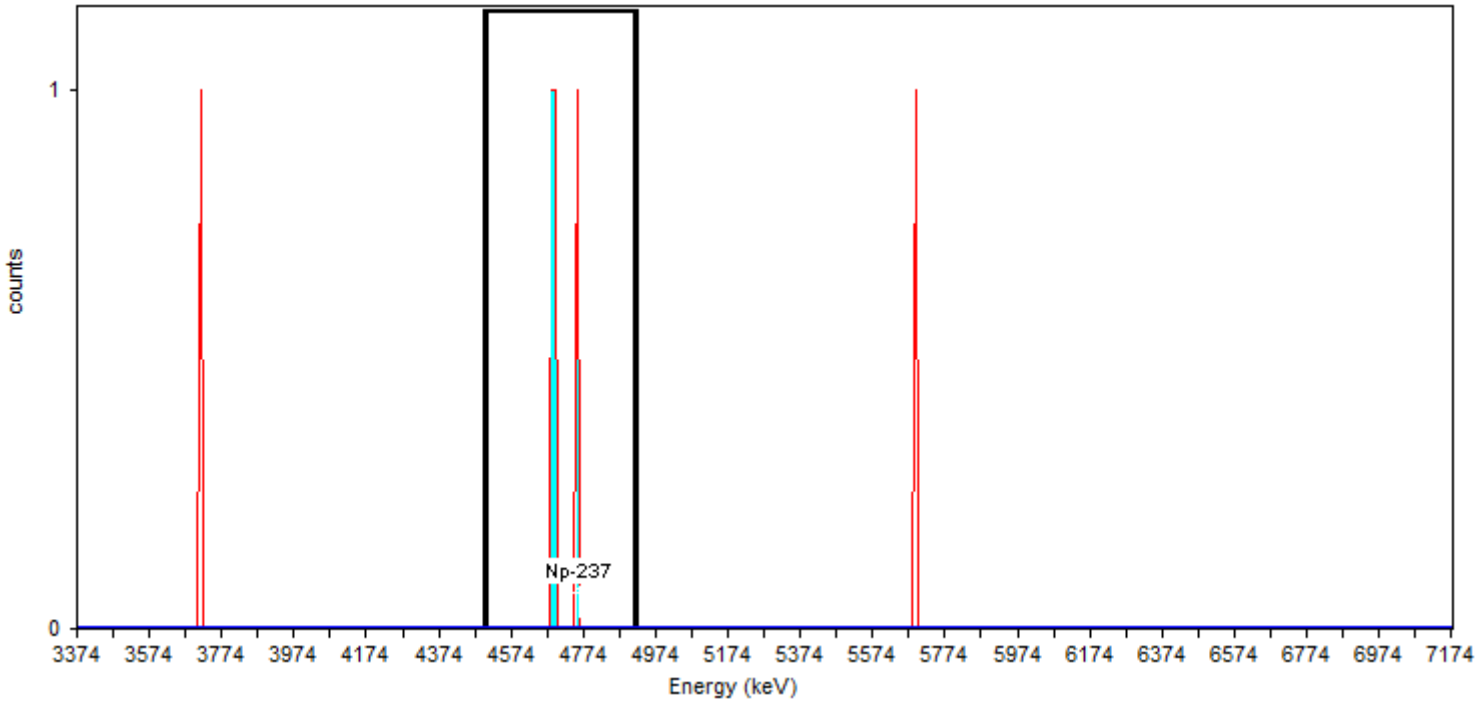
Tracer Name: Am-243_00015
Tracer Activity:
Tracer Ref. Date:

Tracer Nuclide: External Recovery
Tracer Recovery: 100.00%

Acquisition

Detector: AV245 SN: 51-005EE2
Acquisition Start Date: 8/12/2016 4:30:43PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:50PM
Bkgd Info: Sample: ICB;AV245; Det: AV245; Spectrum #1; 7/22/2016 3:43:50 PM

Energy Calibration: IC-7107;AV245-20151019
Efficiency Calibration:IC-7107;AV245-20151019
Calibration Date: 10/19/2015 10:52:31PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.43% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = NP_ROI
Decay Correction:8/12/2016 4:27:24PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Neptunium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Np-237	4761.5	4,788.1	-26.6	4500.5	4918.1	43.0	96.2	3	0.7500	2.25	1.662E-002	pCi/g

Method A-01-R Pu

Isotopic Plutonium (Alpha Spectrometry) by Method A-01-R

Prep Batch: 264055

Preparation, Extraction Chromatography Resin Actinide Separation

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264055

Lab ID: MB 160-264055/1-A
Client ID:
Sigma: 2

Analyzed: 08/12/16 16:27
Detector: AV227
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Plutonium-238	0.01879	0.0394	0.0394	U	pCi/g	1.00	0.0743	264839
Plutonium-239/240	0.003761	0.0160	0.0160	U	pCi/g	1.00	0.0421	264839

Tracer	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Pu-242 (T)	6.227	0.430	0.677		pCi/g	0.0223	6.31	98.8	30 - 110

Lab ID: LCS 160-264055/2-A
Client ID:
Sigma: 2

Analyzed: 08/12/16 16:27
Detector: AV228
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Plutonium-238	5.292	0.390	0.591		pCi/g	1.00	0.0688	264840
Plutonium-239/240	6.834	0.442	0.725		pCi/g	1.00	0.0401	264840

Tracer	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Pu-242 (T)	6.558	0.442	0.706		pCi/g	0.0416	6.31	104	30 - 110

Lab ID: 160-18504-F-1-H DU
Client ID:
Sigma: 2

Analyzed: 08/12/16 16:27
Detector: AV230
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Plutonium-238	0.2976	0.0922	0.0955		pCi/g	1.00	0.0513	264842
Plutonium-239/240	0.06678	0.0461	0.0464		pCi/g	1.00	0.0487	264842

Tracer	DU Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Pu-242 (T)	6.874	0.454	0.735		pCi/g	0.0756	6.30	109	30 - 110

Lab ID: 160-18521-1
Client ID: YMTFA74SE001
Sigma: 2

Analyzed: 08/12/16 16:27
Detector: AV235
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Plutonium-238	0.771	0.154	0.168		pCi/g	1.00	0.0510	264846
Plutonium-239/240	0.0860	0.0534	0.0539		pCi/g	1.00	0.0473	264846

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Pu-242 (T)	6.05	0.422	0.661		pCi/g	0.0490	6.30	96.1	30 - 110

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264055

Lab ID:	160-18521-2	Analyzed:	08/12/16 16:27	Decay Corrected:	No
Client ID:	YMTFA75SE001	Detector:	AV236	Yield Truncated:	No
Sigma:	2	Dil Fac:	1	Ts:	240

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Plutonium-238	0.0349	0.0331	0.0332	U	pCi/g	1.00	0.0356	264847
Plutonium-239/240	0.0221	0.0303	0.0304	U	pCi/g	1.00	0.0492	264847

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Pu-242 (T)	6.56	0.449	0.711		pCi/g	0.0575	6.30	104	30 - 110

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-264055/1-A	Plutonium-238			0.01879	U	pCi/g							.952699
MB 160-264055/1-A	Plutonium-239/240			0.003761	U	pCi/g							.47131215

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-264055/2-A	Plutonium-238		5.38	5.292		pCi/g	98	80 - 127					-.1992543458
LCS 160-264055/2-A	Plutonium-239/240		6.60	6.834		pCi/g	103	81 - 129					.4582706889

Duplicate ID:	Analyte	Parent Result	Spike Added	DU Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18504-F-1-H DU	Plutonium-238	0.313		0.2976		pCi/g			5	0.08	0.21	1	
160-18504-F-1-H DU	Plutonium-239/240	0.0669		0.06678		pCi/g			0.2	0	0	1	

Glossary:

Ts = Count Duration, Sample

ALPHA SPECTROSCOPY BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264055 Batch Start Date: 08/09/16 11:40 Batch Analyst: Sherman, Austin T

Batch Method: ExtChrom Batch End Date: 08/12/16 08:06

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	Pu-238 00010	Pu-239 00010	Pu-242 00023		
MB 160-264055/1		ExtChrom, A-01-R		1.0 g			0.2 mL		
LCS 160-264055/2		ExtChrom, A-01-R		1.0 g	0.2 mL	0.2 mL	0.2 mL		
160-18504-F-1-A DU		ExtChrom, A-01-R	T	1.0014 g			0.2 mL		
160-18521-F-1-A	YMTFA74SE001	ExtChrom, A-01-R	T	1.0006 g			0.2 mL		
160-18521-F-2-A	YMTFA75SE001	ExtChrom, A-01-R	T	1.0012 g			0.2 mL		

Batch Notes	
Balance ID	1123433897
Analyst ID - Column	nmn
Column Date	8/11/16
Analyst ID - CoPrecipitation	nmn
CoPrecipitation Date	8/12/16
Pipette ID	rad104
Analyst ID - Reagent Drop Witness	scb
Analyst ID - Reagent Drop	ats
SOP Number	st-rc-0003, st-rc-0004, st-rc-0100, st-rc-0240

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:13PM 8/12/2016

Sample

Sample Name: MB 160-264055/1-A Type: Blank
Spectrum #1 Analysis #1
: MB 160-264055/1-A
Sample Collection Date: 8/12/2016 8:03:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264055
AnalysisResultsID: 174063
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

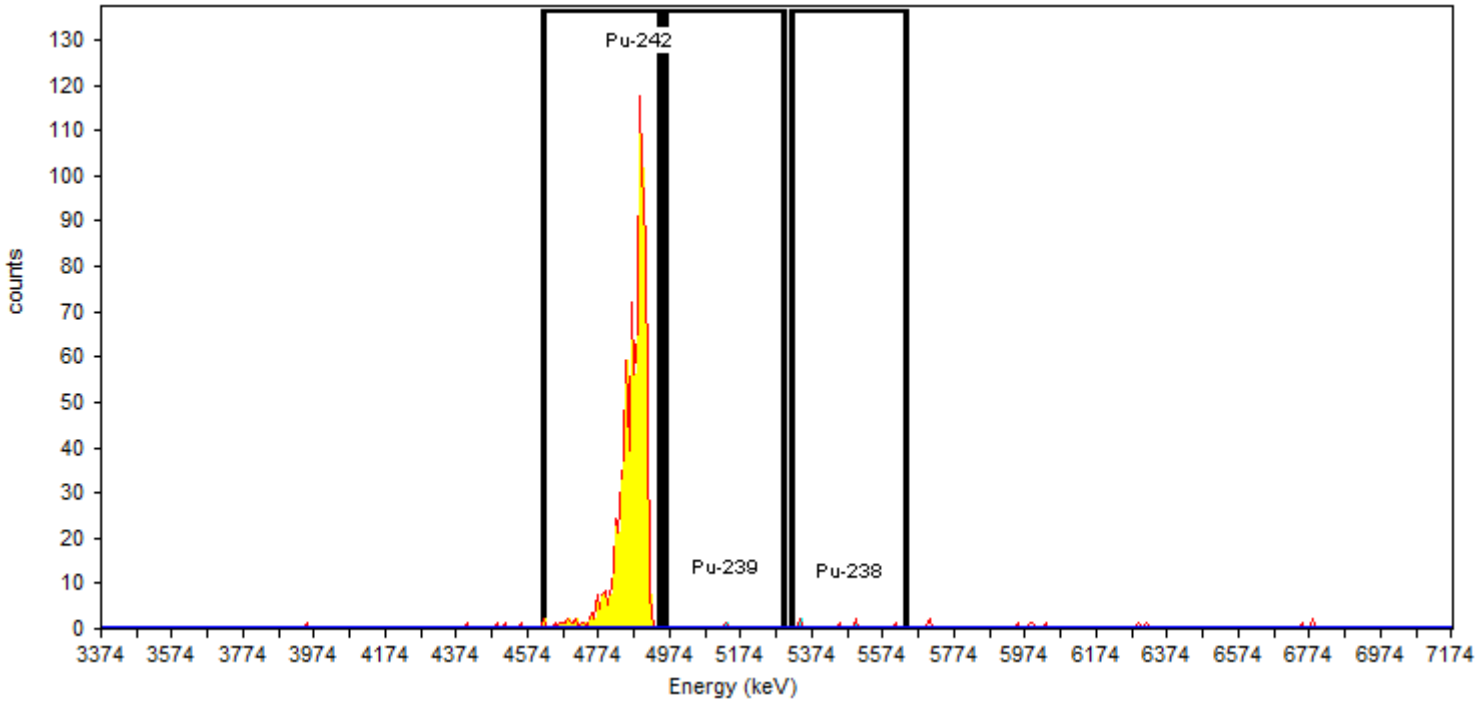
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.20 mL = 14.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 98.77%

Acquisition

Detector: AV227 SN: 50-120DD5
Acquisition Start Date: 8/12/2016 4:27:01PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:46PM
Bkgd Info: Sample: ICB;AV227; Det: AV227; Spectrum #1; 7/22/2016 3:43:46 PM

Energy Calibration: IC-9817;AV227-20151018
Efficiency Calibration:IC-9817;AV227-20151018
Calibration Date: 10/18/2015 9:20:24PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.29% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = PuROI_11/05
Decay Correction:8/12/2016 4:24:46PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-238	5484.9	5,499.2	-14.3	5320.8	5641.5	281.0	100.0	6	3.5000	2.50	1.879E-002	pCi/g
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	57.5	100.0	839	0.0000	839.00	6.227E+000	pCi/g
Pu-239	5134.4	5,155.4	-21.0	4962.9	5298.5	44.5	99.9	1	0.5000	0.50	3.761E-003	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:02PM 8/12/2016

Sample

Sample Name: LCS 160-264055/2-A Type: Control
Spectrum #1 Analysis #1
: LCS 160-264055/2-A
Sample Collection Date: 8/12/2016 8:03:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264055
AnalysisResultsID: 174062
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

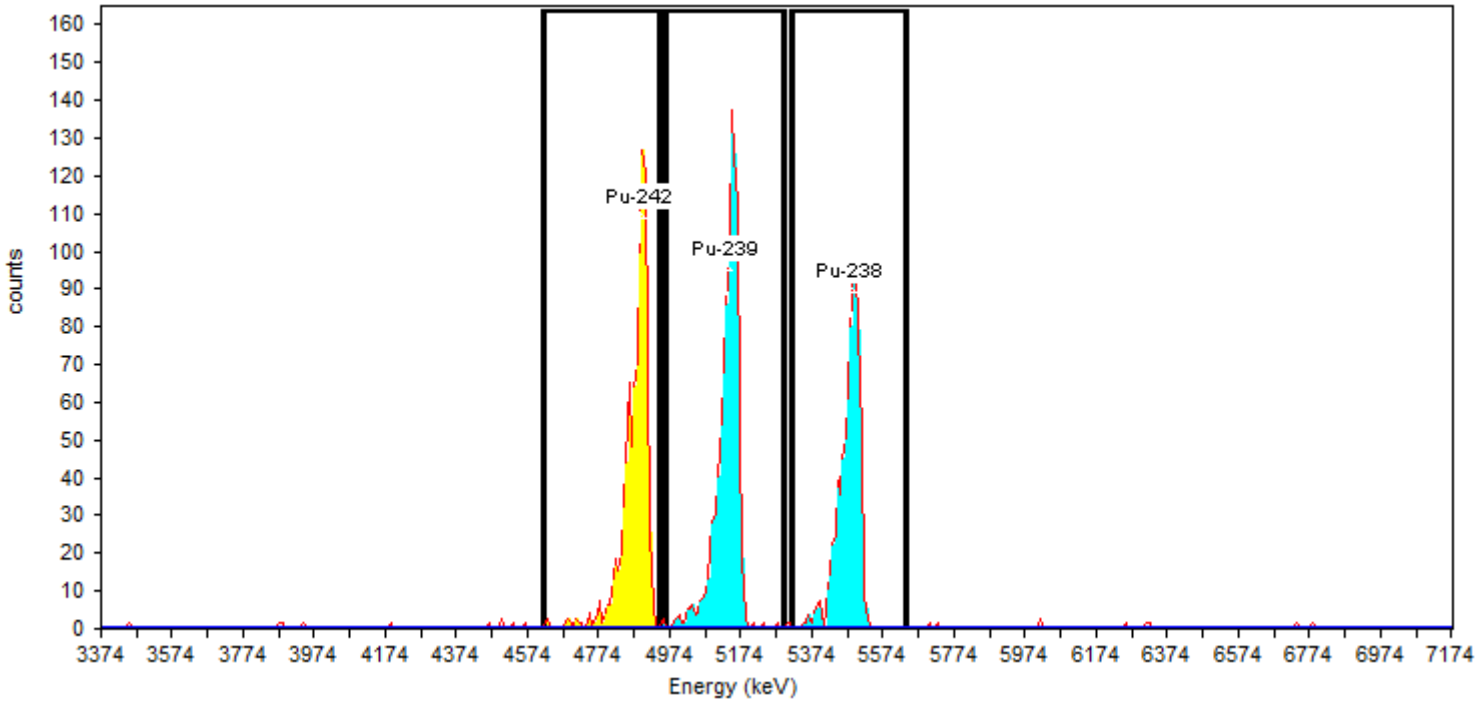
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.20 mL = 14.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 104.00%

Acquisition

Detector: AV228 SN: 51-005Q6
Acquisition Start Date: 8/12/2016 4:27:01PM
Live Time: 240.00 min.
Real Time: 240.02 min.
Background Date: 7/22/2016 3:43:46PM
Bkgd Info: Sample: ICB;AV228; Det: AV228; Spectrum #1; 7/22/2016 3:43:46 PM

Energy Calibration: IC-9884;AV228-20151018
Efficiency Calibration:IC-9884;AV228-20151018
Calibration Date: 10/18/2015 9:20:29PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.26% +/- 0.36% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = PuROI_11/05
Decay Correction:8/12/2016 4:24:45PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	46.3	100.0	883	0.5000	882.50	6.558E+000	pCi/g
Pu-239	5134.4	5,155.4	-21.0	4962.9	5298.5	54.0	99.9	956	0.5000	955.50	6.834E+000	pCi/g
Pu-238	5484.9	5,499.2	-14.3	5320.8	5641.5	57.7	100.0	744	3.2500	740.75	5.292E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:16PM 8/12/2016

Sample

Sample Name: 160-18504-F-1-H DU Type: Sample
Spectrum #1 Analysis #1
: 160-18504-F-1-H DU
Sample Collection Date: 8/4/2016 9:00:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264055
AnalysisResultsID: 174065
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

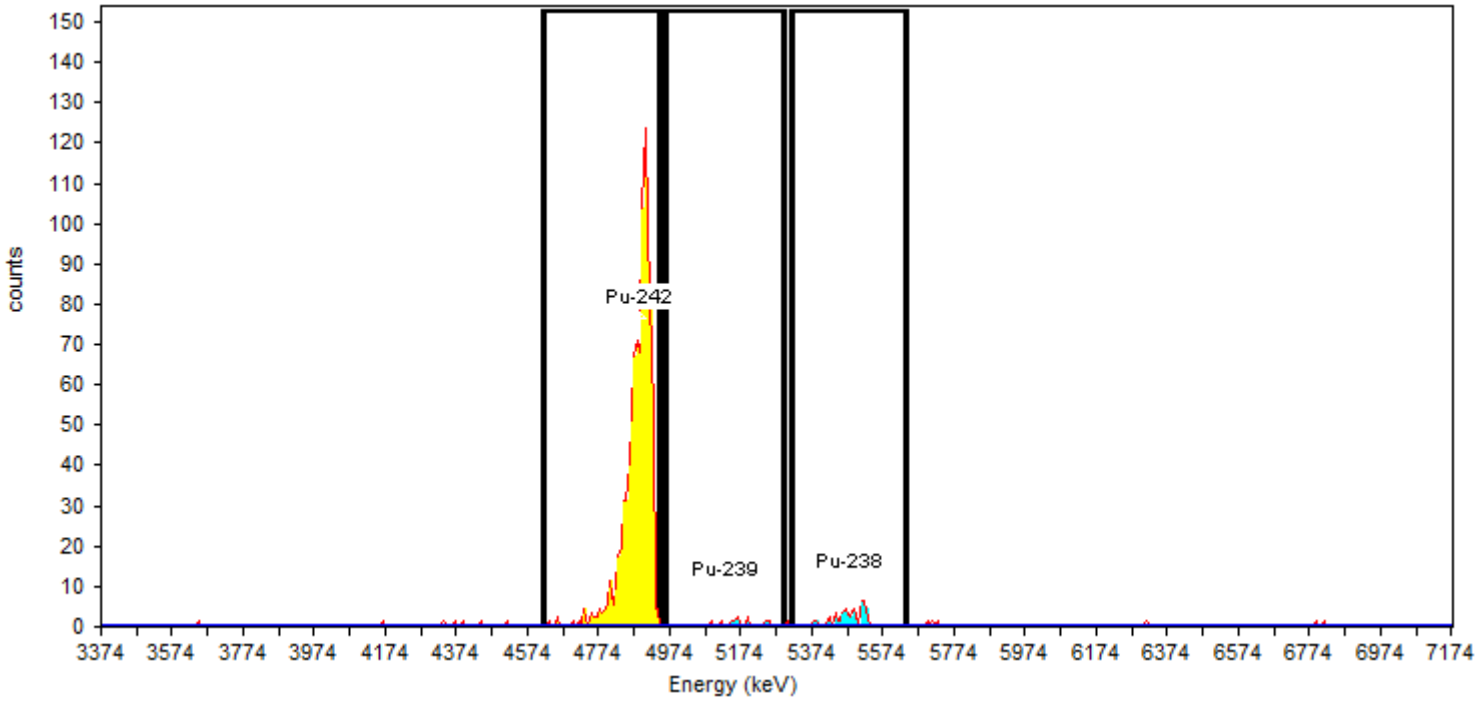
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.20 mL = 14.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 109.17%

Acquisition

Detector: AV230 SN: 49-045J5
Acquisition Start Date: 8/12/2016 4:27:02PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:47PM
Bkgd Info: Sample: ICB;AV230; Det: AV230; Spectrum #1; 7/22/2016 3:43:47 PM

Energy Calibration: IC-9886;AV230-20151018
Efficiency Calibration:IC-9886;AV230-20151018
Calibration Date: 10/18/2015 9:20:40PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.09% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = PuROI_11/05
Decay Correction:8/12/2016 4:24:45PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	34.8	100.0	924	3.7500	920.25	6.874E+000	pCi/g
Pu-239	5134.4	5,155.4	-21.0	4962.9	5298.5	53.9	99.9	11	1.2500	9.75	6.678E-002	pCi/g
Pu-238	5484.9	5,499.2	-14.3	5320.8	5641.5	95.1	100.0	45	1.5000	43.50	2.976E-001	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:21PM 8/12/2016

Sample

Sample Name: 160-18521-F-1-D Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-1-D
Sample Collection Date: 8/5/2016 7:50:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264055
AnalysisResultsID: 174068
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

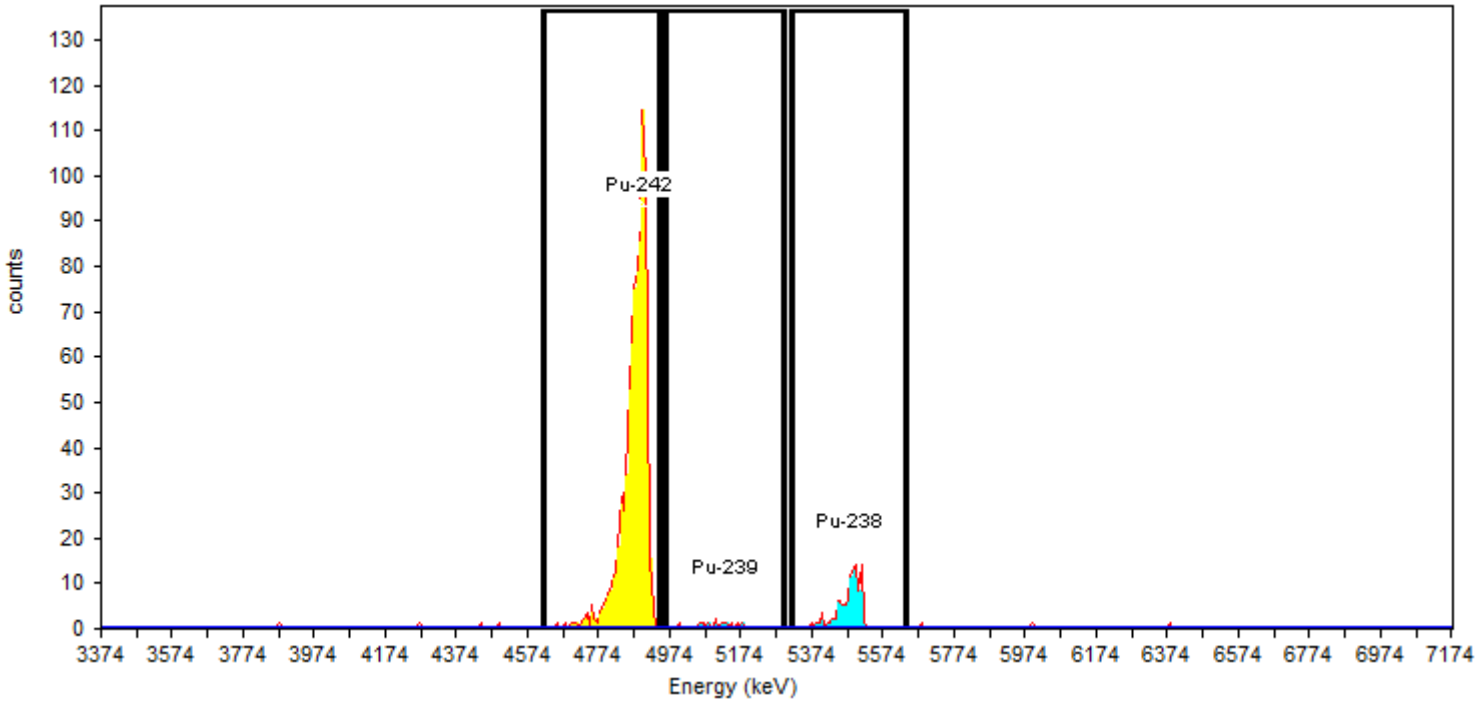
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.20 mL = 14.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 96.05%

Acquisition

Detector: AV235 SN: 51-005Q5
Acquisition Start Date: 8/12/2016 4:27:03PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:48PM
Bkgd Info: Sample: ICB;AV235; Det: AV235; Spectrum #1; 7/22/2016 3:43:48 PM

Energy Calibration: IC-8877;AV235-20151018
Efficiency Calibration:IC-8877;AV235-20151018
Calibration Date: 10/19/2015 4:11:39PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.57% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = PuROI_11/05
Decay Correction:8/12/2016 4:24:45PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	52.9	100.0	826	1.0000	825.00	6.053E+000	pCi/g
Pu-239	5134.4	5,155.4	-21.0	4962.9	5298.5	116.0	99.9	12	0.7500	11.25	8.601E-002	pCi/g
Pu-238	5484.9	5,499.2	-14.3	5320.8	5641.5	56.9	100.0	102	1.0000	101.00	7.714E-001	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:22PM 8/12/2016

Sample

Sample Name: 160-18521-F-2-D Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-2-D
Sample Collection Date: 8/5/2016 9:25:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264055
AnalysisResultsID: 174069
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

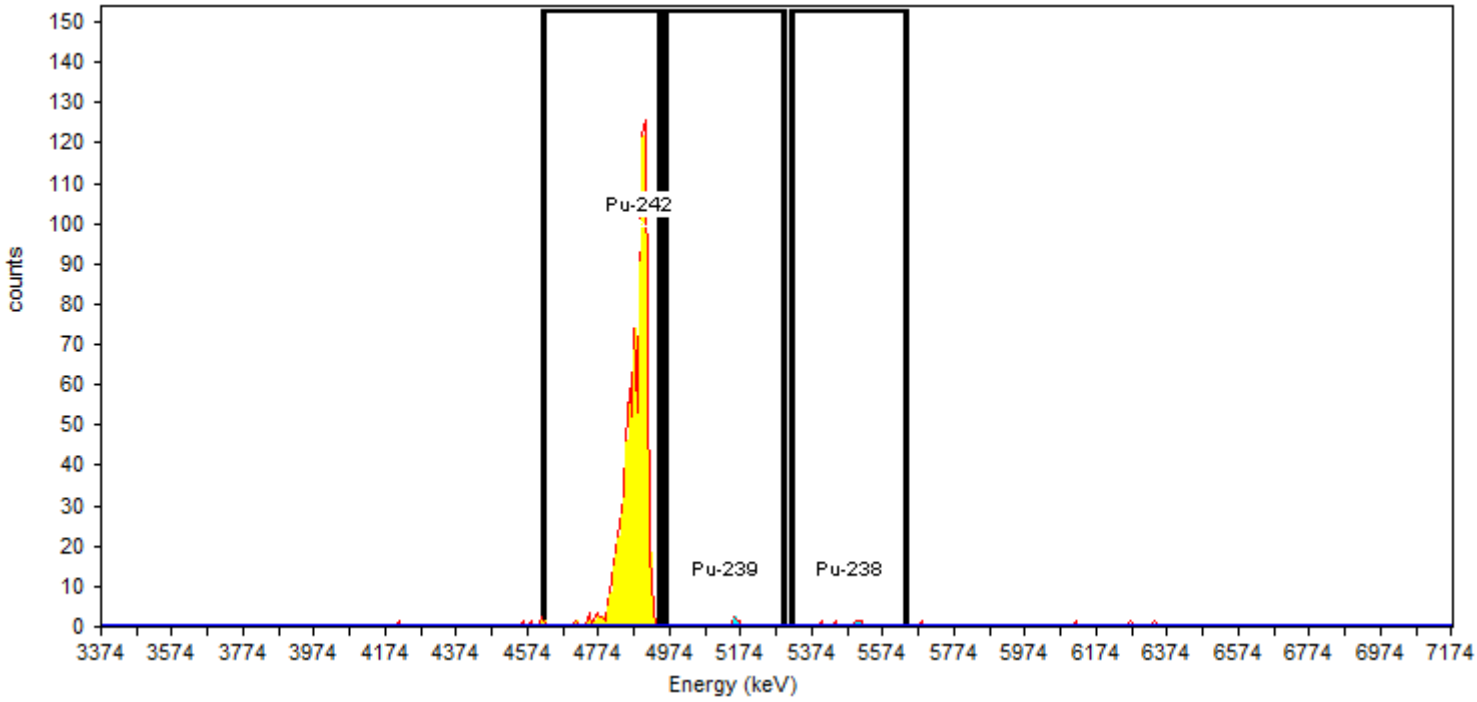
Tracer Name: Pu-242_00023
Tracer Activity: 69.99 DPM / mL x (Vol.) 0.20 mL = 14.00 DPM
Tracer Ref. Date: 1/1/2010 3:35:24PM

Tracer Nuclide: Pu-242
Tracer Recovery: 104.18%

Acquisition

Detector: AV236 SN: 51-005P3
Acquisition Start Date: 8/12/2016 4:27:03PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:48PM
Bkgd Info: Sample: ICB;AV236; Det: AV236; Spectrum #1; 7/22/2016 3:43:48 PM

Energy Calibration: IC-9520;AV236-20151018
Efficiency Calibration:IC-9520;AV236-20151018
Calibration Date: 10/19/2015 4:11:44PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.47% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = PuROI_11/05
Decay Correction:8/12/2016 4:24:45PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Plutonium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Pu-242	4888.3	4,900.6	-12.3	4619.8	4948.0	45.6	100.0	858	1.5000	856.50	6.561E+000	pCi/g
Pu-239	5134.4	5,155.4	-21.0	4962.9	5298.5	43.7	99.9	4	1.0000	3.00	2.208E-002	pCi/g
Pu-238	5484.9	5,499.2	-14.3	5320.8	5641.5	43.8	100.0	5	0.2500	4.75	3.493E-002	pCi/g

Method A-01-R Th

Isotopic Thorium (Alpha Spectrometry) by Method A-01-R

Prep Batch: 264058

Preparation, Extraction Chromatography Resin Actinide Separation

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264058

Lab ID: MB 160-264058/1-A
Client ID:
Sigma: 2

Analyzed: 08/12/16 16:24
Detector: AV150
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Thorium-228	0.02579	0.0495	0.0495	U	pCi/g	1.00	0.0910	264793
Thorium-230	0.1384	0.0704	0.0714		pCi/g	1.00	0.0425	264793
Thorium-232	0.004372	0.0185	0.0186	U	pCi/g	1.00	0.0490	264793

Tracer	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Thorium-229	5.304	0.404	0.602		pCi/g	0.0373	6.06	87.6	30 - 110

Lab ID: LCS 160-264058/2-A
Client ID:
Sigma: 2

Analyzed: 08/12/16 16:24
Detector: AV151
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Thorium-230	26.28	1.34	2.58		pCi/g	1.00	0.121	264794

Tracer	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Thorium-229	10.61	0.795	1.19		pCi/g	0.0994	12.1	87.7	30 - 110

Lab ID: 160-18504-F-1-L DU
Client ID:
Sigma: 2

Analyzed: 08/15/16 17:21
Detector: AV149
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 960

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Thorium-228	1.497	0.171	0.212		pCi/g	1.00	0.0959	264961
Thorium-230	1.632	0.171	0.219		pCi/g	1.00	0.0426	264961
Thorium-232	1.335	0.154	0.190		pCi/g	1.00	0.0133	264961

Tracer	DU Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Thorium-229	2.672	0.145	0.267		pCi/g	0.0217	6.06	44.1	30 - 110

Lab ID: 160-18521-2
Client ID: YMTFA75SE001
Sigma: 2

Analyzed: 08/12/16 16:24
Detector: AV161
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Thorium-228	1.10	0.201	0.221		pCi/g	1.00	0.0932	264802
Thorium-230	0.773	0.165	0.178		pCi/g	1.00	0.0427	264802
Thorium-232	1.11	0.197	0.218		pCi/g	1.00	0.0263	264802

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264058

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Thorium-229	4.95	0.378	0.562		pCi/g	0.0349	6.06	81.7	30 - 110

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-264058/1-A	Thorium-228			0.02579	U	pCi/g							1.04123421
MB 160-264058/1-A	Thorium-230			0.1384		pCi/g							3.8773723
MB 160-264058/1-A	Thorium-232			0.004372	U	pCi/g							.47131215

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-264058/2-A	Thorium-230		24.5	26.28		pCi/g	107	81 - 118					1.012463233

Duplicate ID:	Analyte	Parent Result	Spike Added	DU Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18504-F-1-L DU	Thorium-228	1.79		1.497		pCi/g			18	0.64	1.81	1	
160-18504-F-1-L DU	Thorium-230	1.70		1.632		pCi/g			4	0.15	0.44	1	
160-18504-F-1-L DU	Thorium-232	1.63		1.335		pCi/g			20	0.72	2.04	1	

Glossary:

Ts = Count Duration, Sample

ALPHA SPECTROSCOPY BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264058 Batch Start Date: 08/09/16 11:50 Batch Analyst: Sherman, Austin T

Batch Method: ExtChrom Batch End Date: 08/12/16 08:05

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	Th-229 00021	TRM-2 00001			
MB 160-264058/1		ExtChrom, A-01-R		1.0 g	0.2 mL				
LCS 160-264058/2		ExtChrom, A-01-R		0.5007 g	0.2 mL	0.5007 g			
160-18504-F-1-A DU		ExtChrom, A-01-R	T	0.9996 g	0.2 mL				
160-18521-F-2-A	YMTFA75SE001	ExtChrom, A-01-R	T	0.9999 g	0.2 mL				

Batch Notes	
Balance ID	1123433897
Analyst ID - Column	NMN
Column Date	8/11/16
Analyst ID - CoPrecipitation	NMN
CoPrecipitation Date	8/16/16
Pipette ID	rad104
Analyst ID - Reagent Drop Witness	scb
Analyst ID - Reagent Drop	ats
SOP Number	st-rc-0003, st-rc-0004, st-rc-0400, st-rc-0232

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:24:16PM 8/12/2016

Sample

Sample Name: MB 160-264058/1-A Type: Blank
Spectrum #1 Analysis #1
: MB 160-264058/1-A
Sample Collection Date: 8/12/2016 8:02:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264058
AnalysisResultsID: 174055
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

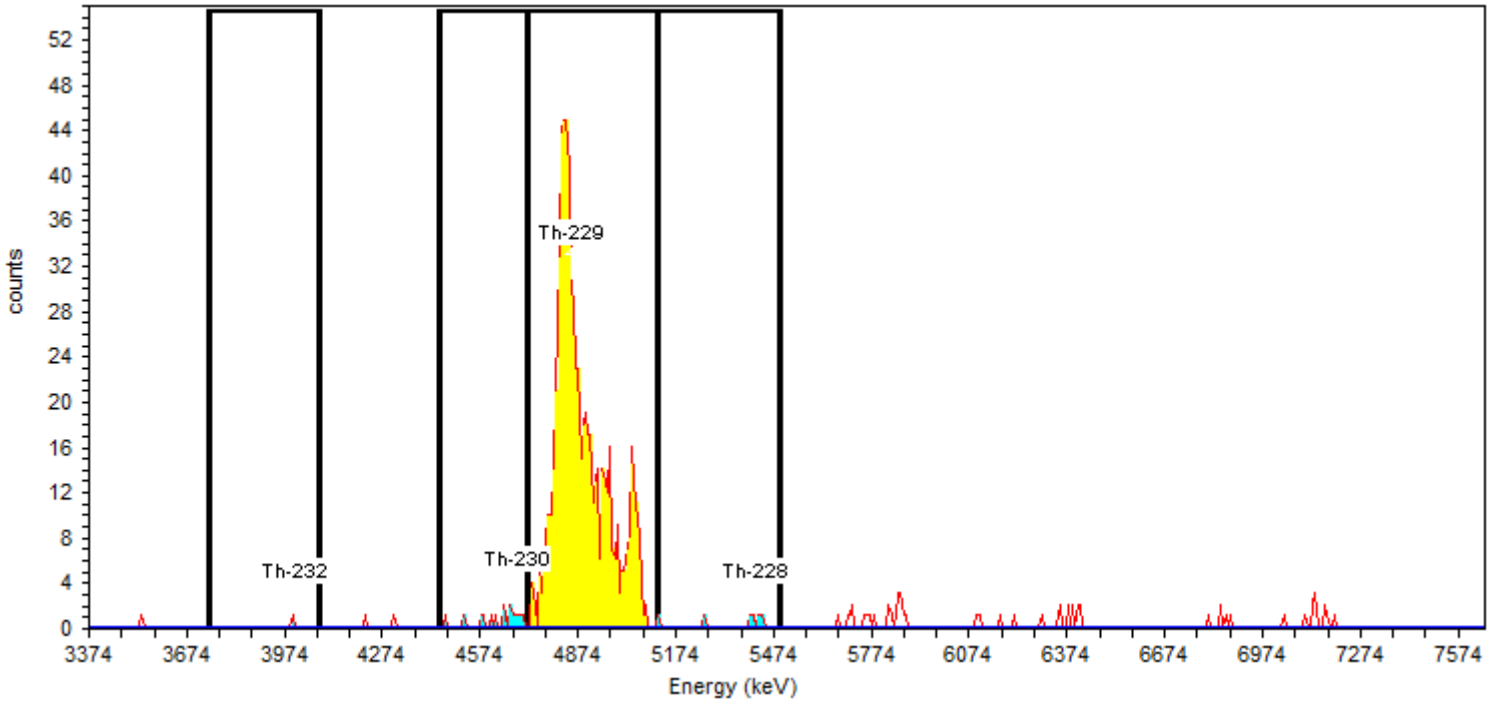
Tracer Name: Th-229_00021
Tracer Activity: 67.23 DPM / mL x (Vol.) 0.20 mL = 13.45 DPM
Tracer Ref. Date: 8/16/2014 2:33:14PM

Tracer Nuclide: Th-229
Tracer Recovery: 87.59%

Acquisition

Detector: AV150 SN: 50-05/R4
Acquisition Start Date: 8/12/2016 4:24:06PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:52PM
Bkgd Info: Sample: ICB;AV150; Det: AV150; Spectrum #1; 7/22/2016 3:43:52 PM

Energy Calibration: IC-8876;AV150-20151016
Efficiency Calibration:IC-8876;AV150-20151016
Calibration Date: 10/16/2015 6:46:46PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.45% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Th2007_ROI
Decay Correction:8/12/2016 4:21:52PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	44.5	100.2	1	0.5000	0.50	4.372E-003	pCi/g
Th-230	4688.0	4,687.5	0.5	4446.0	4717.0	41.5	99.7	16	0.2500	15.75	1.384E-001	pCi/g
Th-229	4848.0	4,845.3	2.7	4717.0	5119.0	70.3	99.6	689	0.2500	688.69	5.305E+000	pCi/g
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	326.8	99.8	7	4.0000	2.94	2.579E-002	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:24:10PM 8/12/2016

Sample

Sample Name: LCS 160-264058/2-A Type: Control
Spectrum #1 Analysis #1
: LCS 160-264058/2-A
Sample Collection Date: 8/12/2016 8:02:00AM
Comment:

Sample Weight : 0.50 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264058
AnalysisResultsID: 174054
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

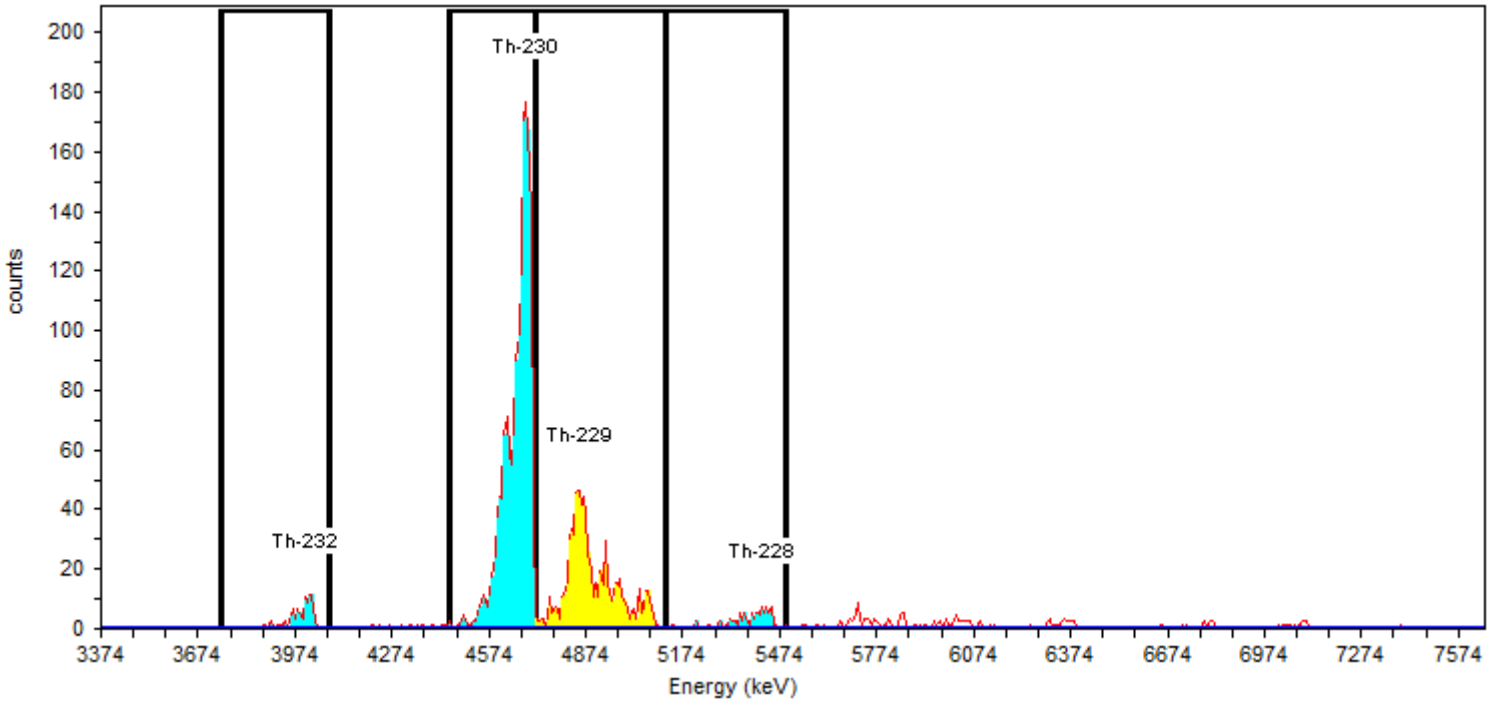
Tracer Name: Th-229_00021
Tracer Activity: 67.23 DPM / mL x (Vol.) 0.20 mL = 13.45 DPM
Tracer Ref. Date: 8/16/2014 2:33:14PM

Tracer Nuclide: Th-229
Tracer Recovery: 87.73%

Acquisition

Detector: AV151 SN: 50-05/R5
Acquisition Start Date: 8/12/2016 4:24:06PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:31PM
Bkgd Info: Sample: ICB;AV151; Det: AV151; Spectrum #1; 7/22/2016 3:43:31 PM

Energy Calibration: IC-8877;AV151-20151016
Efficiency Calibration:IC-8877;AV151-20151016
Calibration Date: 10/16/2015 6:46:50PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.28% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Th2007_ROI
Decay Correction:8/12/2016 4:21:51PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-230	4688.0	4,687.5	0.5	4446.0	4717.0	37.6	99.7	1551	1.2500	1550.04	2.628E+001	pCi/g
Th-229	4848.0	4,845.3	2.7	4717.0	5119.0	69.0	99.6	714	1.0000	712.91	1.061E+001	pCi/g
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	39.7	99.8	80	3.5000	76.41	1.295E+000	pCi/g
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	63.2	100.2	79	0.5000	78.50	1.324E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:21:36AM 8/16/2016

Sample

Sample Name: 160-18504-F-1-L DU Type: Sample
Spectrum #1 Analysis #1
: 160-18504-F-1-L DU
Sample Collection Date: 8/4/2016 9:00:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264058
AnalysisResultsID: 174204
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

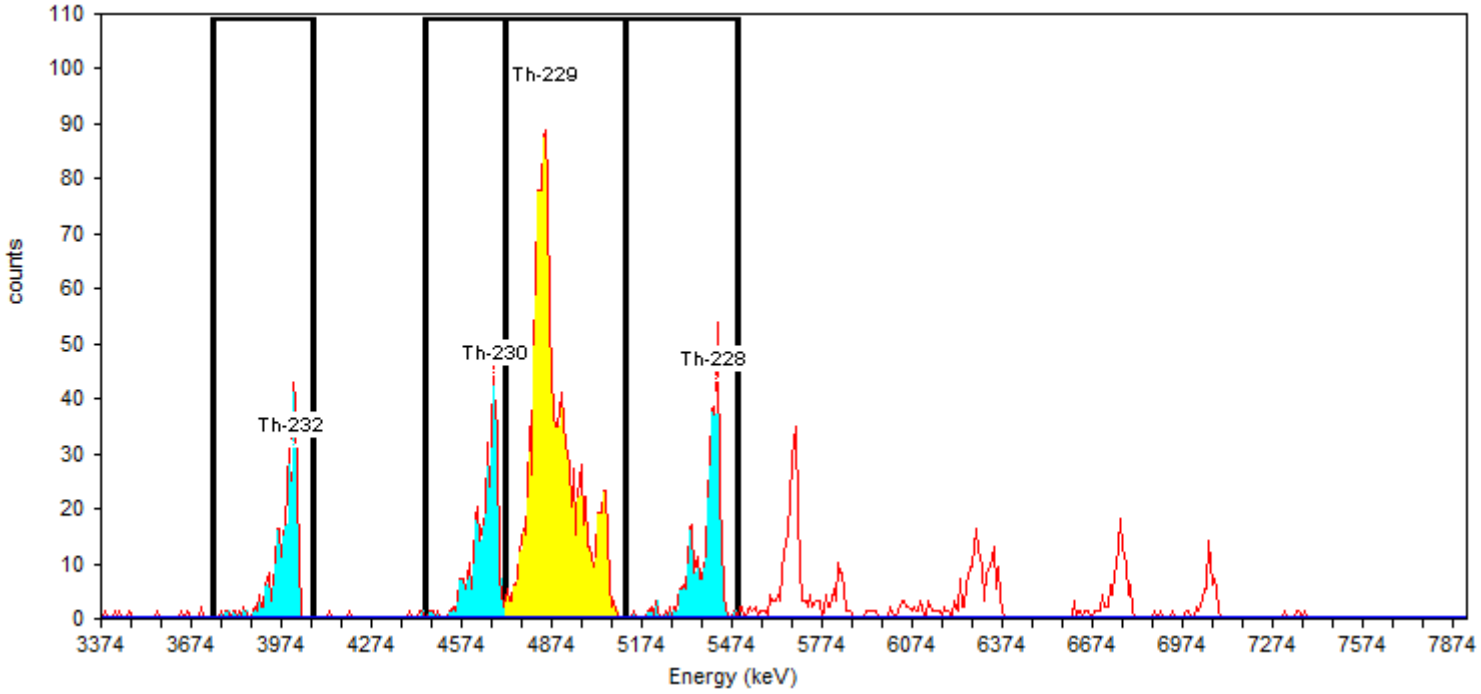
Tracer Name: Th-229_00021
Tracer Activity: 67.23 DPM / mL x (Vol.) 0.20 mL = 13.45 DPM
Tracer Ref. Date: 8/16/2014 2:33:14PM

Tracer Nuclide: Th-229
Tracer Recovery: 44.11%

Acquisition

Detector: AV149 SN: 50-05/R3
Acquisition Start Date: 8/15/2016 5:21:29PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 7/22/2016 3:43:52PM
Bkgd Info: Sample: ICB;AV149; Det: AV149; Spectrum #1; 7/22/2016 3:43:52 PM

Energy Calibration: IC-8875;AV149-20151016
Efficiency Calibration:IC-8875;AV149-20151016
Calibration Date: 10/16/2015 6:46:43PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.03% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Th2007_ROI
Decay Correction:8/15/2016 5:20:20PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	58.9	100.2	302	0.0000	302.00	1.335E+000	pCi/g
Th-230	4688.0	4,687.5	0.5	4446.0	4717.0	31.2	99.7	369	2.0000	367.37	1.632E+000	pCi/g
Th-229	4848.0	4,845.3	2.7	4717.0	5119.0	71.9	99.6	1366	3.0000	1363.06	2.673E+000	pCi/g
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	49.7	99.8	353	16.0000	337.17	1.497E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:24:07PM 8/12/2016

Sample

Sample Name: 160-18521-F-2-F Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-2-F
Sample Collection Date: 8/5/2016 9:25:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264058
AnalysisResultsID: 174053
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

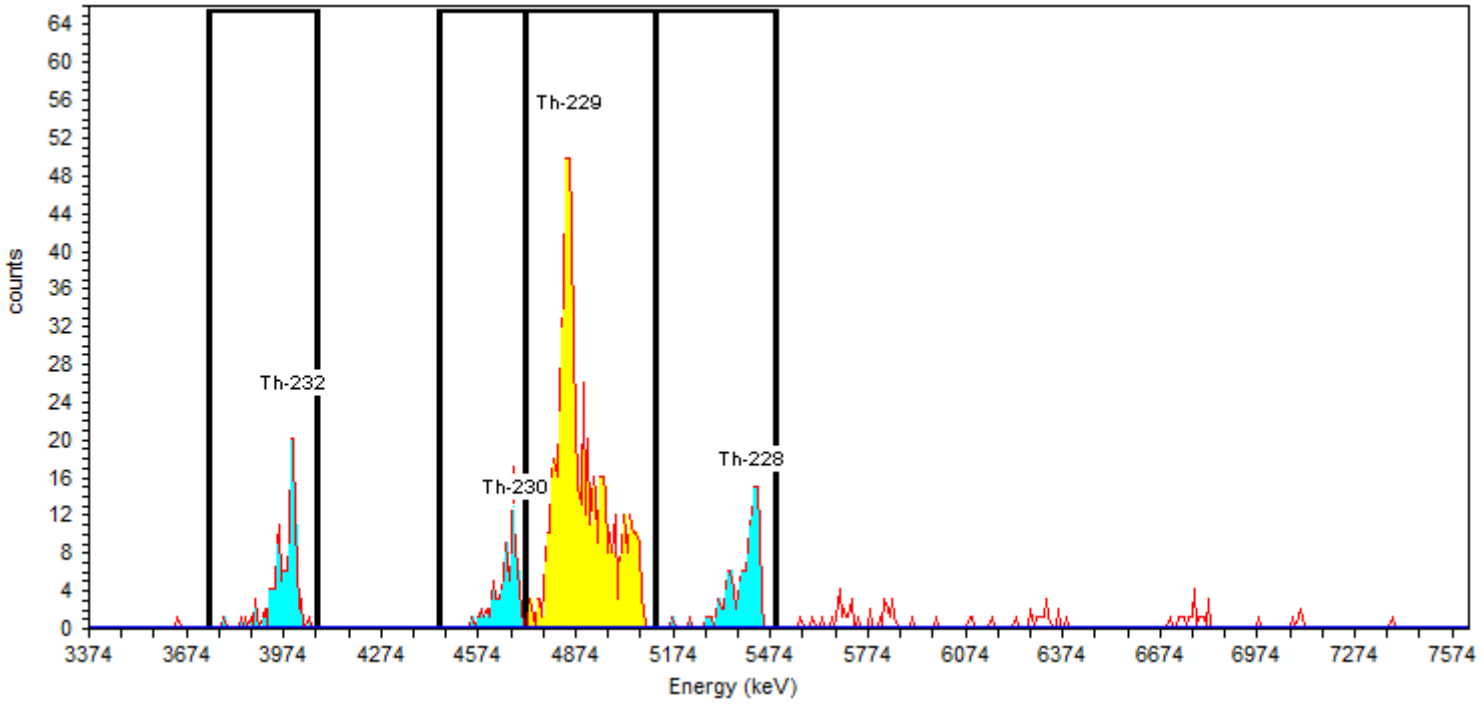
Tracer Name: Th-229_00021
Tracer Activity: 67.23 DPM / mL x (Vol.) 0.20 mL = 13.45 DPM
Tracer Ref. Date: 8/16/2014 2:33:14PM

Tracer Nuclide: Th-229
Tracer Recovery: 81.72%

Acquisition

Detector: AV161 SN: 50-05/II7
Acquisition Start Date: 8/12/2016 4:24:07PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:32PM
Bkgd Info: Sample: ICB;AV161; Det: AV161; Spectrum #1; 7/22/2016 3:43:32 PM

Energy Calibration: IC-7107;AV161-20151016
Efficiency Calibration:IC-7107;AV161-20151016
Calibration Date: 10/17/2015 2:36:23PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.14% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Th2007_ROI
Decay Correction:8/12/2016 4:21:51PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	73.0	100.2	126	0.0000	126.00	1.105E+000	pCi/g
Th-230	4688.0	4,687.5	0.5	4446.0	4717.0	24.9	99.7	88	0.2500	87.75	7.734E-001	pCi/g
Th-229	4848.0	4,845.3	2.7	4717.0	5119.0	64.1	99.6	687	0.2500	686.75	4.950E+000	pCi/g
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	57.1	99.8	129	4.2500	124.75	1.099E+000	pCi/g

Prep Batch: 265068

Preparation, Extraction Chromatography Resin Actinide Separation

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 265068

Lab ID: MB 160-265068/1-A
Client ID:
Sigma: 2

Analyzed: 08/18/16 17:10
Detector: AV152
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 400

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Thorium-228	0.06388	0.0868	0.0870	U	pCi/g	1.00	0.146	265586
Thorium-230	0.1530	0.0815	0.0826		pCi/g	1.00	0.0577	265586
Thorium-232	0.02079	0.0294	0.0294	U	pCi/g	1.00	0.0312	265586

Tracer	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Thorium-229	10.67	0.627	1.09		pCi/g	0.0679	12.1	88.1	30 - 110

Lab ID: LCS 160-265068/2-A
Client ID:
Sigma: 2

Analyzed: 08/18/16 17:10
Detector: AV153
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 400

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Thorium-230	25.76	1.00	2.39		pCi/g	1.00	0.0541	265587

Tracer	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Thorium-229	10.48	0.597	1.06		pCi/g	0.0626	12.1	86.7	30 - 110

Lab ID: 160-18521-1
Client ID: YMTFA74SE001
Sigma: 2

Analyzed: 08/18/16 17:10
Detector: AV156
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 400

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Thorium-228	3.72	0.382	0.493		pCi/g	1.00	0.131	265588
Thorium-230	2.60	0.316	0.385		pCi/g	1.00	0.0629	265588
Thorium-232	4.65	0.421	0.575		pCi/g	1.00	0.0526	265588

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Thorium-229	11.0	0.618	1.11		pCi/g	0.0640	12.1	90.6	30 - 110

Lab ID: 160-18521-1 DU
Client ID: YMTFA74SE001
Sigma: 2

Analyzed: 08/18/16 17:10
Detector: AV157
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 400

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Thorium-228	4.177	0.429	0.554		pCi/g	1.00	0.131	265589
Thorium-230	3.081	0.365	0.447		pCi/g	1.00	0.0596	265589
Thorium-232	5.980	0.507	0.714		pCi/g	1.00	0.0792	265589

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 265068

Tracer	DU Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Thorium-229	10.24	0.612	1.06		pCi/g	0.0673	12.1	84.5	30 - 110

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-265068/1-A	Thorium-228			0.06388	U	pCi/g							1.46914585
MB 160-265068/1-A	Thorium-230			0.1530		pCi/g							3.70630808
MB 160-265068/1-A	Thorium-232			0.02079	U	pCi/g							1.41172547

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-265068/2-A	Thorium-230		24.5	25.76		pCi/g	105	81 - 118					.7691803526

Duplicate ID:	Analyte	Parent Result	Spike Added	DU Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18521-1	Thorium-228	3.72		4.177		pCi/g			12	0.44	1.24	1	
160-18521-1	Thorium-230	2.60		3.081		pCi/g			17	0.57	1.61	1	
160-18521-1	Thorium-232	4.65		5.980		pCi/g			25	1.03	2.89	1	

Glossary:

Ts = Count Duration, Sample

ALPHA SPECTROSCOPY BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 265068 Batch Start Date: 08/16/16 14:46 Batch Analyst: Sherman, Austin T

Batch Method: ExtChrom Batch End Date: 08/18/16 10:16

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	Th-229 00021	TRM-2 00001			
MB 160-265068/1		ExtChrom, A-01-R		0.5 g	0.2 mL				
LCS 160-265068/2		ExtChrom, A-01-R		0.5008 g	0.2 mL	0.5008 g			
160-18521-F-1-A	YMTFA74SE001	ExtChrom, A-01-R	T	0.4996 g	0.2 mL				
160-18521-F-1-A DU	YMTFA74SE001	ExtChrom, A-01-R	T	0.4998 g	0.2 mL				

Batch Notes	
Balance ID	11233433897
Analyst ID - Column	nmn
Column Date	8/18/16
Analyst ID - CoPrecipitation	nmn
CoPrecipitation Date	8/18/16
Pipette ID	rad104
Analyst ID - Reagent Drop Witness	jdl
Analyst ID - Reagent Drop	ats
SOP Number	st-rc-0003, st-rc-0004, st-rc-0100, st-rc-0242

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:50:31PM 8/18/2016

Sample

Sample Name: MB 160-265068/1-A Type: Blank
Spectrum #1 Analysis #1
: MB 160-265068/1-A
Sample Collection Date: 8/18/2016 10:13:00AM
Comment:

Sample Weight : 0.50 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 265068
AnalysisResultsID: 174497
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

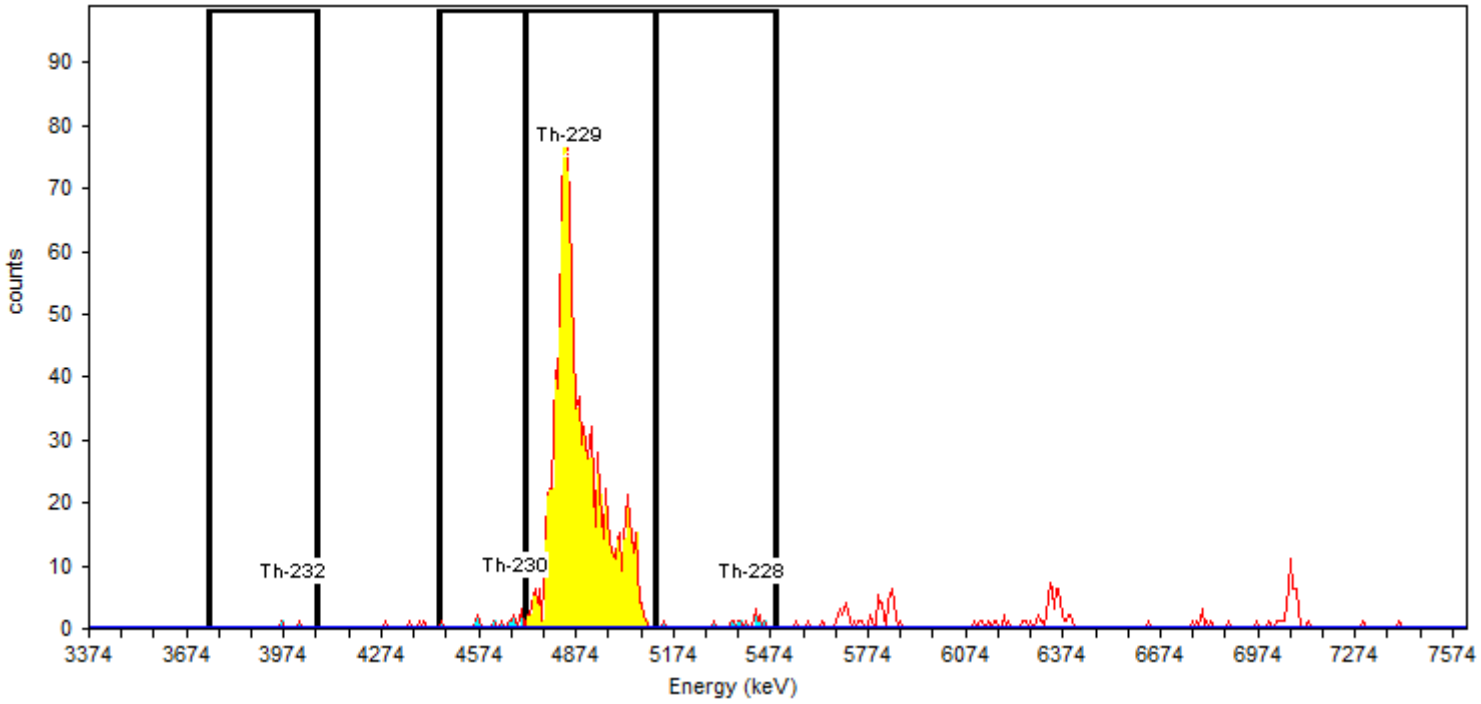
Tracer Name: Th-229_00021
Tracer Activity: 67.23 DPM / mL x (Vol.) 0.20 mL = 13.45 DPM
Tracer Ref. Date: 8/16/2014 2:33:14PM

Tracer Nuclide: Th-229
Tracer Recovery: 88.12%

Acquisition

Detector: AV152 SN: 50-05/R6
Acquisition Start Date: 8/18/2016 5:10:25PM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 7/22/2016 3:43:31PM
Bkgd Info: Sample: ICB;AV152; Det: AV152; Spectrum #1; 7/22/2016 3:43:31 PM

Energy Calibration: IC-9520;AV152-20151016
Efficiency Calibration:IC-9520;AV152-20151016
Calibration Date: 10/16/2015 6:46:53PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.54% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Th2007_ROI
Decay Correction:8/18/2016 5:08:41PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	93.8	100.2	2	0.0000	2.00	2.079E-002	pCi/g
Th-230	4688.0	4,687.5	0.5	4446.0	4717.0	34.7	99.7	15	0.4167	14.65	1.530E-001	pCi/g
Th-229	4848.0	4,845.3	2.7	4717.0	5119.0	74.5	99.6	1160	1.2500	1158.81	1.067E+001	pCi/g
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	46.1	99.8	14	7.8806	6.12	6.388E-002	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:50:37PM 8/18/2016

Sample

Sample Name: LCS 160-265068/2-A Type: Control
Spectrum #1 Analysis #1
: LCS 160-265068/2-A
Sample Collection Date: 8/18/2016 10:13:00AM
Comment:

Sample Weight : 0.50 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 265068
AnalysisResultsID: 174499
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

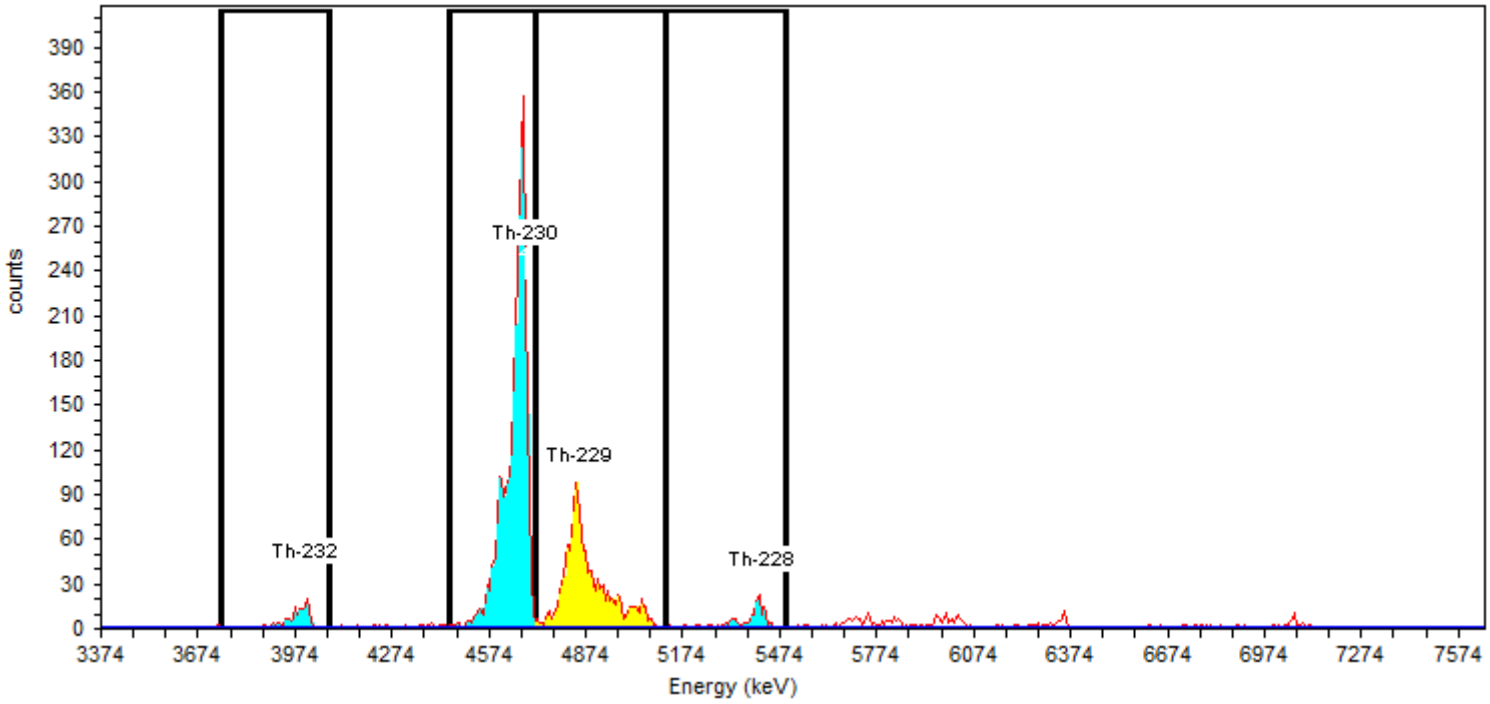
Tracer Name: Th-229_00021
Tracer Activity: 67.23 DPM / mL x (Vol.) 0.20 mL = 13.45 DPM
Tracer Ref. Date: 8/16/2014 2:33:14PM

Tracer Nuclide: Th-229
Tracer Recovery: 86.70%

Acquisition

Detector: AV153 SN: 54-011 Y6
Acquisition Start Date: 8/18/2016 5:10:25PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 7/25/2016 1:14:03PM
Bkgd Info: Sample: ICB;AV153; Det: AV153; Spectrum #1; 7/25/2016 1:14:03 PM

Energy Calibration: IC-9792;AV153-20151016
Efficiency Calibration:IC-9792;AV153-20151016
Calibration Date: 10/16/2015 6:46:57PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.60% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Th2007_ROI
Decay Correction:8/18/2016 5:08:39PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	60.9	100.2	127	0.4167	126.58	1.232E+000	pCi/g
Th-230	4688.0	4,687.5	0.5	4446.0	4717.0	26.3	99.7	2635	0.4167	2634.31	2.576E+001	pCi/g
Th-229	4848.0	4,845.3	2.7	4717.0	5119.0	72.3	99.6	1237	1.2500	1235.78	1.049E+001	pCi/g
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	52.3	99.8	134	6.2139	127.79	1.249E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:50:35PM 8/18/2016

Sample

Sample Name: 160-18521-F-1-I Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-1-I
Sample Collection Date: 8/5/2016 7:50:00AM
Comment:

Sample Weight : 0.50 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 265068
AnalysisResultsID: 174498
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

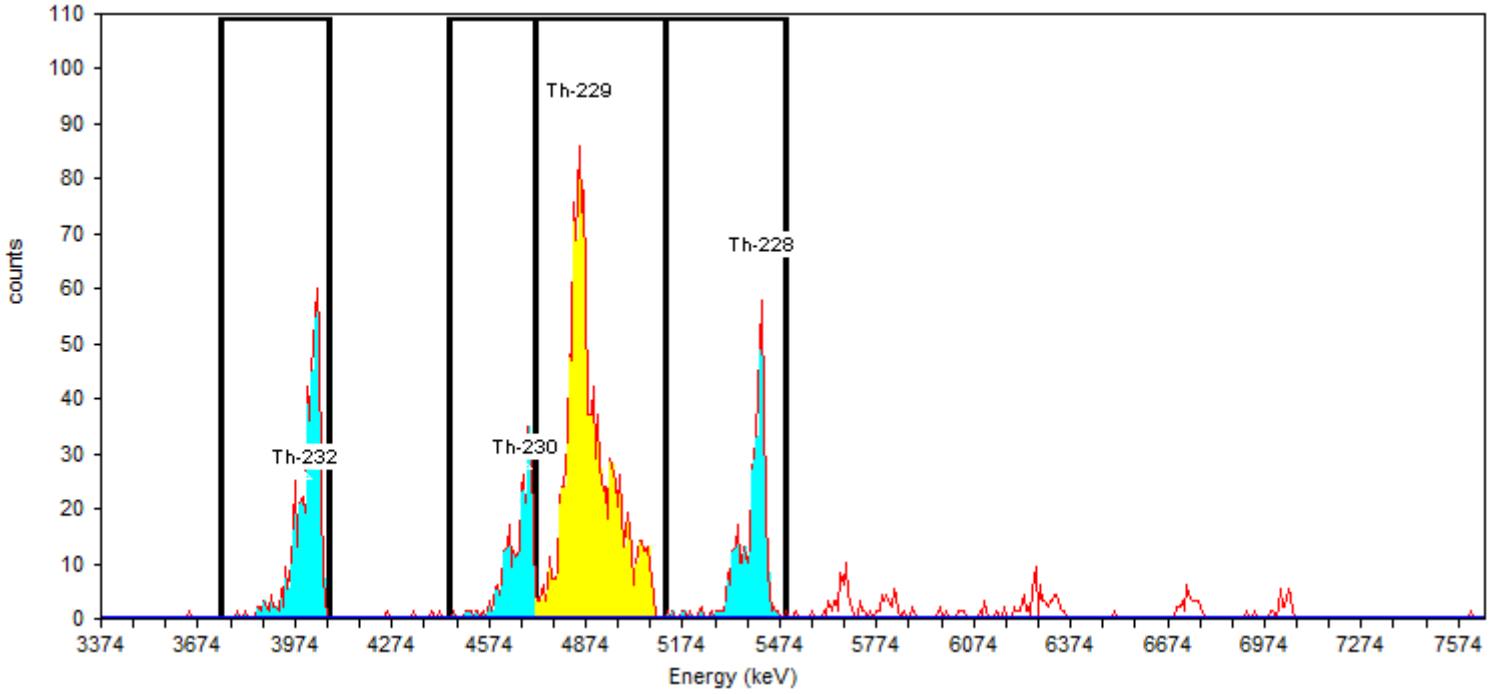
Tracer Name: Th-229_00021
Tracer Activity: 67.23 DPM / mL x (Vol.) 0.20 mL = 13.45 DPM
Tracer Ref. Date: 8/16/2014 2:33:14PM

Tracer Nuclide: Th-229
Tracer Recovery: 90.57%

Acquisition

Detector: AV156 SN: 49-155n4
Acquisition Start Date: 8/18/2016 5:10:24PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 7/22/2016 3:43:31PM
Bkgd Info: Sample: ICB;AV156; Det: AV156; Spectrum #1; 7/22/2016 3:43:31 PM

Energy Calibration: IC-9795;AV156-20151016a
Efficiency Calibration:IC-9795;AV156-20151016a
Calibration Date: 10/16/2015 6:47:28PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.08% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Th2007_ROI
Decay Correction:8/18/2016 5:08:39PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	27.8	100.2	489	0.4167	488.58	4.653E+000	pCi/g
Th-230	4688.0	4,687.5	0.5	4446.0	4717.0	39.1	99.7	273	0.8333	272.14	2.605E+000	pCi/g
Th-229	4848.0	4,845.3	2.7	4717.0	5119.0	76.3	99.6	1267	1.2500	1265.72	1.098E+001	pCi/g
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	50.6	99.8	396	7.5000	388.41	3.715E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:50:40PM 8/18/2016

Sample

Sample Name: 160-18521-F-1-J DU Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-1-J DU
Sample Collection Date: 8/5/2016 7:50:00AM
Comment:

Sample Weight : 0.50 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 265068
AnalysisResultsID: 174500
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

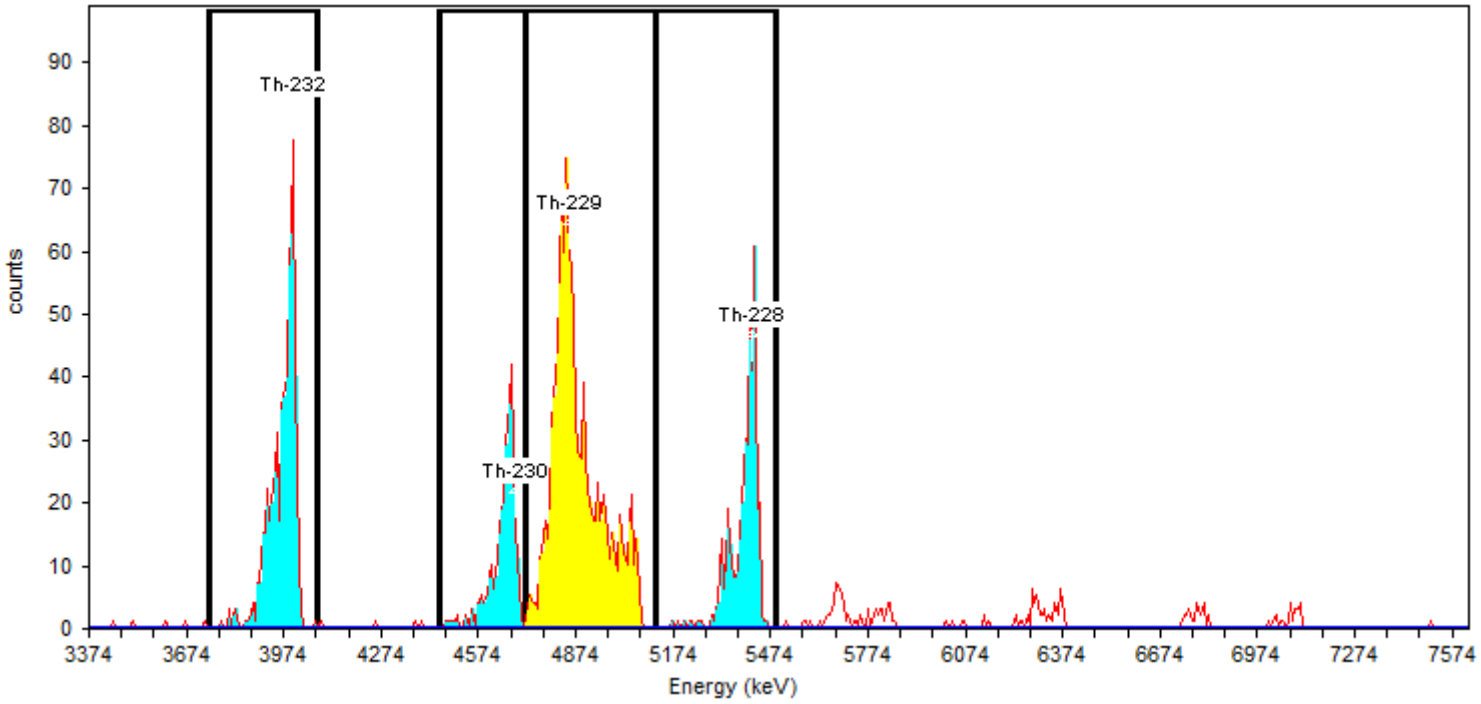
Tracer Name: Th-229_00021
Tracer Activity: 67.23 DPM / mL x (Vol.) 0.20 mL = 13.45 DPM
Tracer Ref. Date: 8/16/2014 2:33:14PM

Tracer Nuclide: Th-229
Tracer Recovery: 84.55%

Acquisition

Detector: AV157 SN: 50-05/II3
Acquisition Start Date: 8/18/2016 5:10:25PM
Live Time: 400.00 min.
Real Time: 400.01 min.
Background Date: 7/22/2016 3:43:31PM
Bkgd Info: Sample: ICB;AV157; Det: AV157; Spectrum #1; 7/22/2016 3:43:31 PM

Energy Calibration: IC-9817;AV157-20151016
Efficiency Calibration:IC-9817;AV157-20151016
Calibration Date: 10/16/2015 6:47:07PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.78% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = Th2007_ROI
Decay Correction:8/18/2016 5:08:39PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Thorium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
Th-232	3999.0	4,010.0	-11.0	3743.0	4072.0	55.5	100.2	558	1.2500	557.21	5.980E+000	pCi/g
Th-230	4688.0	4,687.5	0.5	4446.0	4717.0	20.7	99.7	286	0.4167	285.65	3.081E+000	pCi/g
Th-229	4848.0	4,845.3	2.7	4717.0	5119.0	80.5	99.6	1124	1.2500	1122.81	1.025E+001	pCi/g
Th-228	5420.0	5,423.3	-3.3	5119.0	5493.0	50.3	99.8	393	5.4888	387.51	4.177E+000	pCi/g

Method A-01-R U

Isotopic Uranium (Alpha Spectrometry) by Method A-01-R

Prep Batch: 264056

Preparation, Extraction Chromatography Resin Actinide Separation

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264056

Lab ID: MB 160-264056/1-A
Client ID:
Sigma: 2

Analyzed: 08/15/16 17:30
Detector: AV237
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium-233/234	0.02300	0.0325	0.0326	U	pCi/g	1.00	0.0515	265017
Uranium-235/236	-0.002862	0.00572	0.00573	U	pCi/g	1.00	0.0554	265017
Uranium-238	0.03443	0.0370	0.0371	U	pCi/g	1.00	0.0444	265017

Tracer	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium-232	5.577	0.403	0.618		pCi/g	0.0544	7.41	79.0	30 - 110

Lab ID: LCS 160-264056/2-A
Client ID:
Sigma: 2

Analyzed: 08/15/16 17:30
Detector: AV238
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium-233/234	6.057	0.490	0.707		pCi/g	1.00	0.0704	265018
Uranium-238	6.566	0.510	0.751		pCi/g	1.00	0.0553	265018

Tracer	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium-232	5.293	0.396	0.596		pCi/g	0.0494	7.41	75.0	30 - 110

Lab ID: 160-18504-F-1-J DU
Client ID:
Sigma: 2

Analyzed: 08/15/16 17:30
Detector: AV240
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium-233/234	7.255	0.585	0.844		pCi/g	1.00	0.0659	265020
Uranium-235/236	0.6150	0.190	0.197		pCi/g	1.00	0.0439	265020
Uranium-238	21.01	0.993	2.03		pCi/g	1.00	0.0352	265020

Tracer	DU Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium-232	4.204	0.343	0.492		pCi/g	0.0339	7.40	59.6	30 - 110

Lab ID: 160-18521-1
Client ID: YMTFA74SE001
Sigma: 2

Analyzed: 08/16/16 16:13
Detector: AV176
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 960

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium-233/234	44.5	1.45	4.01		pCi/g	1.00	0.180	265201
Uranium-235/236	5.05	0.548	0.693		pCi/g	1.00	0.162	265201
Uranium-238	299	3.75	25.4		pCi/g	1.00	0.199	265201

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 264056

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium-232	1.08	0.0885	0.127	S	pCi/g	0.0221	7.41	15.3	30 - 110

Lab ID: 160-18521-2
Client ID: YMTFA75SE001
Sigma: 2

Analyzed: 08/15/16 17:30
Detector: AV245
Dil Fac: 1

Decay Corrected: No
Yield Truncated: No
Ts: 240

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium-233/234	1.71	0.241	0.281		pCi/g	1.00	0.0525	265025
Uranium-235/236	0.0634	0.0569	0.0571	U	pCi/g	1.00	0.0705	265025
Uranium-238	2.04	0.263	0.314		pCi/g	1.00	0.0254	265025

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium-232	5.90	0.409	0.643		pCi/g	0.0473	7.40	83.7	30 - 110

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-264056/1-A	Uranium-233/234			0.02300	U	pCi/g							1.41172547
MB 160-264056/1-A	Uranium-235/236			-0.002862	U	pCi/g							-.99911917
MB 160-264056/1-A	Uranium-238			0.03443	U	pCi/g							1.85486659

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-264056/2-A	Uranium-233/234		6.37	6.057		pCi/g	95	84 - 120					-.6076746118
LCS 160-264056/2-A	Uranium-238		6.51	6.566		pCi/g	101	82 - 122					.1052240112

Duplicate ID:	Analyte	Parent Result	Spike Added	DU Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18504-F-1-J DU	Uranium-233/234	7.92		7.255		pCi/g			9	0.38	1.07	1	
160-18504-F-1-J DU	Uranium-235/236	0.600		0.6150		pCi/g			3	0.04	0.11	1	
160-18504-F-1-J DU	Uranium-238	23.4		21.01		pCi/g			11	0.56	1.58	1	

Glossary:
Ts = Count Duration, Sample

ALPHA SPECTROSCOPY BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264056 Batch Start Date: 08/09/16 11:43 Batch Analyst: Sherman, Austin T

Batch Method: ExtChrom Batch End Date: 08/15/16 08:52

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	U-232 00035	UNAT 00012			
MB 160-264056/1		ExtChrom, A-01-R		1.0 g	0.2 mL				
LCS 160-264056/2		ExtChrom, A-01-R		1.0 g	0.2 mL	0.2 mL			
160-18504-F-1-A DU		ExtChrom, A-01-R	T	1.0014 g	0.2 mL				
160-18521-F-1-A	YMTFA74SE001	ExtChrom, A-01-R	T	1.0006 g	0.2 mL				
160-18521-F-2-A	YMTFA75SE001	ExtChrom, A-01-R	T	1.0012 g	0.2 mL				

Batch Notes	
Balance ID	1123433897
Analyst ID - Column	nmn
Column Date	8/12/16
Analyst ID - CoPrecipitation	nmn
CoPrecipitation Date	8/15/16
Pipette ID	rad104
Analyst ID - Reagent Drop Witness	scb
Analyst ID - Reagent Drop	ats
SOP Number	st-rc-0003, st-rc-0004, st-rc-0100, st-rc-0240

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:30:55PM 8/15/2016

Sample

Sample Name: MB 160-264056/1-A Type: Blank
Spectrum #1 Analysis #1
: MB 160-264056/1-A
Sample Collection Date: 8/15/2016 8:44:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264056
AnalysisResultsID: 174190
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

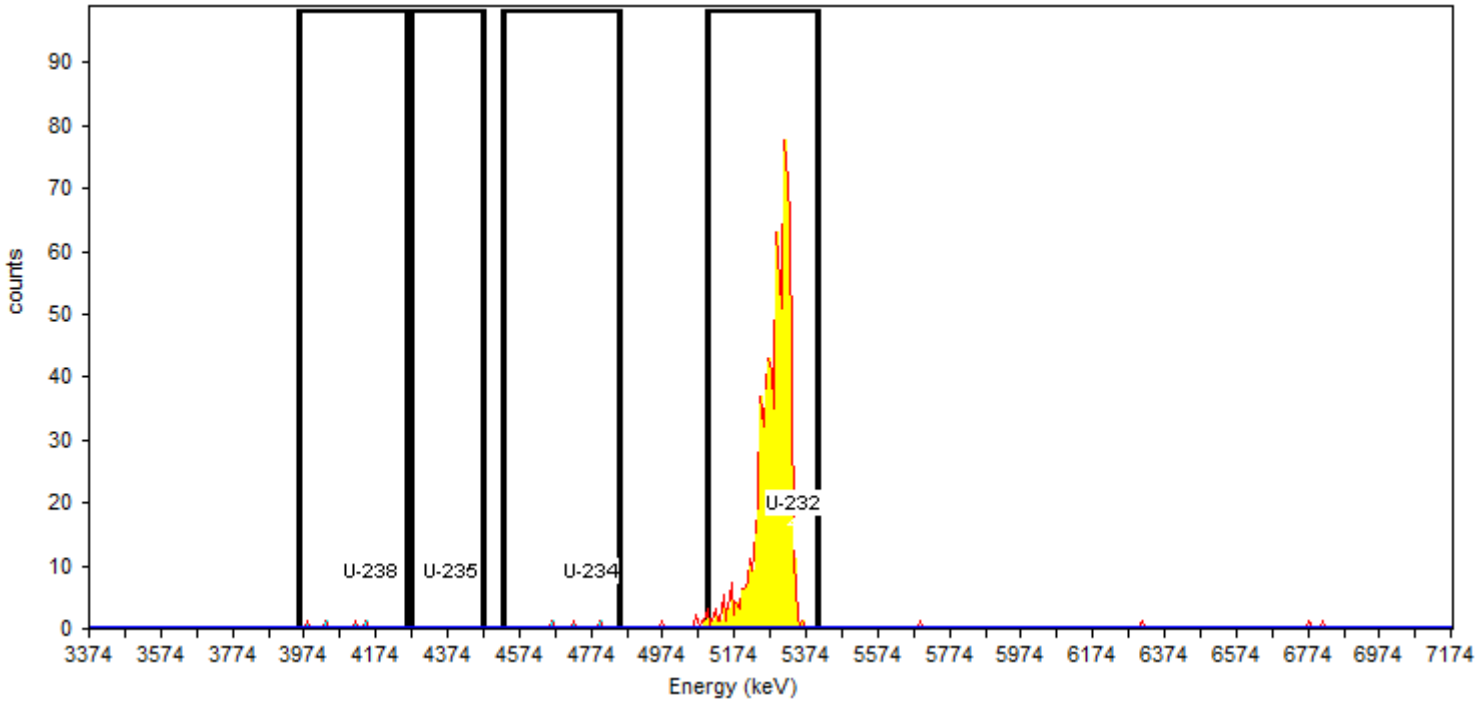
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.20 mL = 16.45 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 79.01%

Acquisition

Detector: AV237 SN: 50-120DD7
Acquisition Start Date: 8/15/2016 5:30:35PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:48PM
Bkgd Info: Sample: ICB;AV237; Det: AV237; Spectrum #1; 7/22/2016 3:43:48 PM

Energy Calibration: IC-9792;AV237-20151018
Efficiency Calibration:IC-9792;AV237-20151018
Calibration Date: 10/19/2015 4:11:48PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.87% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:8/15/2016 5:29:41PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	24.8	100.0	4	0.2500	3.75	3.443E-002	pCi/g
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	.0	80.2	0	0.2500	-0.25	-2.862E-003	pCi/g
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	39.9	99.8	3	0.5000	2.50	2.300E-002	pCi/g
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	82.1	100.1	771	1.5000	769.50	5.854E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:30:58PM 8/15/2016

Sample

Sample Name: LCS 160-264056/2-A Type: Control
Spectrum #1 Analysis #1
: LCS 160-264056/2-A
Sample Collection Date: 8/15/2016 8:44:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264056
AnalysisResultsID: 174191
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

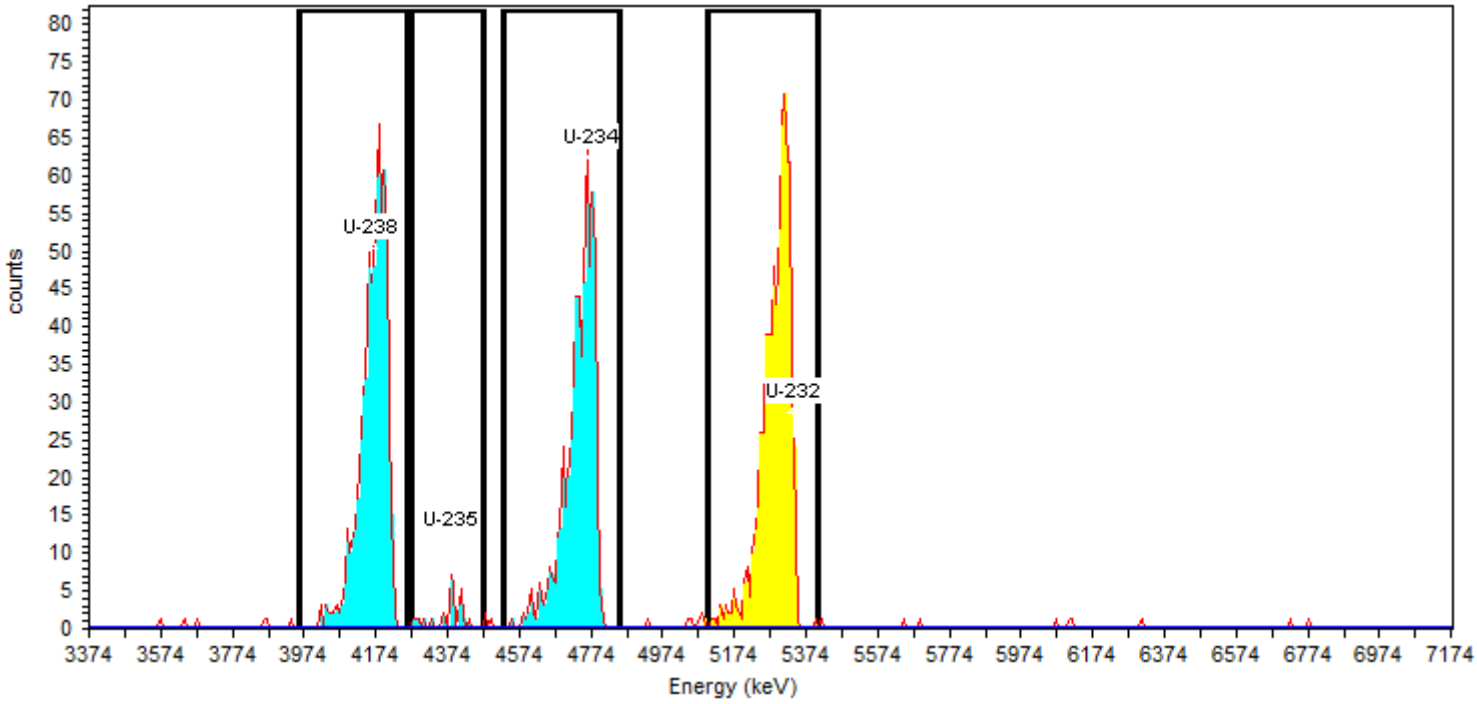
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.20 mL = 16.45 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 74.98%

Acquisition

Detector: AV238 SN: 51-005P7
Acquisition Start Date: 8/15/2016 5:30:35PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:48PM
Bkgd Info: Sample: ICB;AV238; Det: AV238; Spectrum #1; 7/22/2016 3:43:48 PM

Energy Calibration: IC-9793;AV238-20151018
Efficiency Calibration:IC-9793;AV238-20151018
Calibration Date: 10/19/2015 4:11:53PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.33% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:8/15/2016 5:29:40PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	73.8	100.0	665	0.5000	664.50	6.566E+000	pCi/g
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	18.1	80.2	31	0.7500	30.25	3.727E-001	pCi/g
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	76.3	99.8	613	1.2500	611.75	6.057E+000	pCi/g
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	80.7	100.1	716	1.0000	715.00	5.556E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:31:06PM 8/15/2016

Sample

Sample Name: 160-18504-F-1-J DU Type: Sample
Spectrum #1 Analysis #1
: 160-18504-F-1-J DU
Sample Collection Date: 8/4/2016 9:00:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264056
AnalysisResultsID: 174193
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

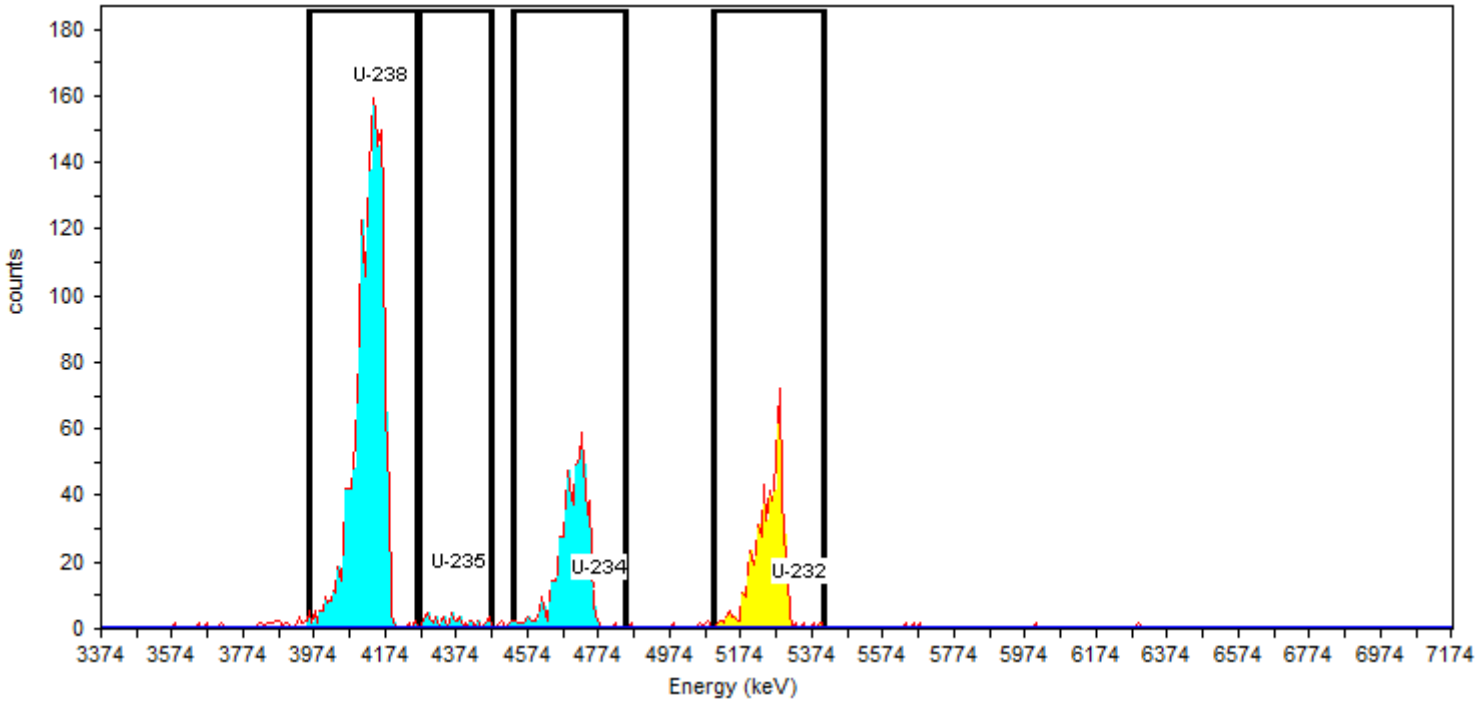
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.20 mL = 16.45 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 59.64%

Acquisition

Detector: AV240 SN: 51-005Q1
Acquisition Start Date: 8/15/2016 5:30:36PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:49PM
Bkgd Info: Sample: ICB;AV240; Det: AV240; Spectrum #1; 7/22/2016 3:43:49 PM

Energy Calibration: IC-9795;AV240-20151018
Efficiency Calibration:IC-9795;AV240-20151018
Calibration Date: 10/19/2015 4:12:02PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.76% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:8/15/2016 5:29:40PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	78.3	100.0	1789	0.0000	1789.00	2.101E+001	pCi/g
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	188.0	80.2	42	0.0000	42.00	6.150E-001	pCi/g
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	87.9	99.8	617	0.5000	616.50	7.255E+000	pCi/g
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	84.4	100.1	601	0.2500	600.75	4.413E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:14:20AM 8/17/2016

Sample

Sample Name: 160-18521-F-1-E Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-1-E
Sample Collection Date: 8/5/2016 7:50:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264056
AnalysisResultsID: 174315
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

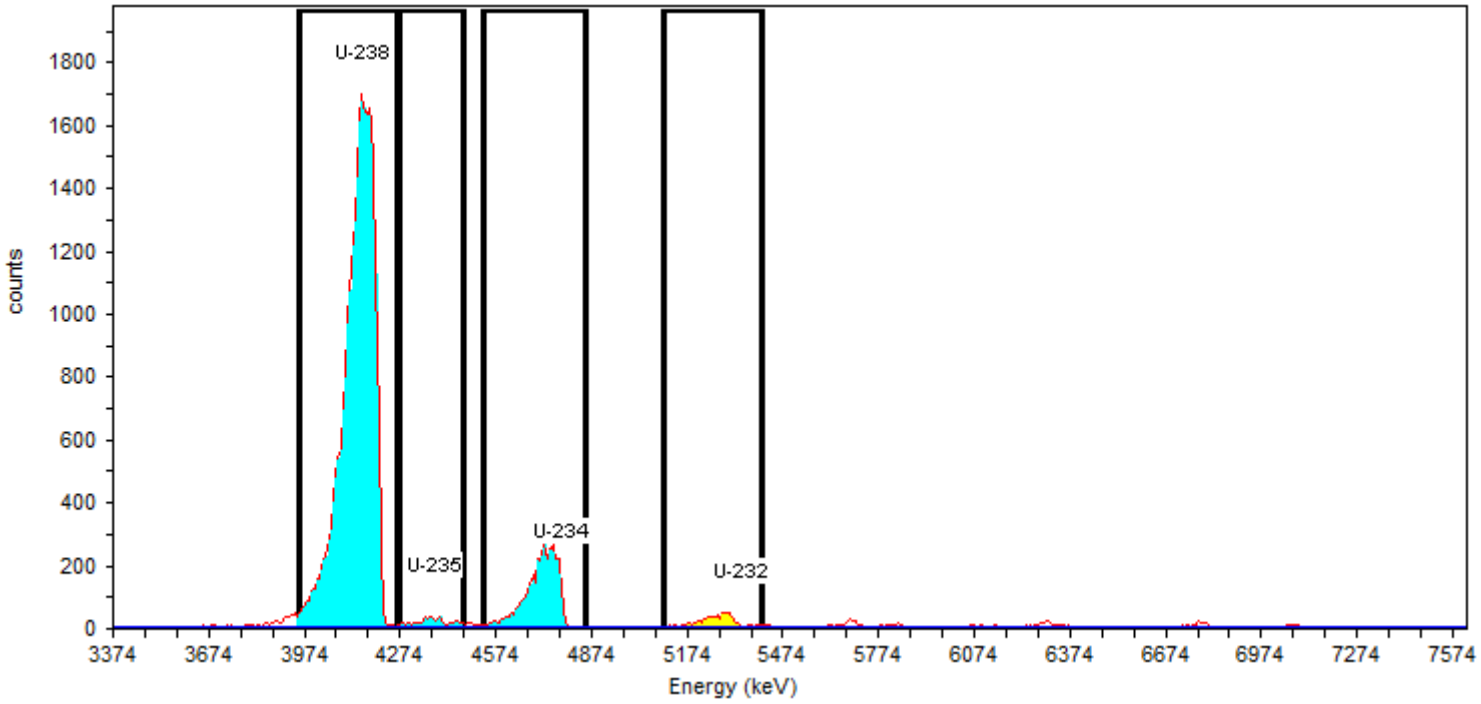
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.20 mL = 16.45 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 16.36%

Acquisition

Detector: AV176 SN: 50-117H2
Acquisition Start Date: 8/16/2016 4:13:28PM
Live Time: 960.00 min.
Real Time: 960.84 min.
Background Date: 7/22/2016 3:43:35PM
Bkgd Info: Sample: ICB;AV176; Det: AV176; Spectrum #1; 7/22/2016 3:43:35 PM

Energy Calibration: IC-8874;AV176-20151017
Efficiency Calibration:IC-8874;AV176-20151017
Calibration Date: 10/17/2015 6:01:52PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.19% +/- 0.37% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:8/16/2016 4:11:54PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	97.6	100.0	25120	8.0000	25112.00	2.749E+002	pCi/g
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	66.4	80.2	432	5.0000	427.00	5.828E+000	pCi/g
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	99.0	99.8	3774	7.0000	3767.00	4.132E+001	pCi/g
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	102.2	100.1	656	11.0000	645.00	1.211E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:34:07AM 8/17/2016

Sample

Sample Name: 160-18521-F-1-E Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-1-E
Sample Collection Date: 8/5/2016 7:50:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264056
AnalysisResultsID: 174316
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

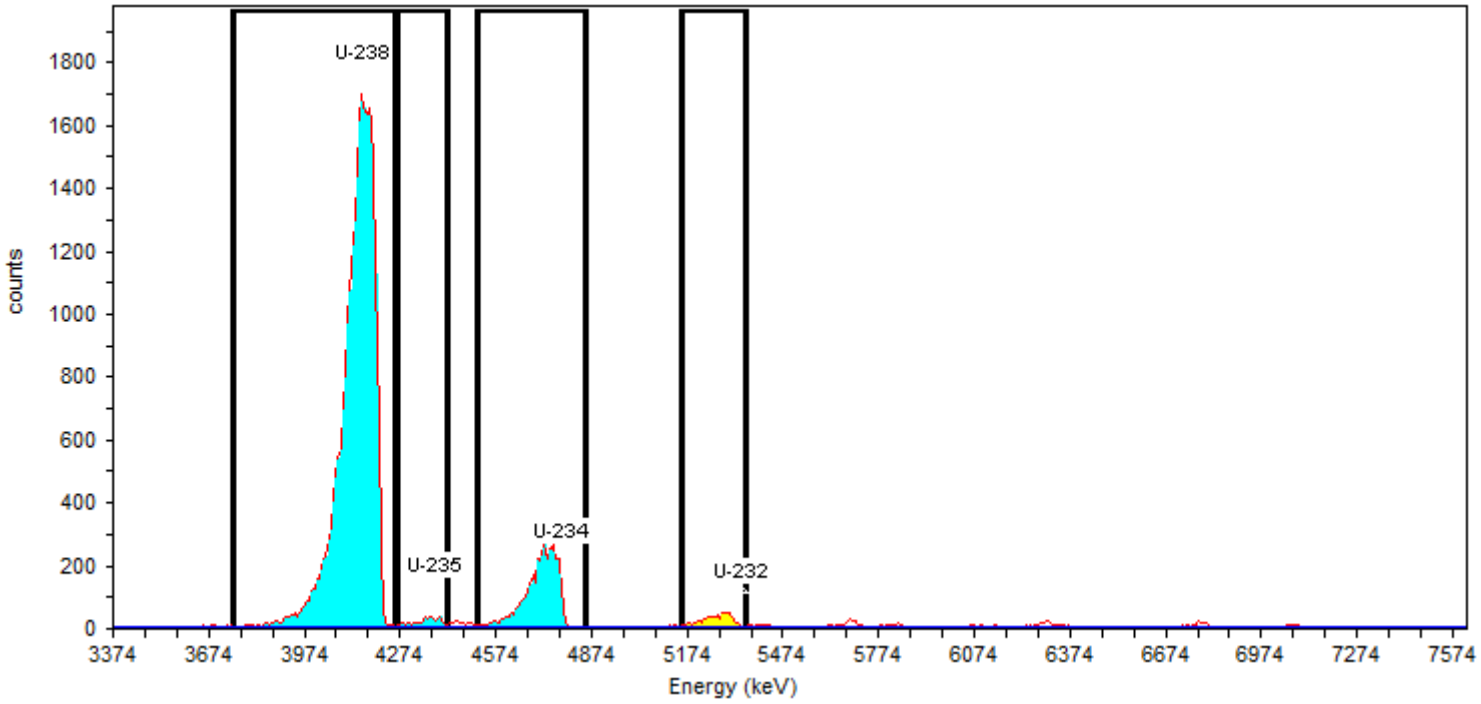
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.20 mL = 16.45 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 15.26%

Acquisition

Detector: AV176 SN: 50-117H2
Acquisition Start Date: 8/16/2016 4:13:28PM
Live Time: 960.00 min.
Real Time: 960.84 min.
Background Date: 7/22/2016 3:43:35PM
Bkgd Info: Sample: ICB;AV176; Det: AV176; Spectrum #1; 7/22/2016 3:43:35 PM

Energy Calibration: IC-8874;AV176-20151017
Efficiency Calibration:IC-8874;AV176-20151017
Calibration Date: 10/17/2015 6:01:52PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.19% +/- 0.37% TPU(2 sigma)



General Analysis

Analysis Method: Interactive ROI Analysis
Decay Correction:8/16/2016 4:11:54PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Manual Integration for tailing
RTM 8/17/2016

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3747.3	4254.4	97.7	100.0	25494	9.0000	25485.00	2.991E+002	pCi/g
U-235	4381.2	4,396.0	-14.8	4261.9	4418.5	71.8	80.2	348	3.0000	345.00	5.048E+000	pCi/g
U-234	4776.4	4,775.8	0.6	4515.4	4851.0	99.0	99.8	3788	7.0000	3781.00	4.446E+001	pCi/g
U-232	5343.2	5,320.3	22.9	5156.8	5358.1	94.6	99.8	604	4.0000	600.00	1.130E+000	pCi/g

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:30:38PM 8/15/2016

Sample

Sample Name: 160-18521-F-2-E Type: Sample
Spectrum #1 Analysis #1
: 160-18521-F-2-E
Sample Collection Date: 8/5/2016 9:25:00AM
Comment:

Sample Weight : 1.00 Sample Units: g
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 264056
AnalysisResultsID: 174189
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

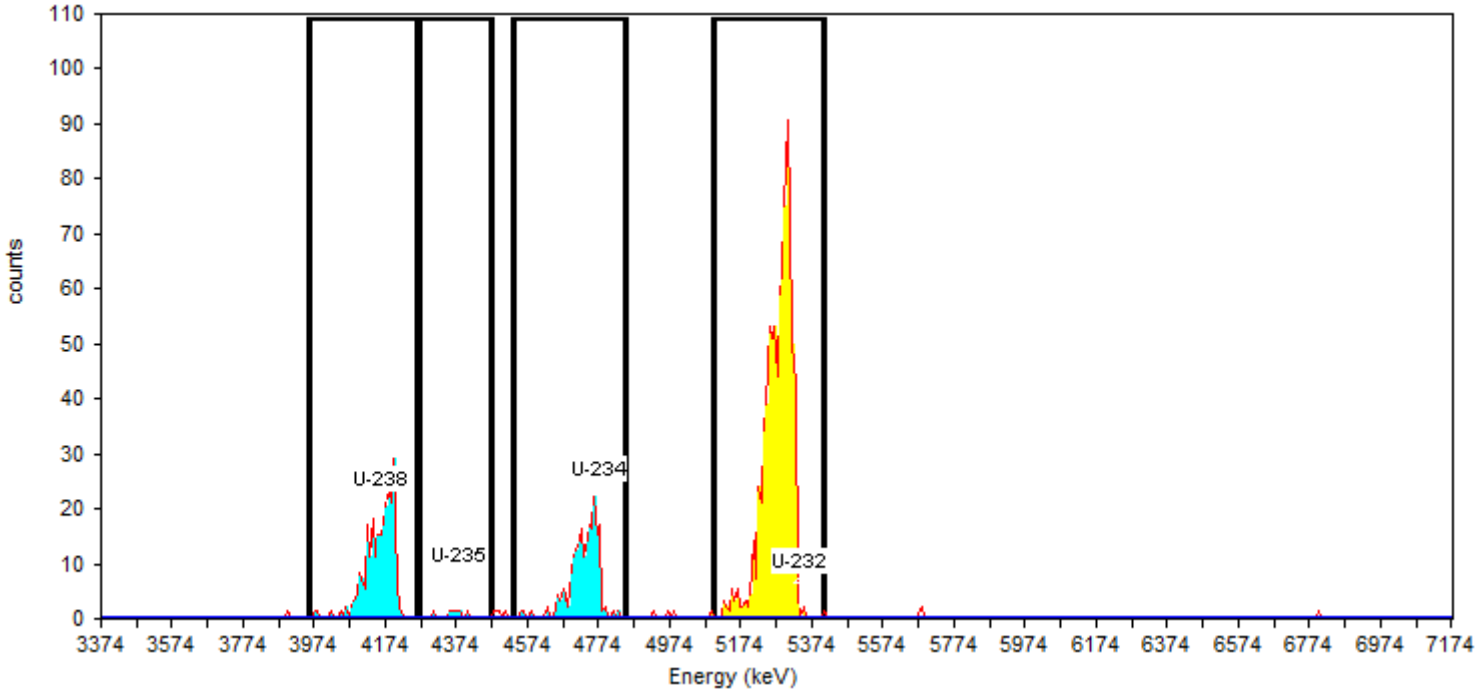
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.20 mL = 16.45 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 83.72%

Acquisition

Detector: AV245 SN: 51-005EE2
Acquisition Start Date: 8/15/2016 5:30:37PM
Live Time: 240.00 min.
Real Time: 240.00 min.
Background Date: 7/22/2016 3:43:50PM
Bkgd Info: Sample: ICB;AV245; Det: AV245; Spectrum #1; 7/22/2016 3:43:50 PM

Energy Calibration: IC-7107;AV245-20151019
Efficiency Calibration:IC-7107;AV245-20151019
Calibration Date: 10/19/2015 10:52:31PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.43% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:8/15/2016 5:29:40PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	87.2	100.0	241	0.0000	241.00	2.042E+000	pCi/g
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	35.2	80.2	7	1.0000	6.00	6.338E-002	pCi/g
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	83.1	99.8	202	0.7500	201.25	1.708E+000	pCi/g
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	85.8	100.1	834	1.0000	833.00	6.196E+000	pCi/g

Daily Checks

Alpha Spectroscopy Daily Pulser Check

Analysis Date: 08/12/16

		Gross Counts			FWHM (keV)			Pulser Center			Energy (keV)		
Detector	Analysis Date	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F
AV150	08/12/16 09:20	6016	5623.0-6214.9	Pass	14.8	10-20	Pass	224.0	219.0-229.0	Pass	5038	4997.7-5077.7	Pass
AV151	08/12/16 09:20	6017	5640.3-6234.1	Pass	13.6	10-20	Pass	222.0	217.0-227.0	Pass	5022	4982.2-5062.2	Pass
AV161	08/12/16 09:20	6024	5716.9-6318.7	Pass	14.7	10-20	Pass	229.9	224.9-234.9	Pass	5082	5041.6-5121.6	Pass
AV227	08/12/16 09:12	5649	5497.4-6076.1	Pass	13.6	10-20	Pass	223.1	217.5-227.5	Pass	5031	4986.1-5066.1	Pass
AV228	08/12/16 09:12	6025	5662.4-6258.4	Pass	13.3	10-20	Pass	222.0	217.0-227.0	Pass	5023	4982.6-5062.6	Pass
AV230	08/12/16 09:12	5865	5588.1-6176.3	Pass	12.9	10-20	Pass	222.0	217.0-227.0	Pass	5023	4982.6-5062.6	Pass
AV235	08/12/16 09:12	6026	5703.8-6304.2	Pass	13.8	10-20	Pass	223.0	218.0-228.0	Pass	5030	4990.0-5070.0	Pass
AV236	08/12/16 09:12	5838	5514.1-6094.6	Pass	12.7	10-20	Pass	223.0	217.6-227.6	Pass	5030	4987.2-5067.2	Pass
AV237	08/12/16 09:12	5770	5531.5-6113.7	Pass	12.9	10-20	Pass	221.9	217.1-227.1	Pass	5022	4983.5-5063.5	Pass
AV238	08/12/16 09:12	6009	5718.5-6320.5	Pass	16.1	10-20	Pass	221.9	217.2-227.2	Pass	5022	4984.2-5064.2	Pass
AV240	08/12/16 09:12	6003	5521.1-6102.2	Pass	15.9	10-20	Pass	223.0	218.1-228.1	Pass	5030	4991.0-5071.0	Pass
AV244	08/12/16 09:12	5727	5687.6-6286.3	Pass	13.1	10-20	Pass	222.9	218.9-228.9	Pass	5029	4996.8-5076.8	Pass
AV245	08/12/16 09:12	5864	5609.1-6199.5	Pass	12.3	10-20	Pass	222.0	217.0-227.0	Pass	5022	4982.9-5062.9	Pass

Analysis Date: 08/15/16

		Gross Counts			FWHM (keV)			Pulser Center			Energy (keV)		
Detector	Analysis Date	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F
AV149	08/15/16 14:39	5878	5704.3-6304.8	Pass	11.9	10-20	Pass	222.9	217.9-227.9	Pass	5030	4989.4-5069.4	Pass
AV237	08/15/16 14:39	5717	5531.5-6113.7	Pass	13.2	10-20	Pass	221.9	217.1-227.1	Pass	5022	4983.5-5063.5	Pass
AV238	08/15/16 14:39	6020	5718.5-6320.5	Pass	14.6	10-20	Pass	221.9	217.2-227.2	Pass	5022	4984.2-5064.2	Pass
AV240	08/15/16 14:39	6008	5521.1-6102.2	Pass	18.2	10-20	Pass	223.1	218.1-228.1	Pass	5031	4991.0-5071.0	Pass
AV245	08/15/16 14:40	6020	5609.1-6199.5	Pass	13.5	10-20	Pass	222.0	217.0-227.0	Pass	5022	4982.9-5062.9	Pass

Analysis Date: 08/16/16

		Gross Counts			FWHM (keV)			Pulser Center			Energy (keV)		
Detector	Analysis Date	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F
AV176	08/16/16 12:32	5977	5679.9-6277.8	Pass	15.6	10-20	Pass	222.0	217.0-227.0	Pass	5022	4982.4-5062.4	Pass
AV227	08/16/16 12:33	5673	5497.4-6076.1	Pass	13.4	10-20	Pass	223.1	217.5-227.5	Pass	5031	4986.1-5066.1	Pass
AV228	08/16/16 12:33	6024	5662.4-6258.4	Pass	13.6	10-20	Pass	222.0	217.0-227.0	Pass	5022	4982.6-5062.6	Pass
AV230	08/16/16 12:33	5909	5588.1-6176.3	Pass	13.1	10-20	Pass	222.0	217.0-227.0	Pass	5022	4982.6-5062.6	Pass
AV235	08/16/16 12:33	5864	5703.8-6304.2	Pass	13.0	10-20	Pass	223.0	218.0-228.0	Pass	5030	4990.0-5070.0	Pass
AV236	08/16/16 12:33	5851	5514.1-6094.6	Pass	12.7	10-20	Pass	223.0	217.6-227.6	Pass	5030	4987.2-5067.2	Pass

Alpha Spectroscopy Daily Pulser Check

Analysis Date: 08/18/16

		Gross Counts			FWHM (keV)			Pulser Center			Energy (keV)		
Detector	Analysis Date	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F	Result	Criteria	P/F
AV152	08/18/16 12:27	6008	5683.1 - 6281.3	Pass	15.2	10 - 20	Pass	224.1	218.9 - 228.9	Pass	5038	4996.9 - 5076.9	Pass
AV153	08/18/16 12:27	6007	5694.3 - 6293.7	Pass	15.3	10 - 20	Pass	223.0	218.0 - 228.0	Pass	5030	4989.9 - 5069.9	Pass
AV156	08/18/16 12:27	5907	5679.3 - 6277.1	Pass	12.4	10 - 20	Pass	224.0	219.0 - 229.0	Pass	5038	4997.2 - 5077.2	Pass
AV157	08/18/16 12:27	5892	5565.7 - 6151.5	Pass	12.6	10 - 20	Pass	222.0	218.1 - 228.1	Pass	5022	4990.4 - 5070.4	Pass

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:54:39PM 8/15/2016

Sample

Sample Name: Pulser;AV149
Comment:

Spectrum #14 Analysis #1

Batch

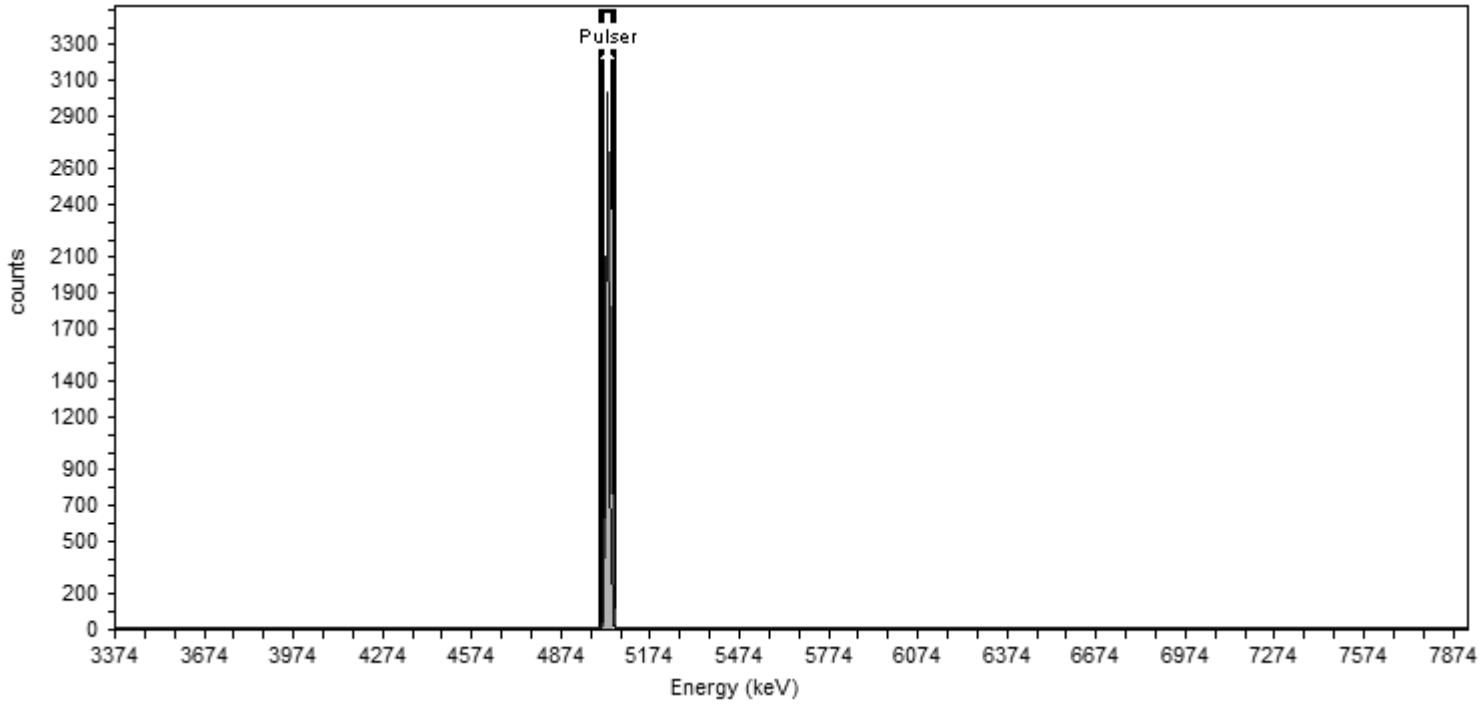
Batch Name: July2016a
Description:

Acquisition

Detector: AV149 , SN: 50-05/R3
Acquisition Start Date: 8/15/2016 2:39:23PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-8875;AV149-20151016
Calibration Date: 10/16/2015 6:46:43PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5029.508	5009.182	5049.833	11.94	5,196.50	5,878.39

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:24:25AM 8/12/2016

Sample

Sample Name: Pulser;AV150
Comment:

Spectrum #14 Analysis #1

Batch

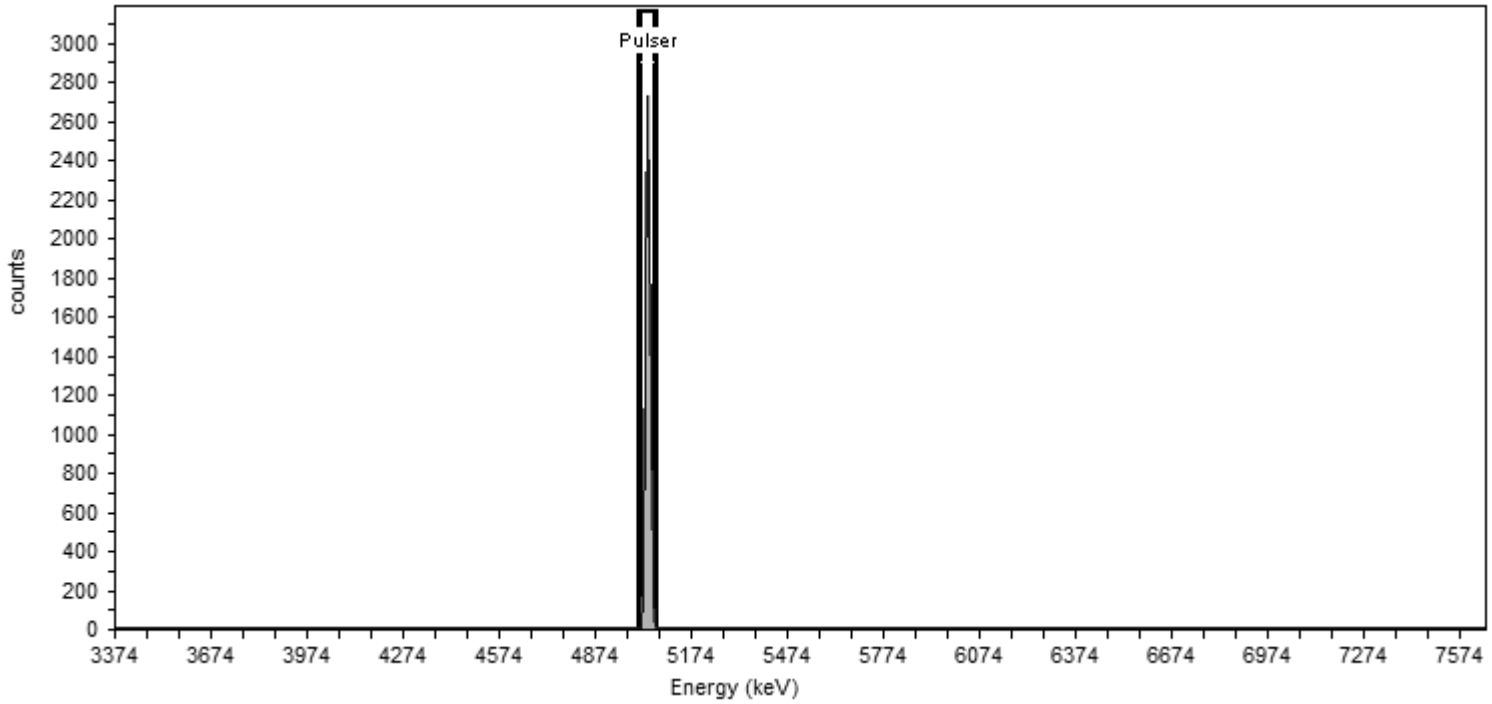
Batch Name: July2016a
Description:

Acquisition

Detector: AV150 , SN: 50-05/R4
Acquisition Start Date: 8/12/2016 9:20:39AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-8876;AV150-20151016
Calibration Date: 10/16/2015 6:46:46PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5037.787	5012.634	5062.938	14.78	5,779.59	6,016.10

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:24:26AM 8/12/2016

Sample

Sample Name: Pulser;AV151
Comment:

Spectrum #16 Analysis #1

Batch

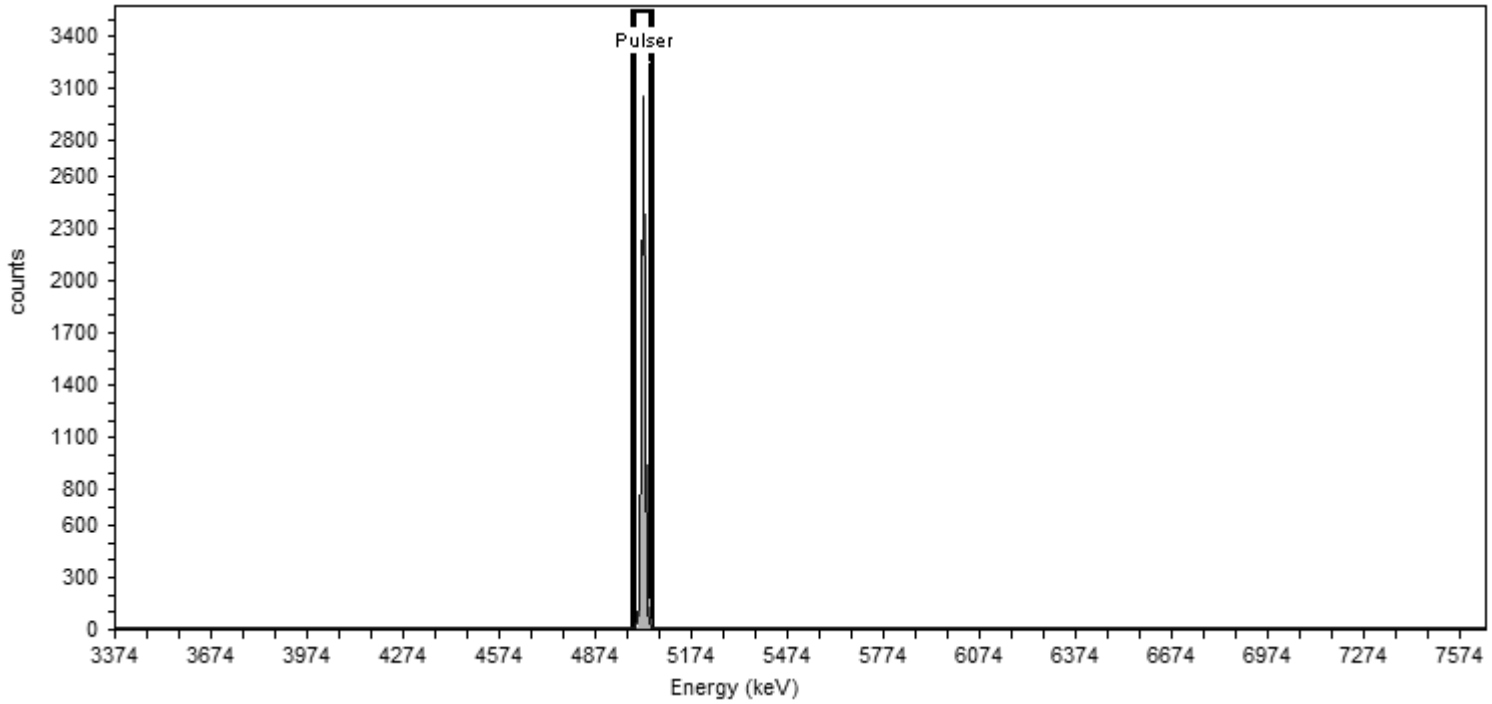
Batch Name: July2016a
Description:

Acquisition

Detector: AV151 , SN: 50-05/R5
Acquisition Start Date: 8/12/2016 9:20:39AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-8877;AV151-20151016
Calibration Date: 10/16/2015 6:46:50PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.275	4999.176	5045.374	13.57	5,942.40	6,017.36

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:44:47PM 8/18/2016

Sample

Sample Name: Pulser;AV152
Comment:

Spectrum #17 Analysis #1

Batch

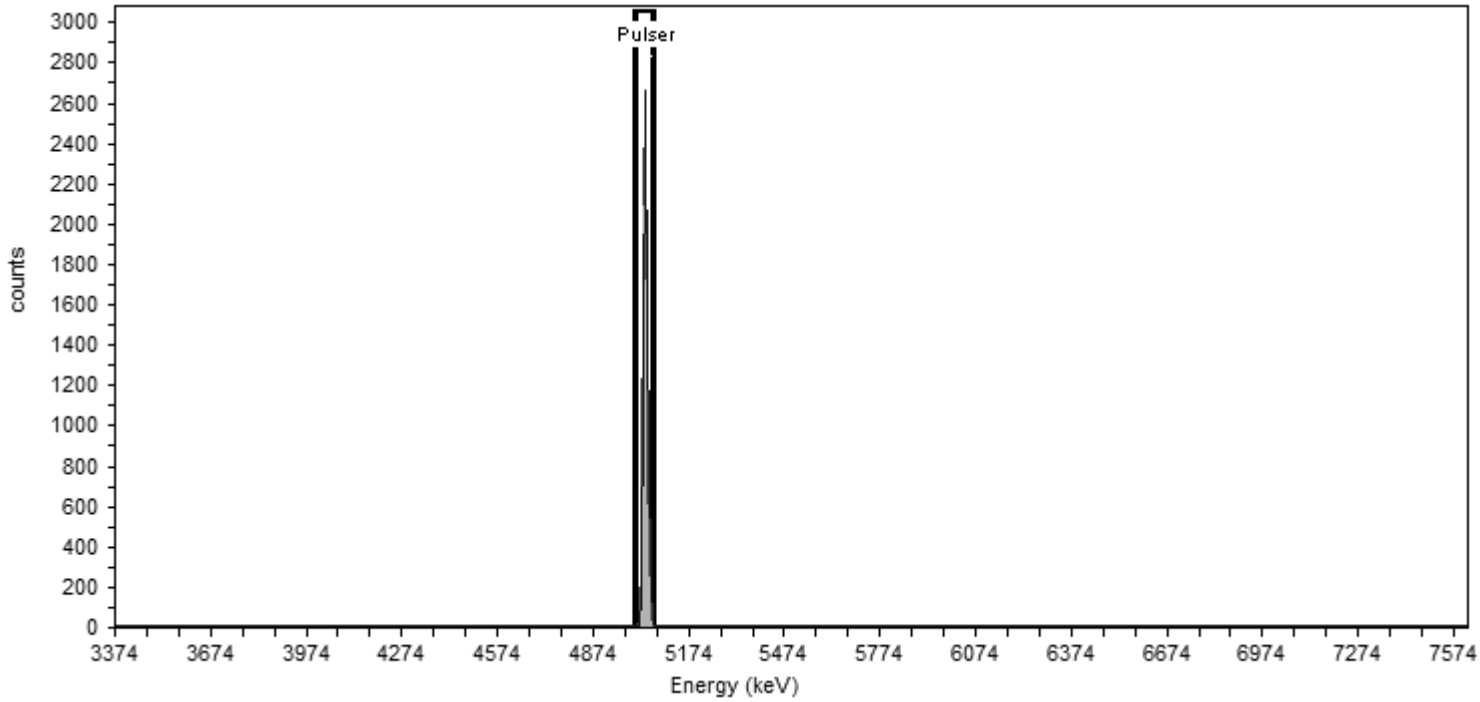
Batch Name: July2016a
Description:

Acquisition

Detector: AV152 , SN: 50-05/R6
Acquisition Start Date: 8/18/2016 12:27:15PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9520;AV152-20151016
Calibration Date: 10/16/2015 6:46:53PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5037.983	5012.129	5063.837	15.19	5,797.54	6,008.37

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:44:44PM 8/18/2016

Sample

Sample Name: Pulser;AV153
Comment:

Spectrum #17 Analysis #1

Batch

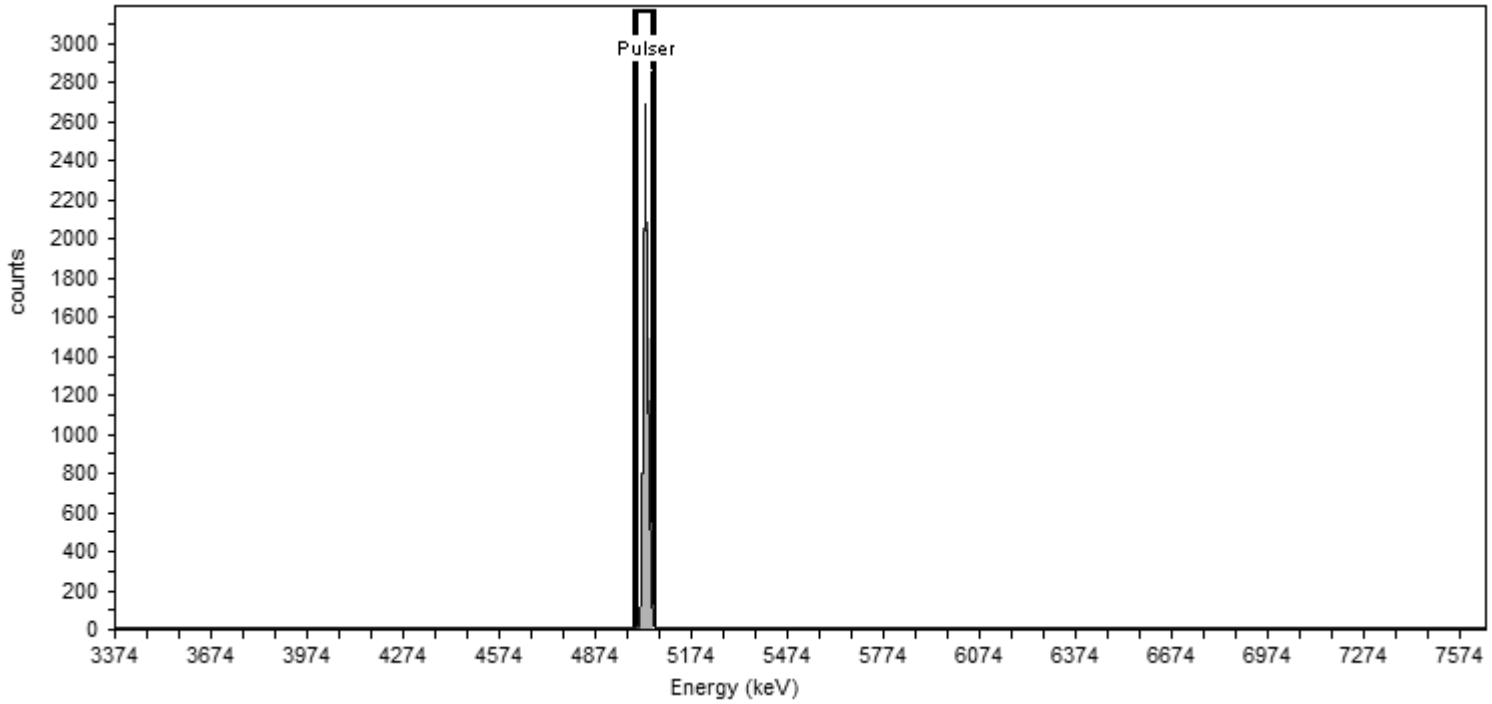
Batch Name: July2016a
Description:

Acquisition

Detector: AV153 , SN: 54-011 Y6
Acquisition Start Date: 8/18/2016 12:27:15PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9792;AV153-20151016
Calibration Date: 10/16/2015 6:46:57PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5030.027	5004.014	5056.041	15.28	5,894.49	6,006.57

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:44:45PM 8/18/2016

Sample

Sample Name: Pulser;AV156
Comment:

Spectrum #17 Analysis #1

Batch

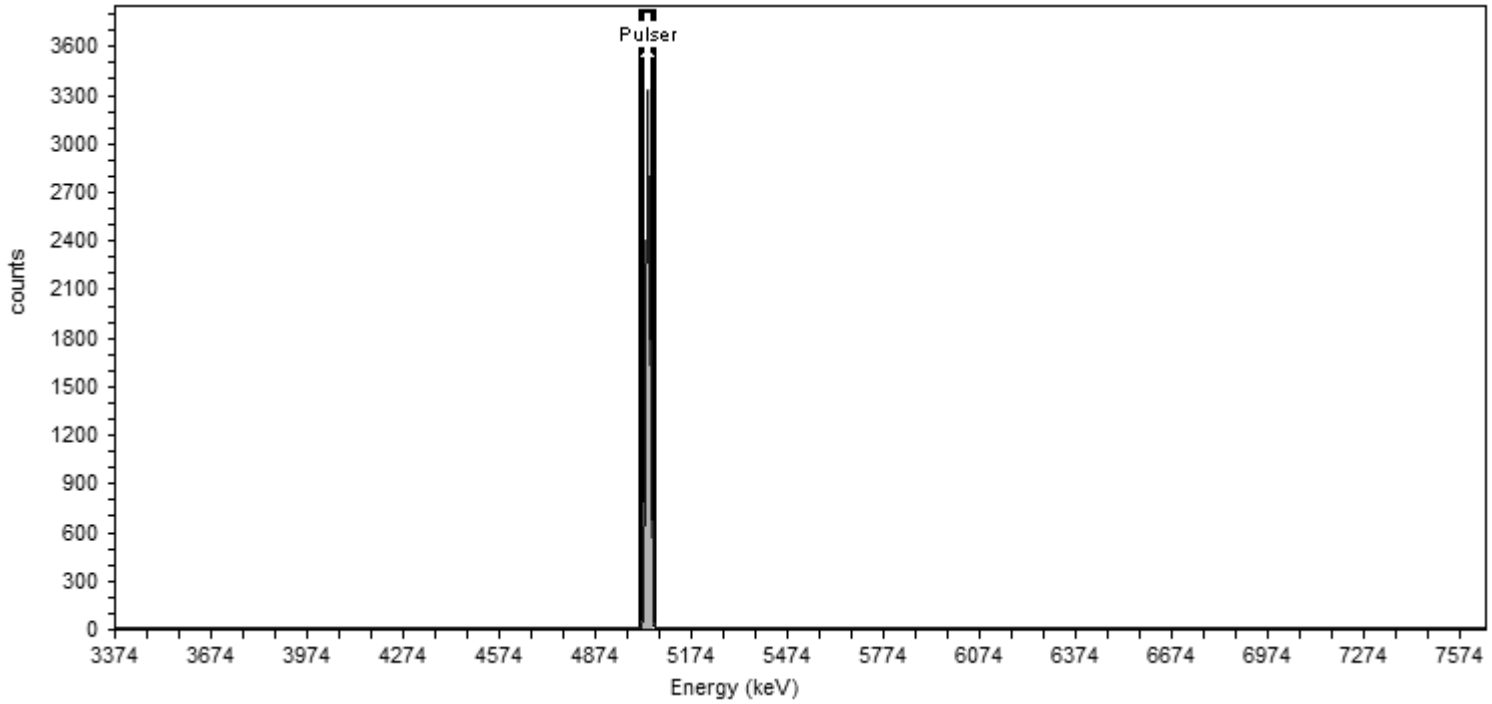
Batch Name: July2016a
Description:

Acquisition

Detector: AV156 , SN: 49-155n4
Acquisition Start Date: 8/18/2016 12:27:15PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9795;AV156-20151016a
Calibration Date: 10/16/2015 6:47:28PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5037.595	5016.447	5058.743	12.42	5,925.51	5,907.00

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:44:46PM 8/18/2016

Sample

Sample Name: Pulser;AV157
Comment:

Spectrum #17 Analysis #1

Batch

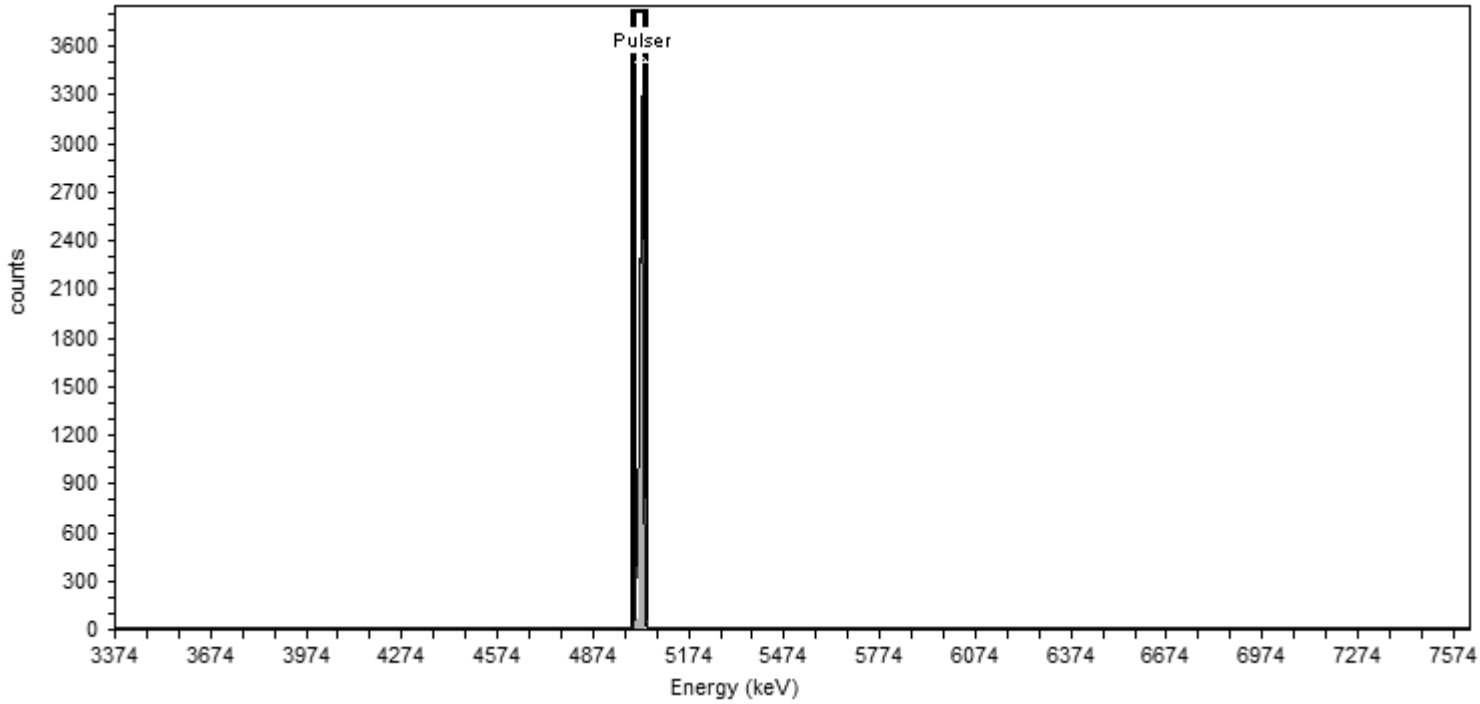
Batch Name: July2016a
Description:

Acquisition

Detector: AV157 , SN: 50-05/II3
Acquisition Start Date: 8/18/2016 12:27:15PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9817;AV157-20151016
Calibration Date: 10/16/2015 6:47:07PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.426	5000.925	5043.928	12.63	5,955.96	5,891.72

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:24:36AM 8/12/2016

Sample

Sample Name: Pulser;AV161
Comment:

Spectrum #14 Analysis #1

Batch

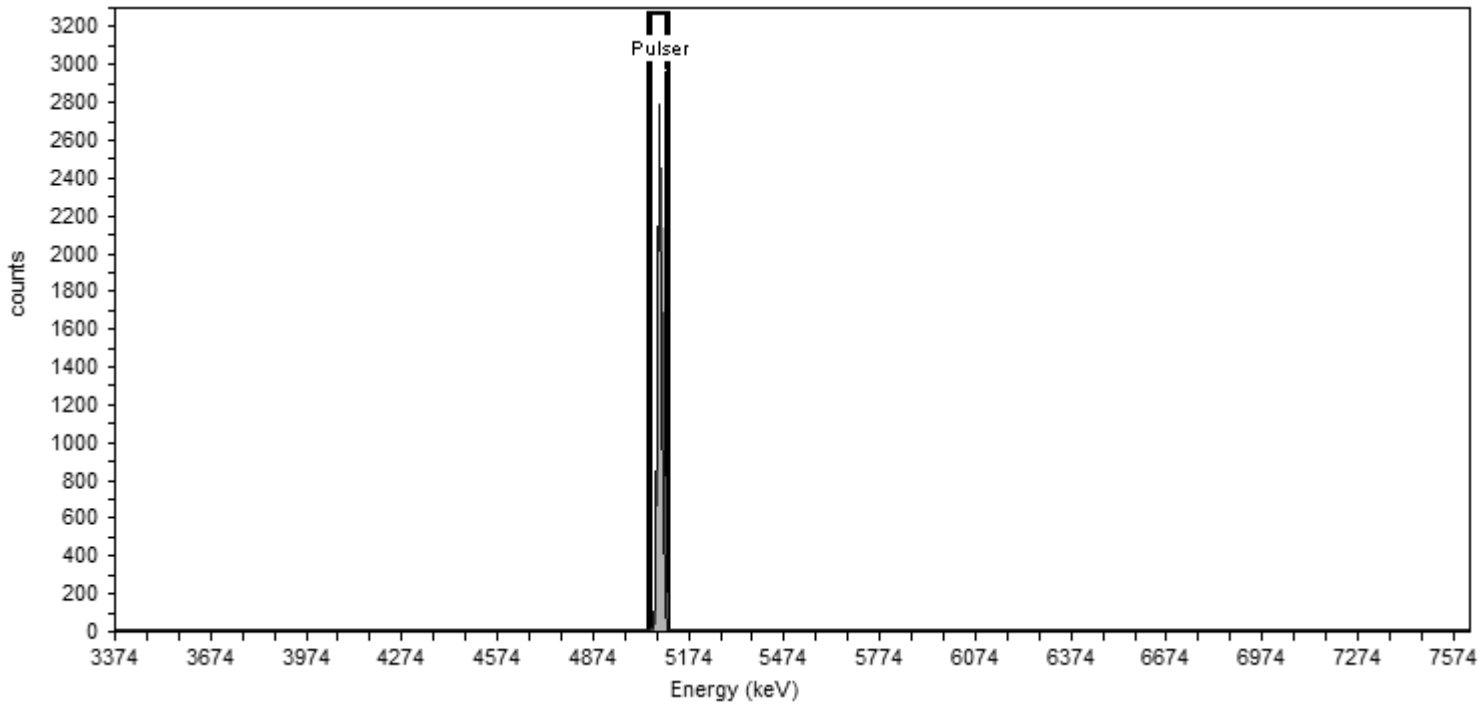
Batch Name: July2016a
Description:

Acquisition

Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 8/12/2016 9:20:42AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-7107;AV161-20151016
Calibration Date: 10/17/2015 2:36:23PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5081.695	5056.729	5106.662	14.67	5,875.37	6,023.75

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:55:09PM 8/16/2016

Sample

Sample Name: Pulser;AV176
Comment:

Spectrum #15 Analysis #1

Batch

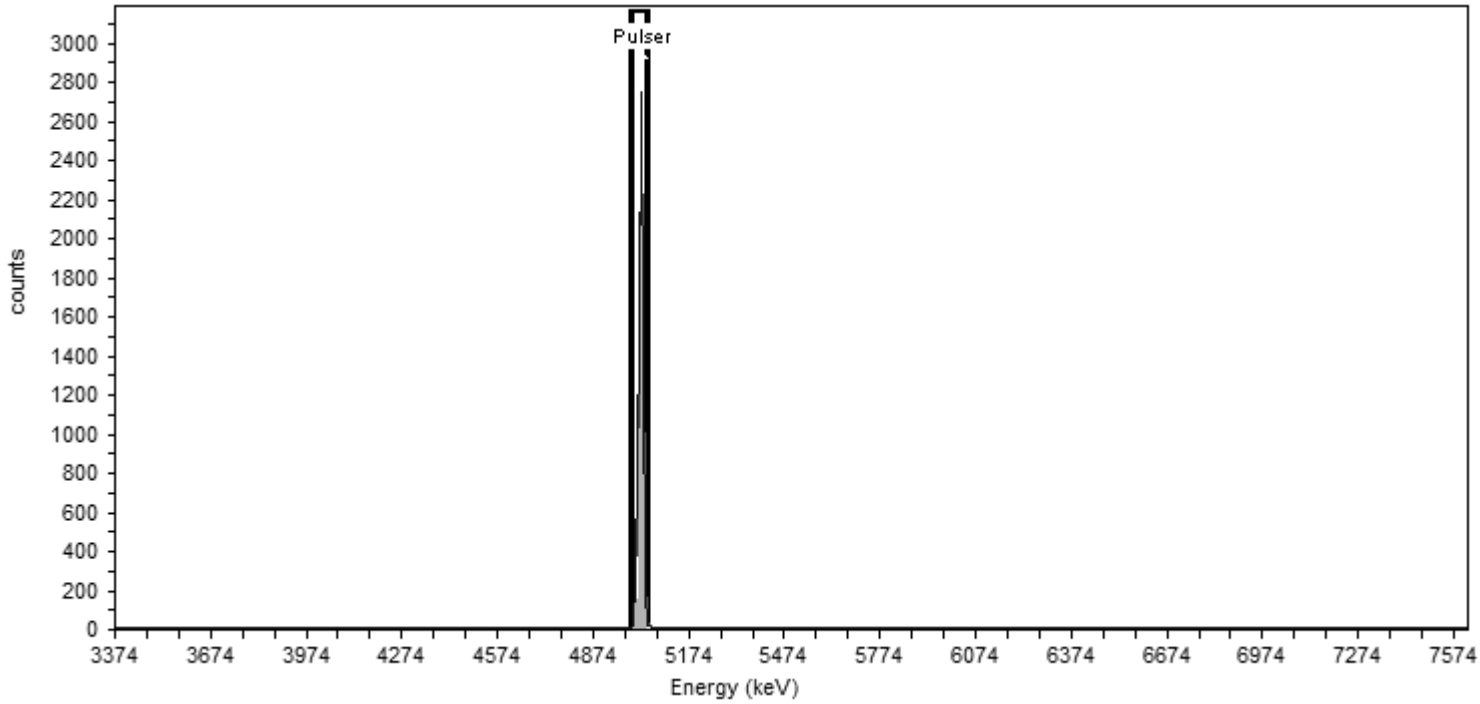
Batch Name: July2016a
Description:

Acquisition

Detector: AV176 , SN: 50-117H2
Acquisition Start Date: 8/16/2016 12:32:50PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-8874;AV176-20151017
Calibration Date: 10/17/2015 6:01:52PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.248	4995.772	5048.723	15.55	6,137.01	5,976.95

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:20:10AM 8/12/2016

Sample

Sample Name: Pulser;AV227
Comment:

Spectrum #13 Analysis #1

Batch

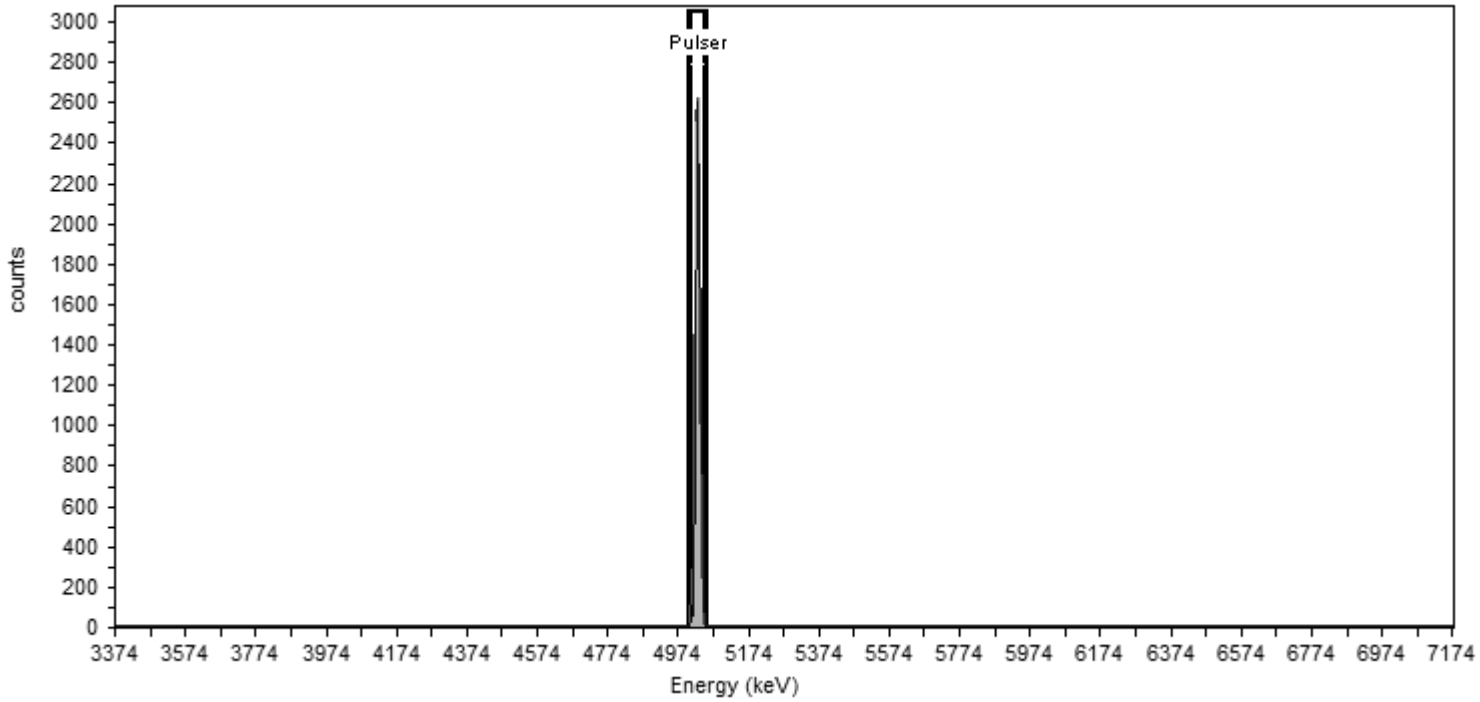
Batch Name: July2016c
Description:

Acquisition

Detector: AV227 , SN: 50-120DD5
Acquisition Start Date: 8/12/2016 9:12:20AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9817;AV227-20151018
Calibration Date: 10/18/2015 9:20:24PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5030.860	5007.682	5054.039	13.62	5,131.38	5,649.42

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:56:04PM 8/16/2016

Sample

Sample Name: Pulser;AV227
Comment:

Spectrum #15 Analysis #1

Batch

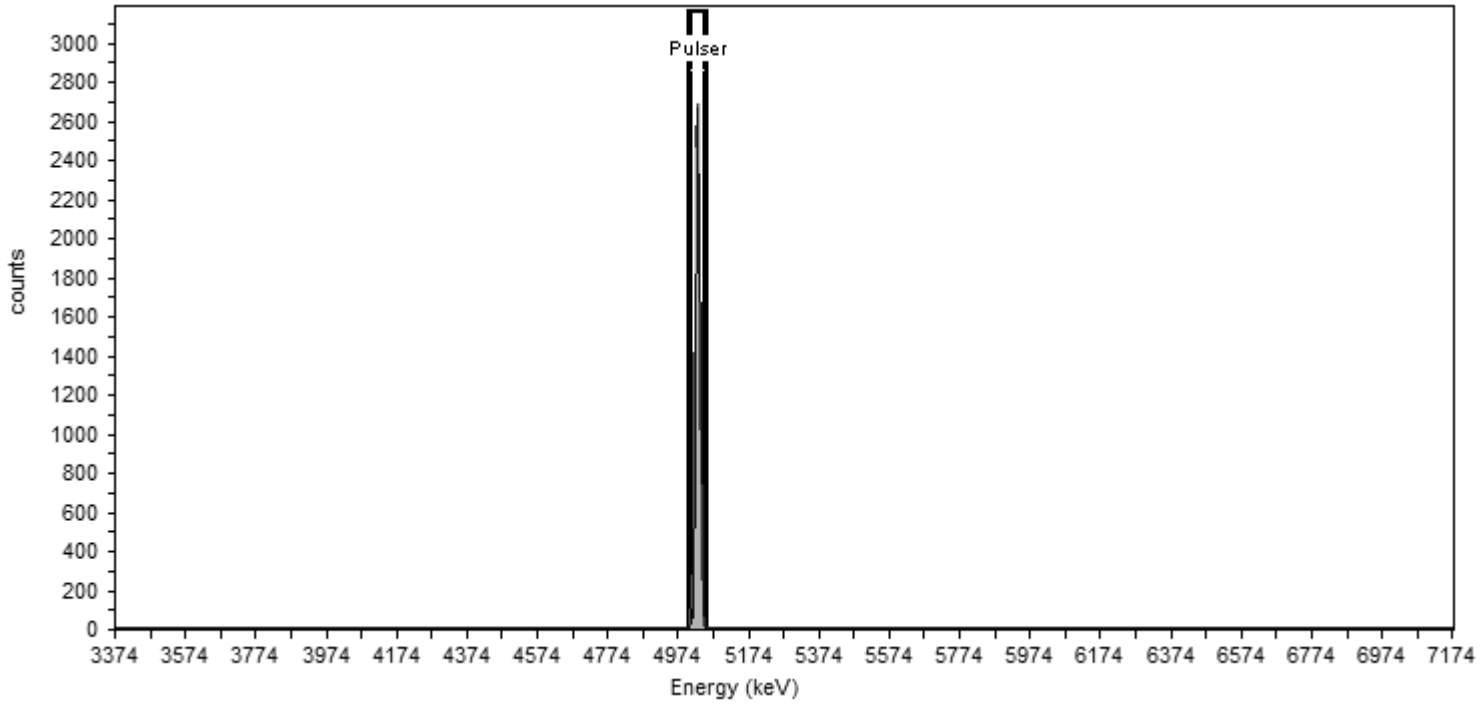
Batch Name: July2016c
Description:

Acquisition

Detector: AV227 , SN: 50-120DD5
Acquisition Start Date: 8/16/2016 12:33:24PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9817;AV227-20151018
Calibration Date: 10/18/2015 9:20:24PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5030.721	5007.868	5053.574	13.43	5,174.55	5,673.06

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:20:07AM 8/12/2016

Sample

Sample Name: Pulser;AV228
Comment:

Spectrum #13 Analysis #1

Batch

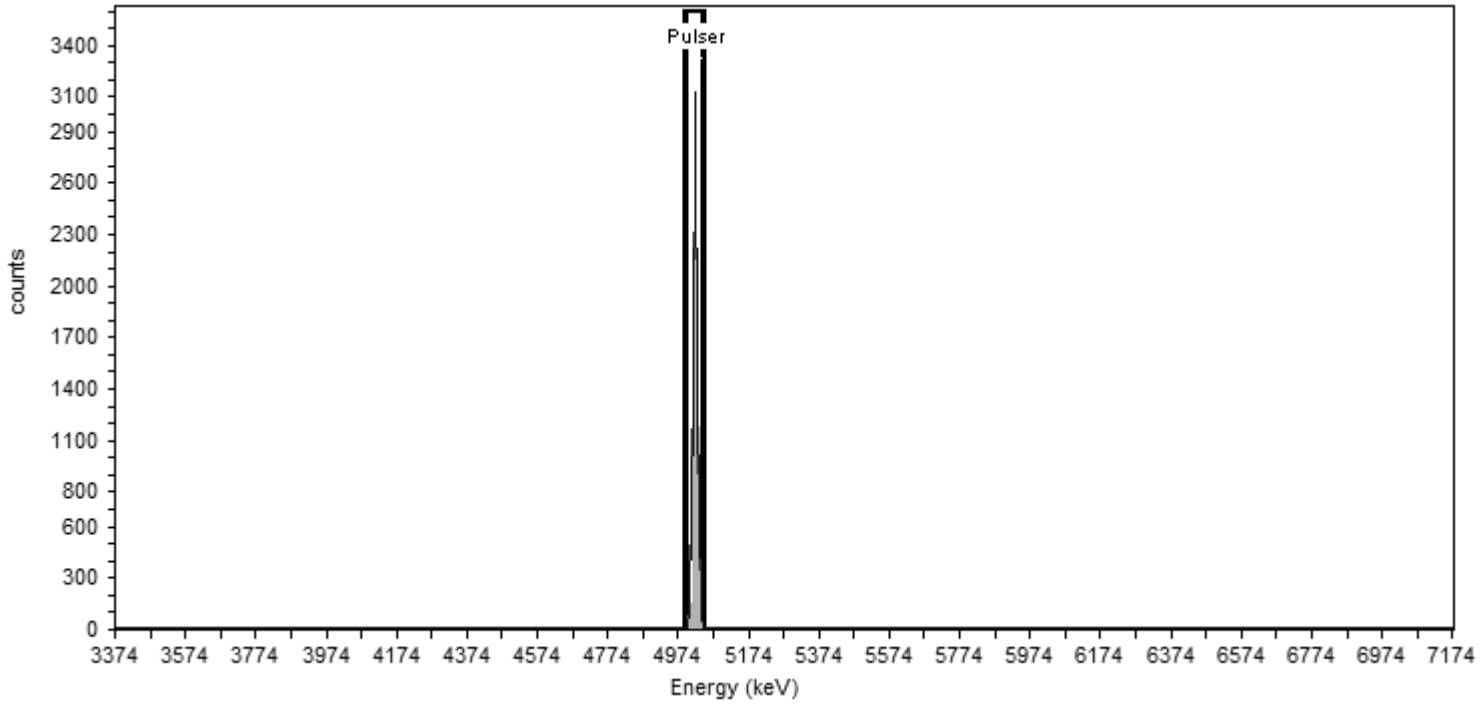
Batch Name: July2016c
Description:

Acquisition

Detector: AV228 , SN: 51-005Q6
Acquisition Start Date: 8/12/2016 9:12:20AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9884;AV228-20151018
Calibration Date: 10/18/2015 9:20:29PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.567	4999.966	5045.168	13.28	5,954.85	6,024.91

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:56:08PM 8/16/2016

Sample

Sample Name: Pulser;AV228
Comment:

Spectrum #15 Analysis #1

Batch

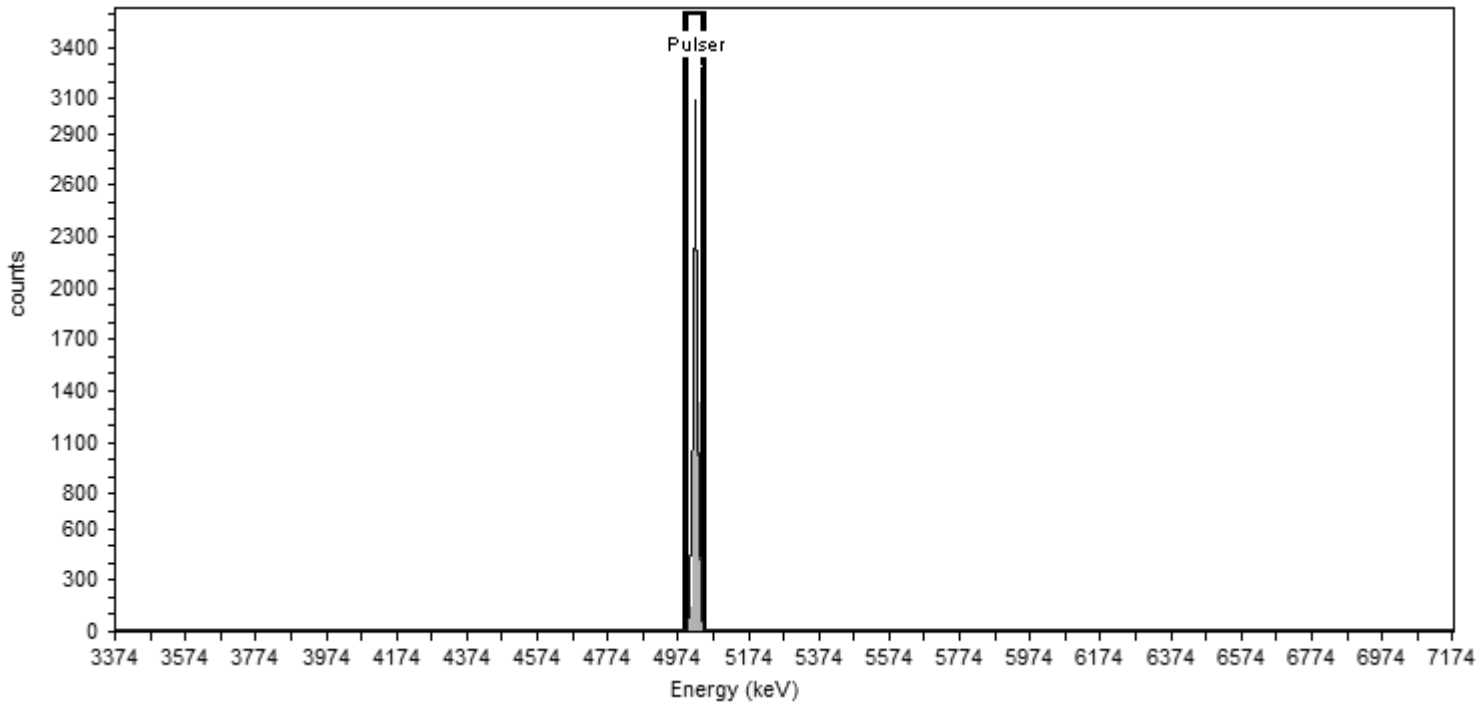
Batch Name: July2016c
Description:

Acquisition

Detector: AV228 , SN: 51-005Q6
Acquisition Start Date: 8/16/2016 12:33:24PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9884;AV228-20151018
Calibration Date: 10/18/2015 9:20:29PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.494	4999.279	5045.708	13.64	6,044.36	6,023.77

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:20:14AM 8/12/2016

Sample

Sample Name: Pulser;AV230
Comment:

Spectrum #13 Analysis #1

Batch

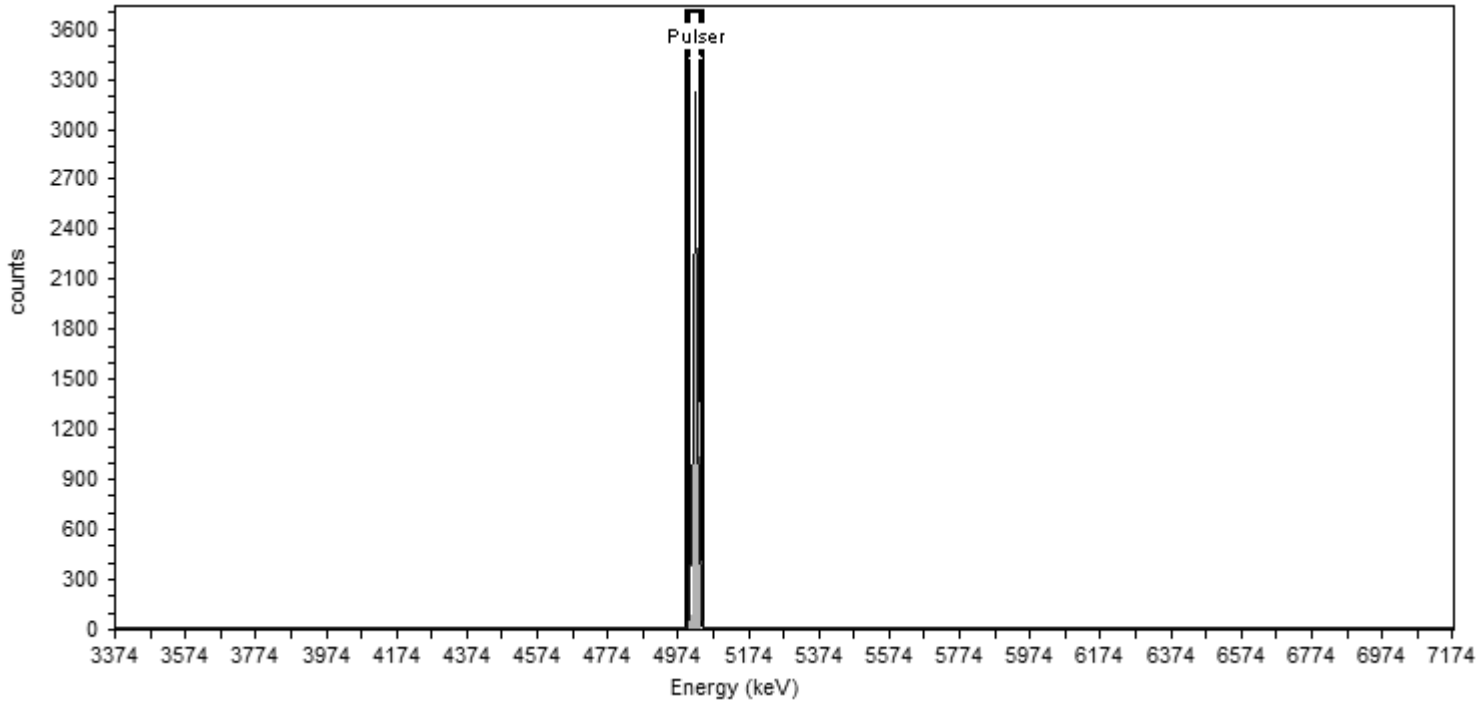
Batch Name: July2016c
Description:

Acquisition

Detector: AV230 , SN: 49-045J5
Acquisition Start Date: 8/12/2016 9:12:20AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9886;AV230-20151018
Calibration Date: 10/18/2015 9:20:40PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.529	5000.550	5044.507	12.91	5,962.60	5,865.45

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:56:22PM 8/16/2016

Sample

Sample Name: Pulser;AV230
Comment:

Spectrum #15 Analysis #1

Batch

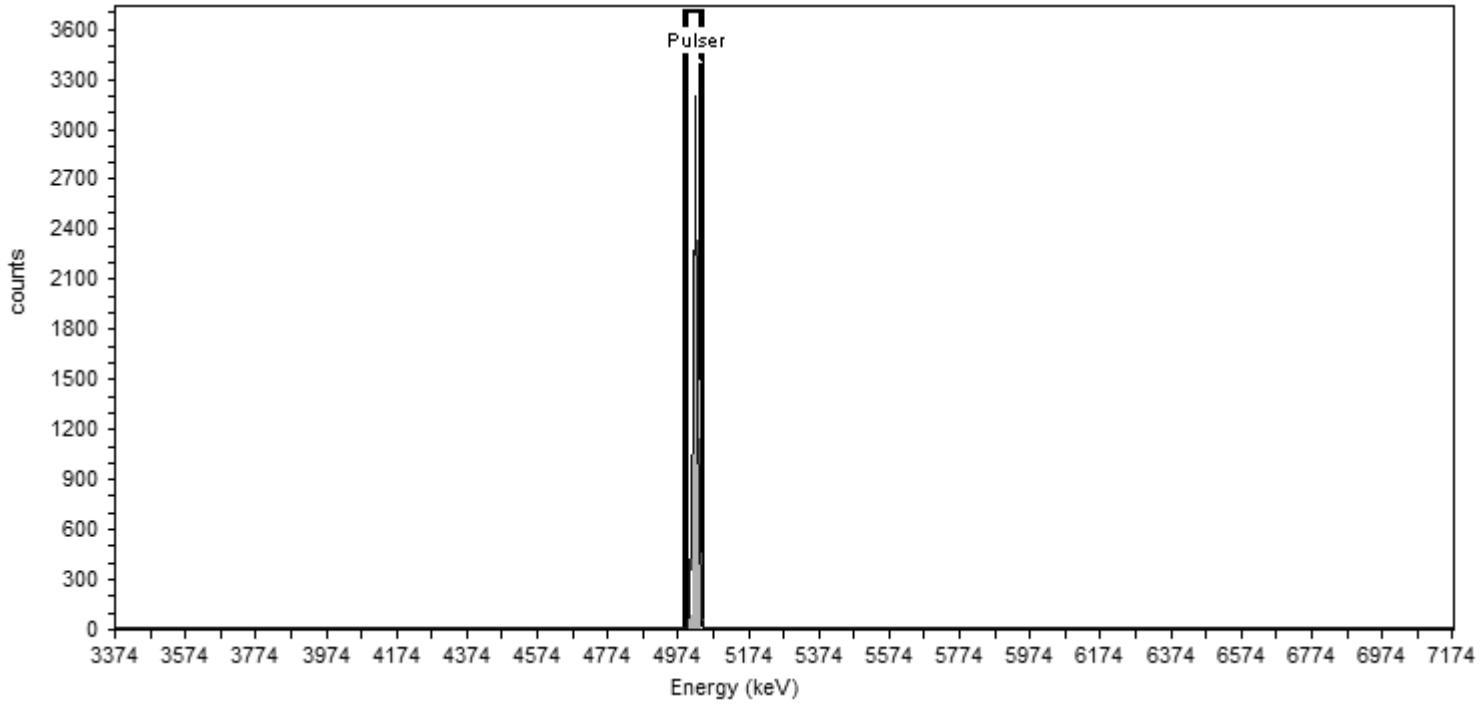
Batch Name: July2016c
Description:

Acquisition

Detector: AV230 , SN: 49-045J5
Acquisition Start Date: 8/16/2016 12:33:25PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9886;AV230-20151018
Calibration Date: 10/18/2015 9:20:40PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.422	5000.061	5044.783	13.14	6,024.94	5,908.73

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:19:42AM 8/12/2016

Sample

Sample Name: Pulser;AV235
Comment:

Spectrum #13 Analysis #1

Batch

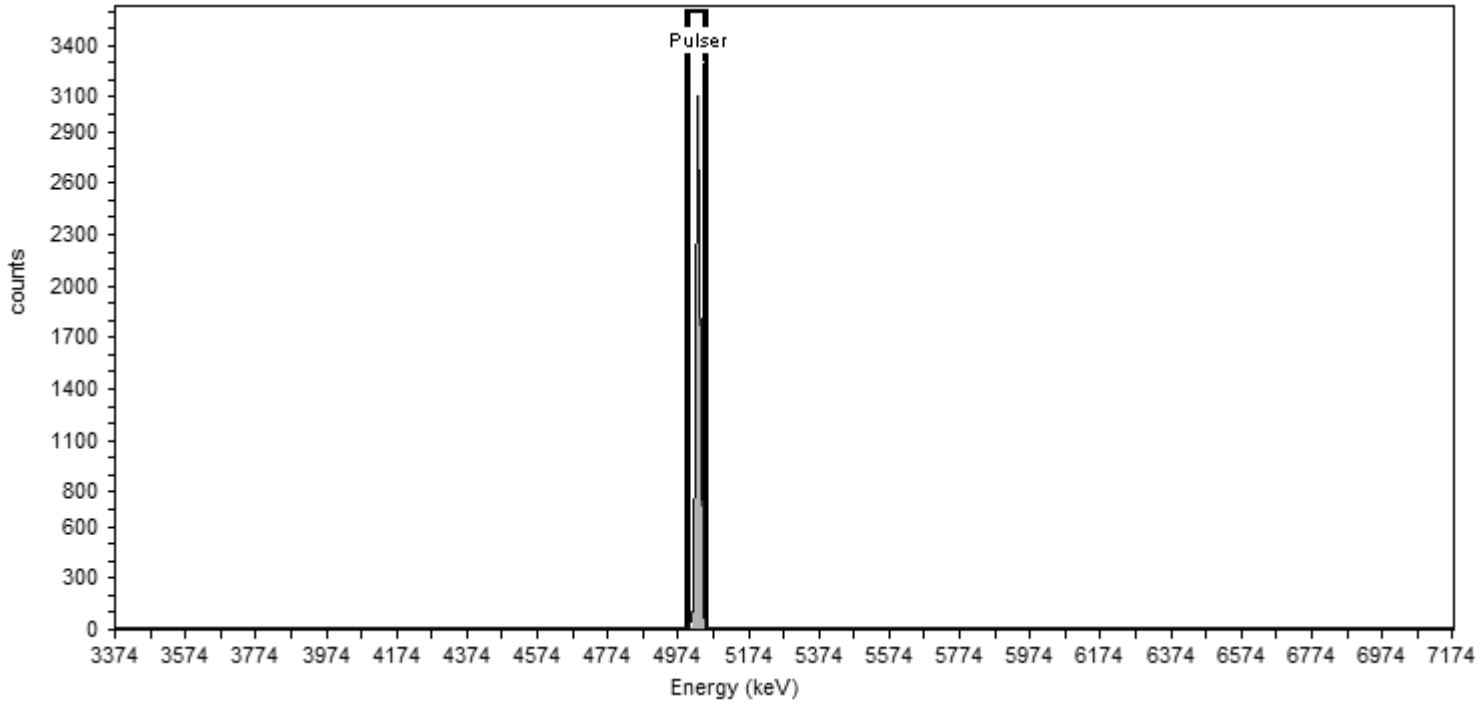
Batch Name: July2016c
Description:

Acquisition

Detector: AV235 , SN: 51-005Q5
Acquisition Start Date: 8/12/2016 9:12:21AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-8877;AV235-20151018
Calibration Date: 10/19/2015 4:11:39PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5029.974	5006.540	5053.408	13.77	6,138.82	6,026.30

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:56:31PM 8/16/2016

Sample

Sample Name: Pulser;AV235
Comment:

Spectrum #15 Analysis #1

Batch

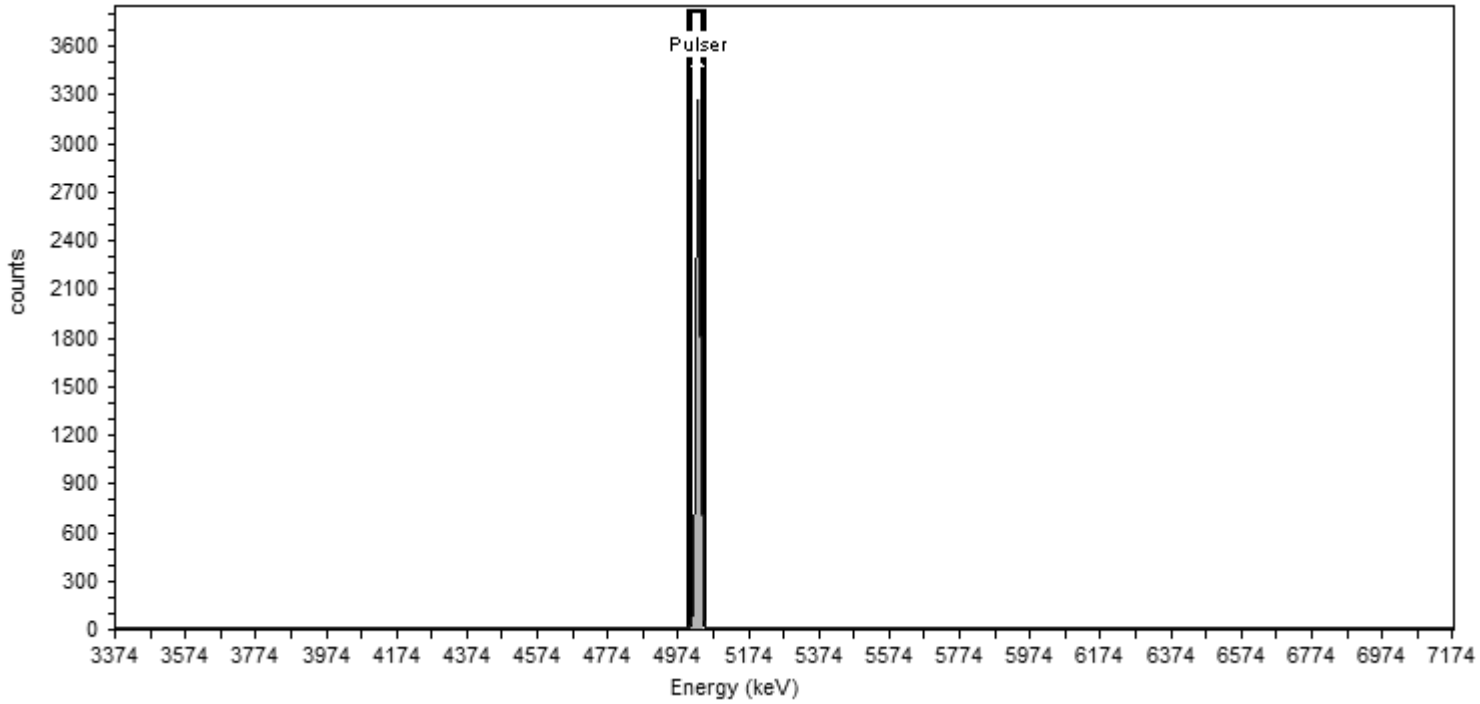
Batch Name: July2016c
Description:

Acquisition

Detector: AV235 , SN: 51-005Q5
Acquisition Start Date: 8/16/2016 12:33:26PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-8877;AV235-20151018
Calibration Date: 10/19/2015 4:11:39PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5029.988	5007.921	5052.055	12.96	6,086.65	5,863.88

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:19:41AM 8/12/2016

Sample

Sample Name: Pulser;AV236
Comment:

Spectrum #13 Analysis #1

Batch

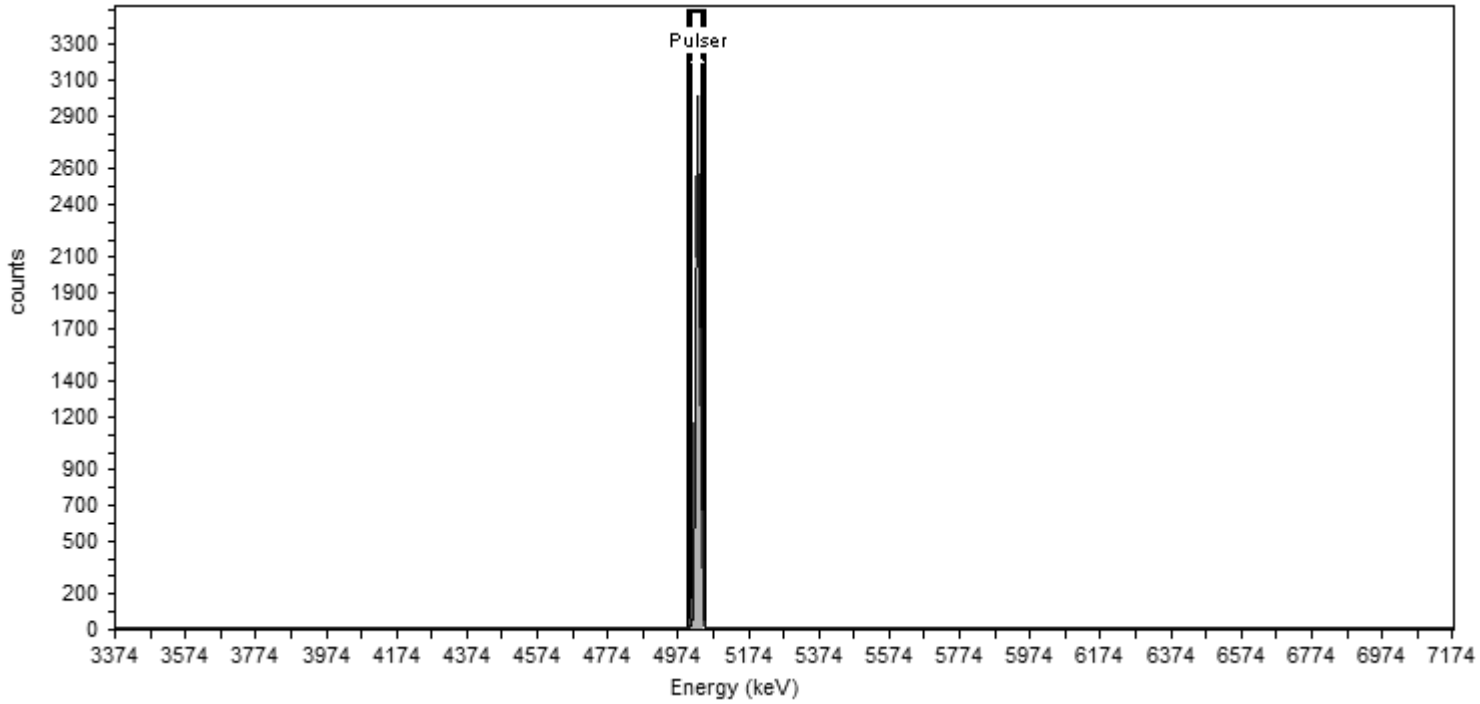
Batch Name: July2016c
Description:

Acquisition

Detector: AV236 , SN: 51-005P3
Acquisition Start Date: 8/12/2016 9:12:22AM
Live Time: 1.00 min.
Real Time: 1.01 min.
Calibration Name: IC-9520;AV236-20151018
Calibration Date: 10/19/2015 4:11:44PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5030.308	5008.659	5051.956	12.72	5,496.59	5,837.61

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:56:29PM 8/16/2016

Sample

Sample Name: Pulser;AV236
Comment:

Spectrum #15 Analysis #1

Batch

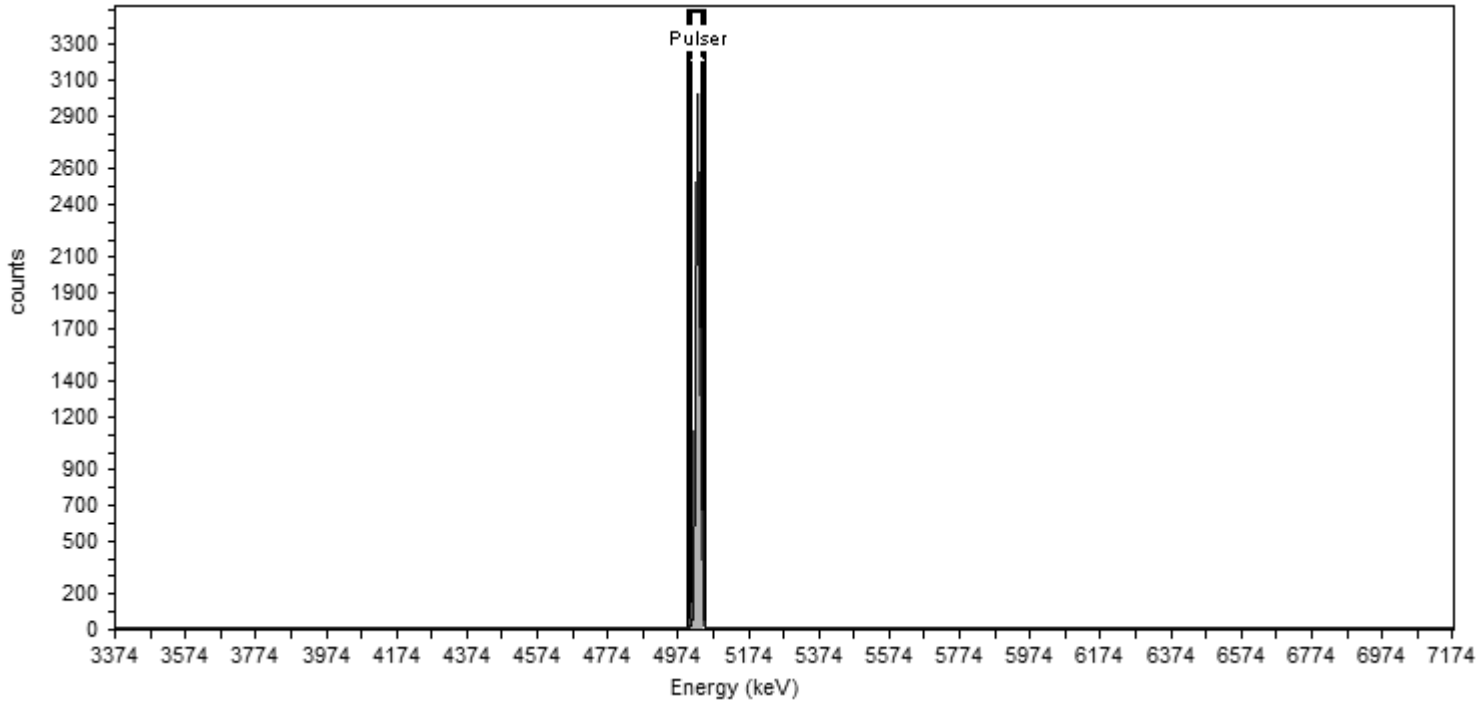
Batch Name: July2016c
Description:

Acquisition

Detector: AV236 , SN: 51-005P3
Acquisition Start Date: 8/16/2016 12:33:26PM
Live Time: 1.00 min.
Real Time: 1.01 min.
Calibration Name: IC-9520;AV236-20151018
Calibration Date: 10/19/2015 4:11:44PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5030.288	5008.679	5051.897	12.70	5,502.87	5,851.38

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:13:22AM 8/12/2016

Sample

Sample Name: Pulser;AV237
Comment:

Spectrum #13 Analysis #1

Batch

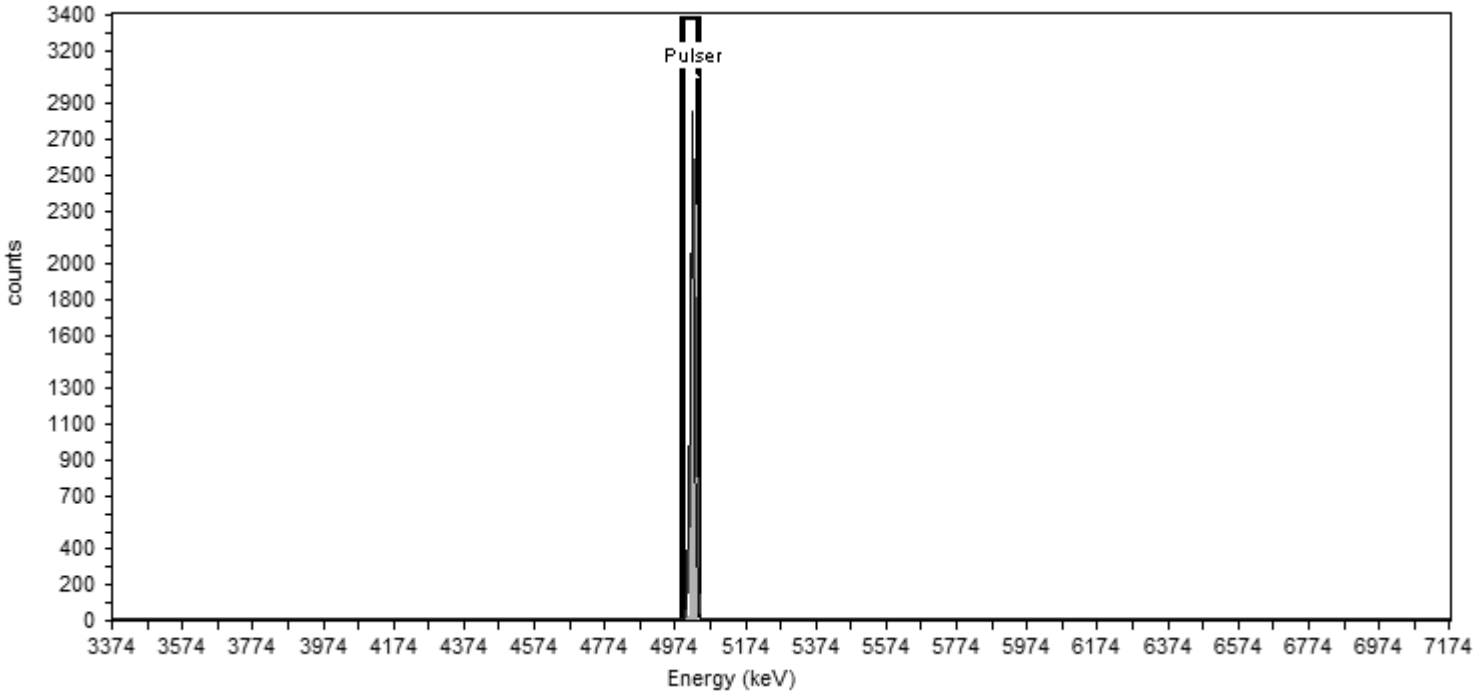
Batch Name: July2016c
Description:

Acquisition

Detector: AV237 , SN: 50-120DD7
Acquisition Start Date: 8/12/2016 9:12:22AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9792;AV237-20151018
Calibration Date: 10/19/2015 4:11:48PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.029	5000.084	5043.975	12.89	5,287.95	5,770.17

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:55:32PM 8/15/2016

Sample

Sample Name: Pulser;AV237
Comment:

Spectrum #14 Analysis #1

Batch

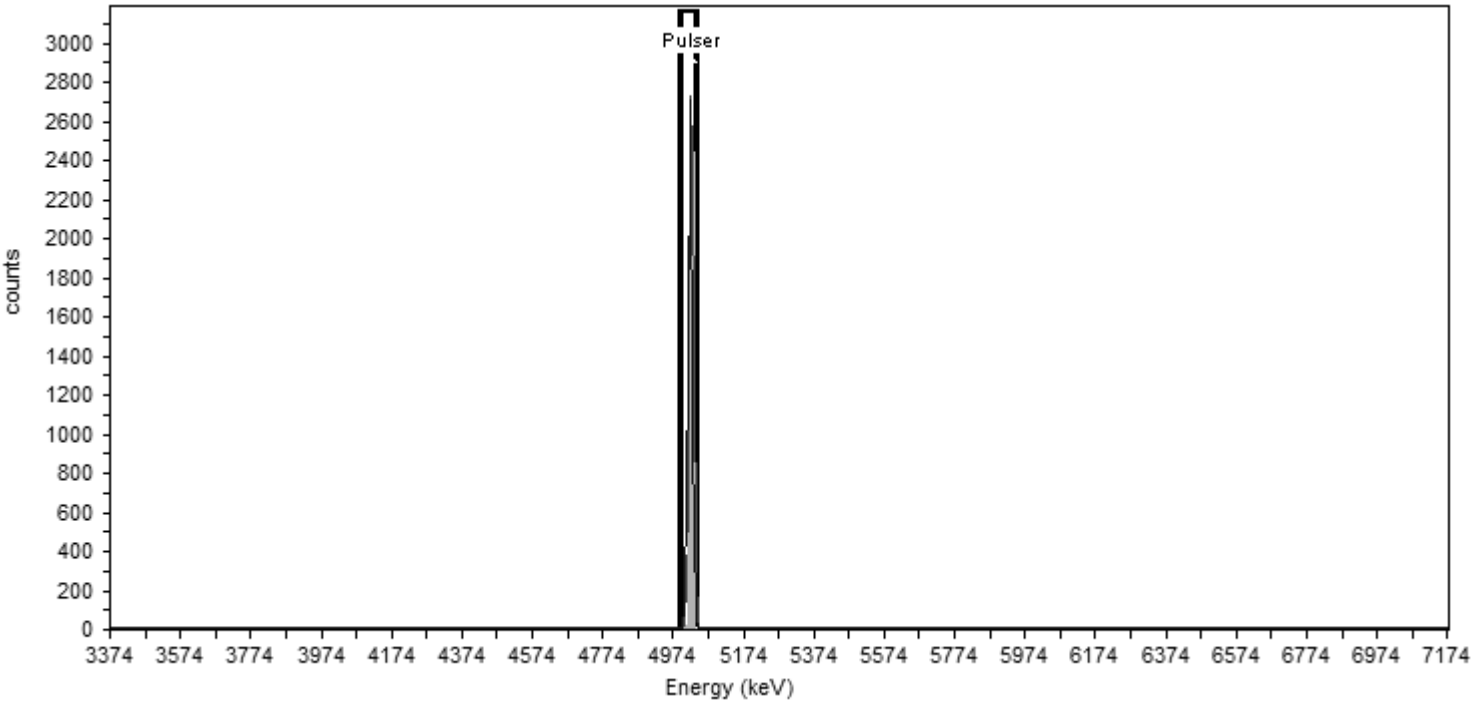
Batch Name: July2016c
Description:

Acquisition

Detector: AV237 , SN: 50-120DD7
Acquisition Start Date: 8/15/2016 2:39:58PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9792;AV237-20151018
Calibration Date: 10/19/2015 4:11:48PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5021.861	4999.352	5044.371	13.22	5,179.94	5,716.75

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:19:40AM 8/12/2016

Sample

Sample Name: Pulser;AV238
Comment:

Spectrum #13 Analysis #1

Batch

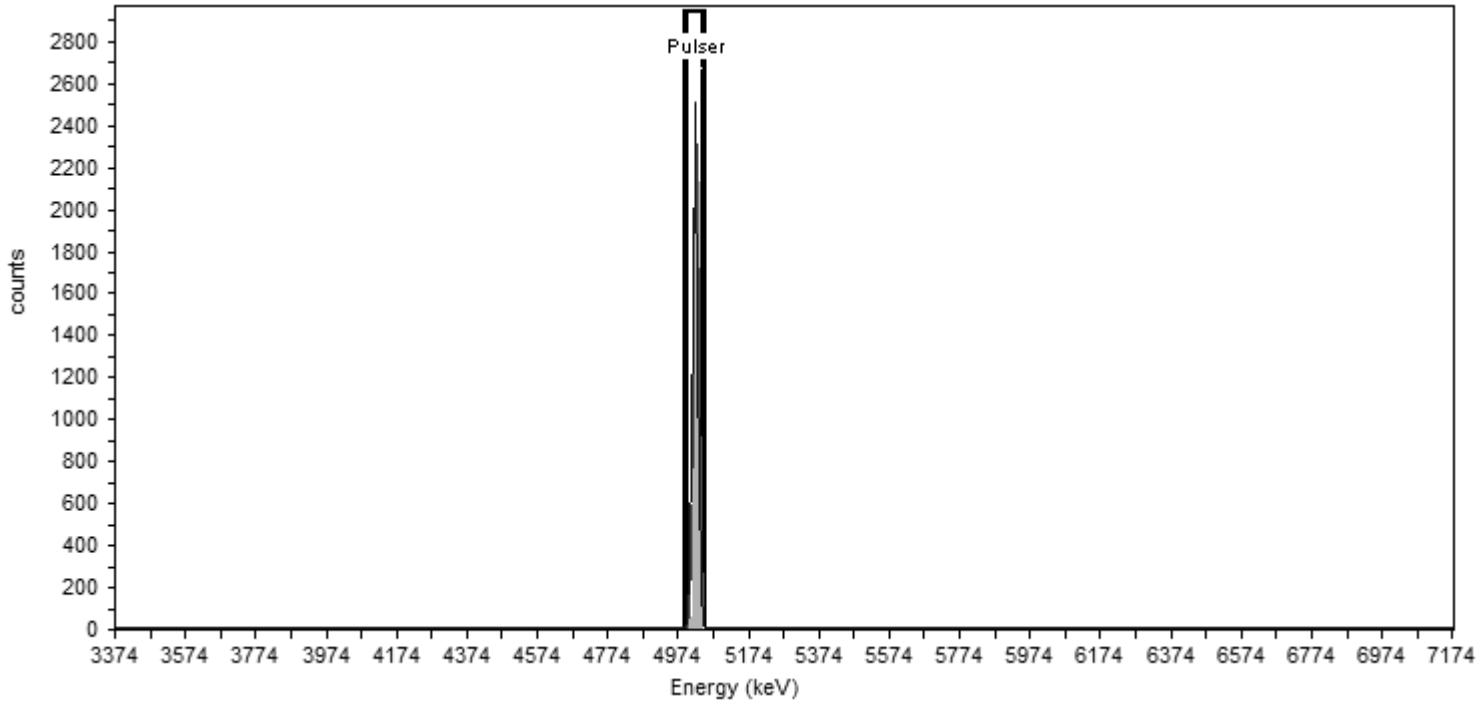
Batch Name: July2016c
Description:

Acquisition

Detector: AV238 , SN: 51-005P7
Acquisition Start Date: 8/12/2016 9:12:22AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9793;AV238-20151018
Calibration Date: 10/19/2015 4:11:53PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5021.966	4994.484	5049.447	16.15	5,816.16	6,008.61

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:55:34PM 8/15/2016

Sample

Sample Name: Pulser;AV238
Comment:

Spectrum #14 Analysis #1

Batch

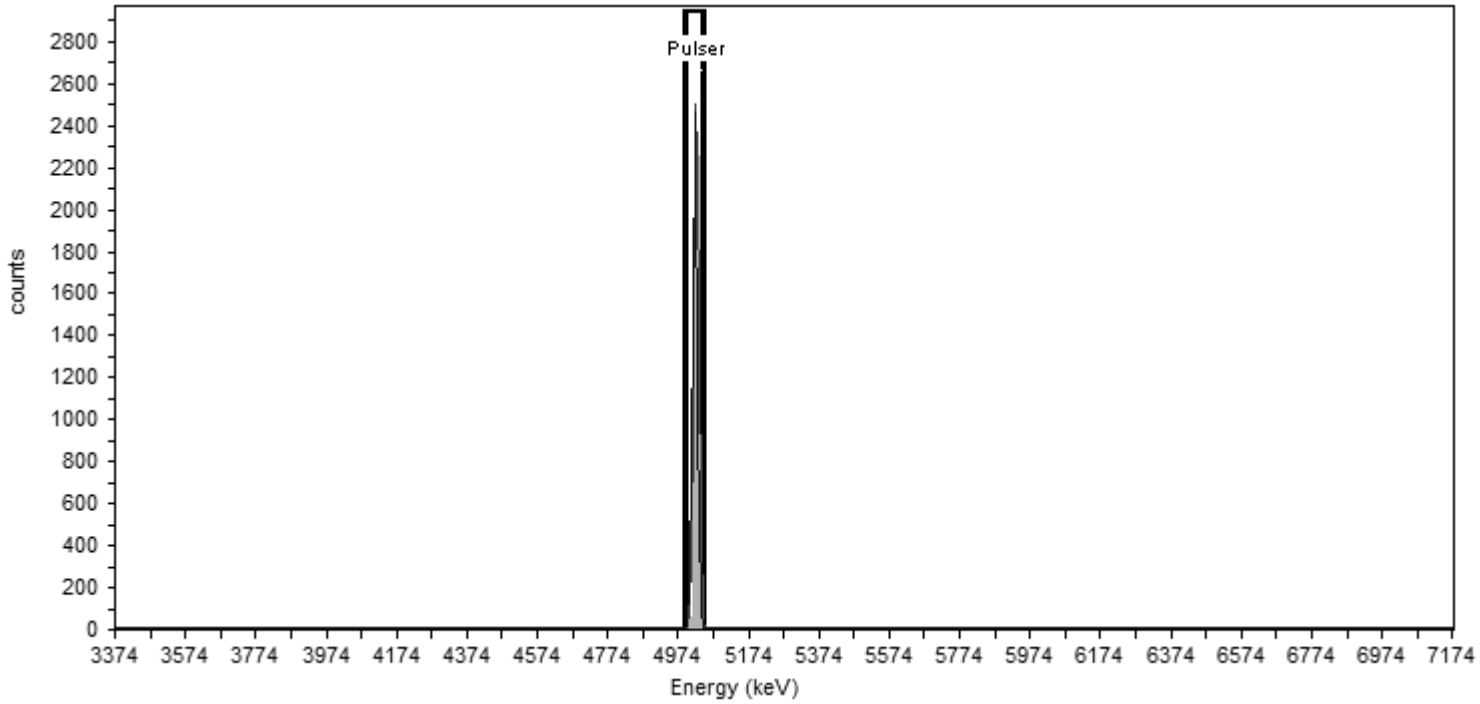
Batch Name: July2016c
Description:

Acquisition

Detector: AV238 , SN: 51-005P7
Acquisition Start Date: 8/15/2016 2:39:58PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9793;AV238-20151018
Calibration Date: 10/19/2015 4:11:53PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5021.504	4996.695	5046.313	14.58	5,219.32	6,020.08

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:19:47AM 8/12/2016

Sample

Sample Name: Pulser;AV240
Comment:

Spectrum #13 Analysis #1

Batch

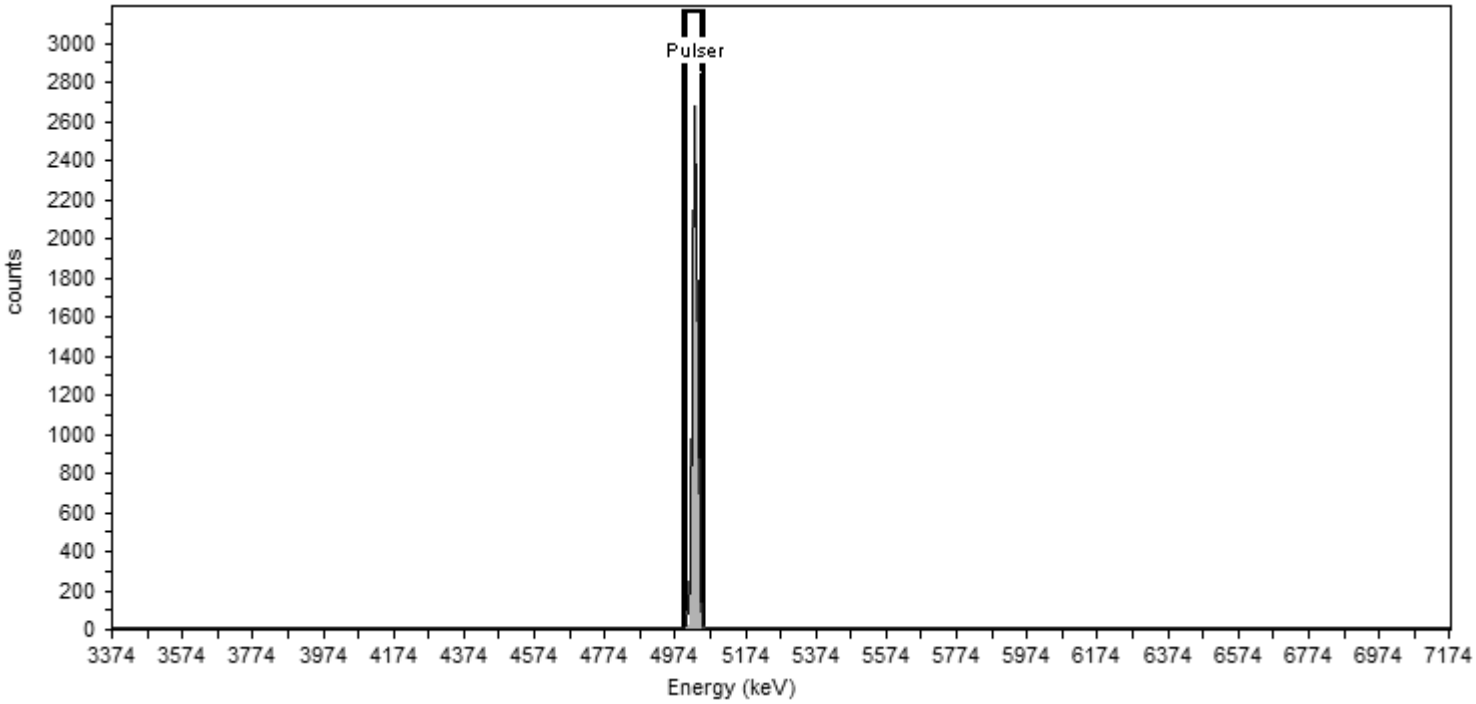
Batch Name: July2016c
Description:

Acquisition

Detector: AV240 , SN: 51-005Q1
Acquisition Start Date: 8/12/2016 9:12:23AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9795;AV240-20151018
Calibration Date: 10/19/2015 4:12:02PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5030.114	5002.995	5057.232	15.93	6,117.55	6,002.68

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:55:38PM 8/15/2016

Sample

Sample Name: Pulser;AV240
Comment:

Spectrum #14 Analysis #1

Batch

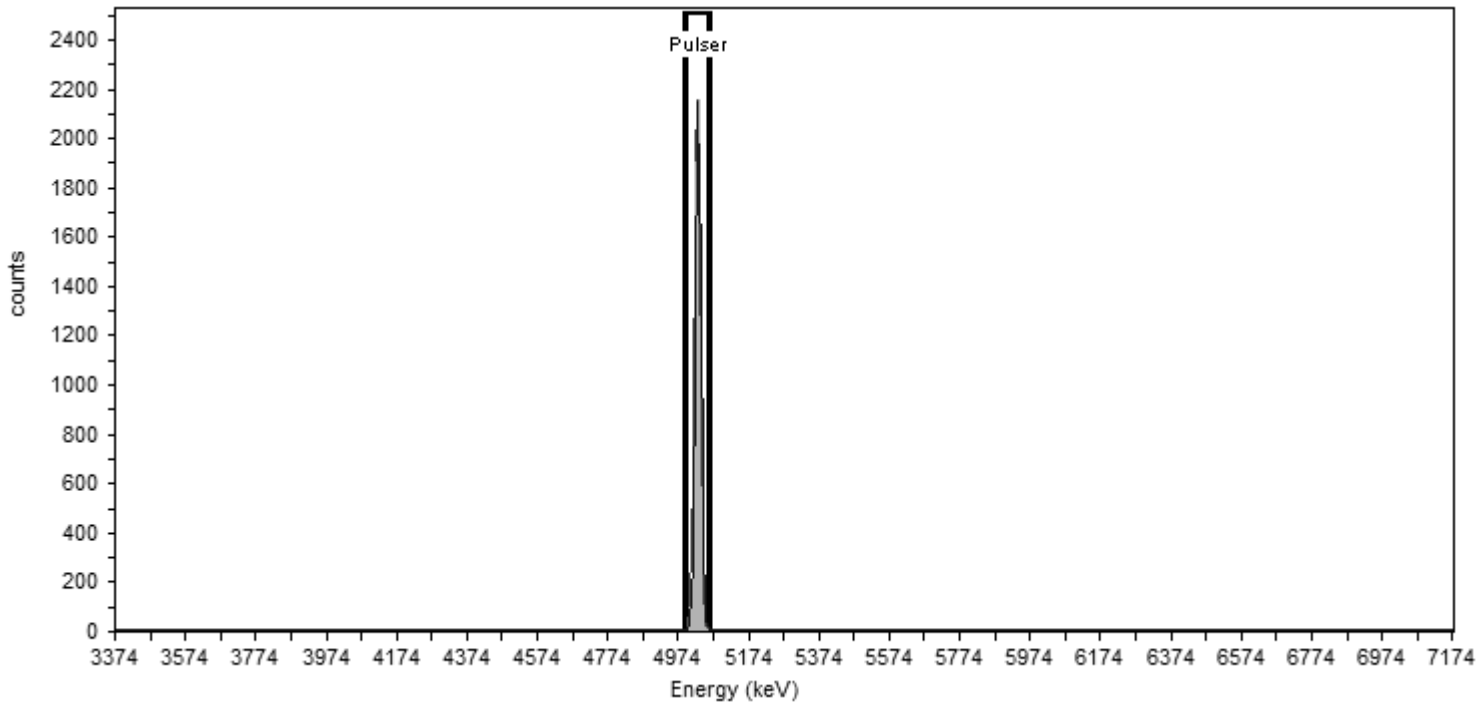
Batch Name: July2016c
Description:

Acquisition

Detector: AV240 , SN: 51-005Q1
Acquisition Start Date: 8/15/2016 2:39:59PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9795;AV240-20151018
Calibration Date: 10/19/2015 4:12:02PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5030.780	4999.867	5061.693	18.16	5,615.17	6,007.77

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:20:00AM 8/12/2016

Sample

Sample Name: Pulser;AV244
Comment:

Spectrum #18 Analysis #1

Batch

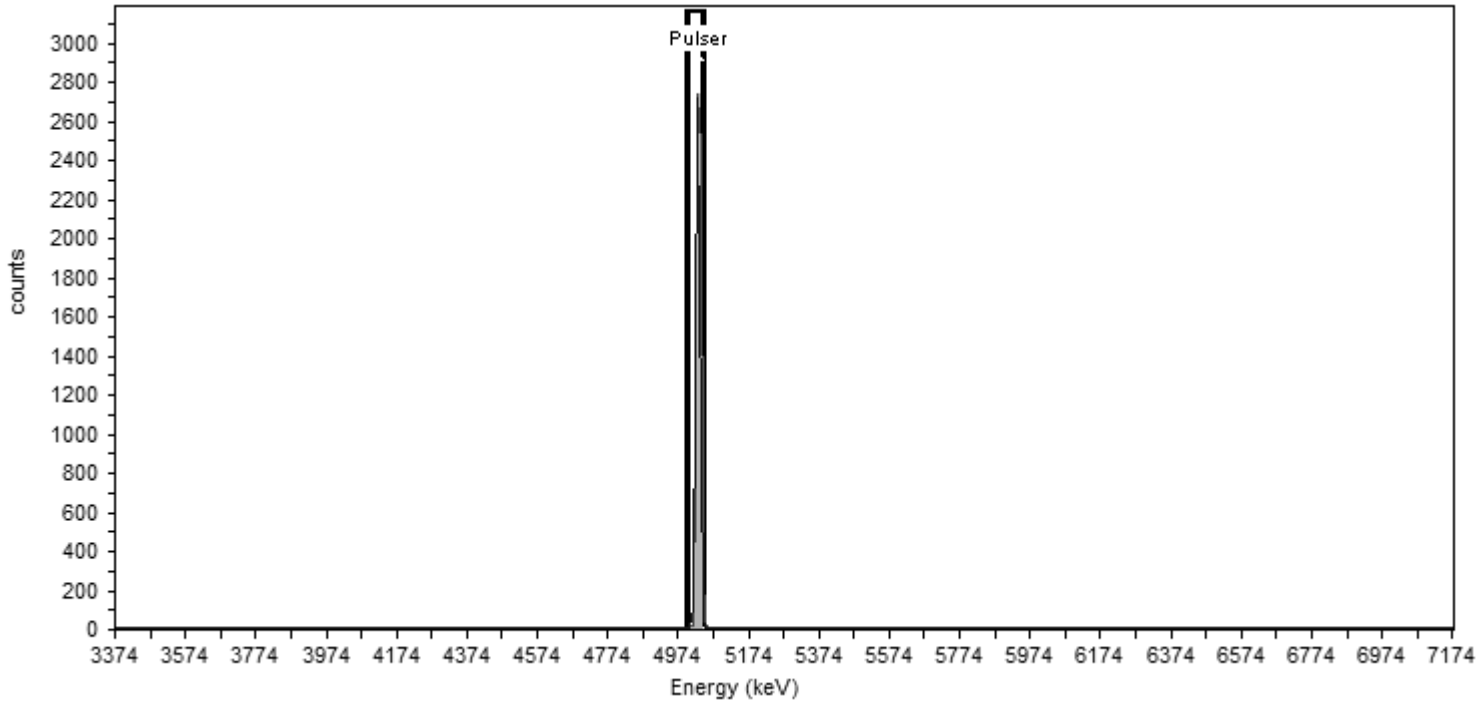
Batch Name: July2016c
Description:

Acquisition

Detector: AV244 , SN: 51-005EE3
Acquisition Start Date: 8/12/2016 9:12:24AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9886;AV244-20151018
Calibration Date: 10/19/2015 4:12:20PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5029.292	5006.978	5051.604	13.11	5,151.59	5,727.37

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:19:59AM 8/12/2016

Sample

Sample Name: Pulser;AV245
Comment:

Spectrum #15 Analysis #1

Batch

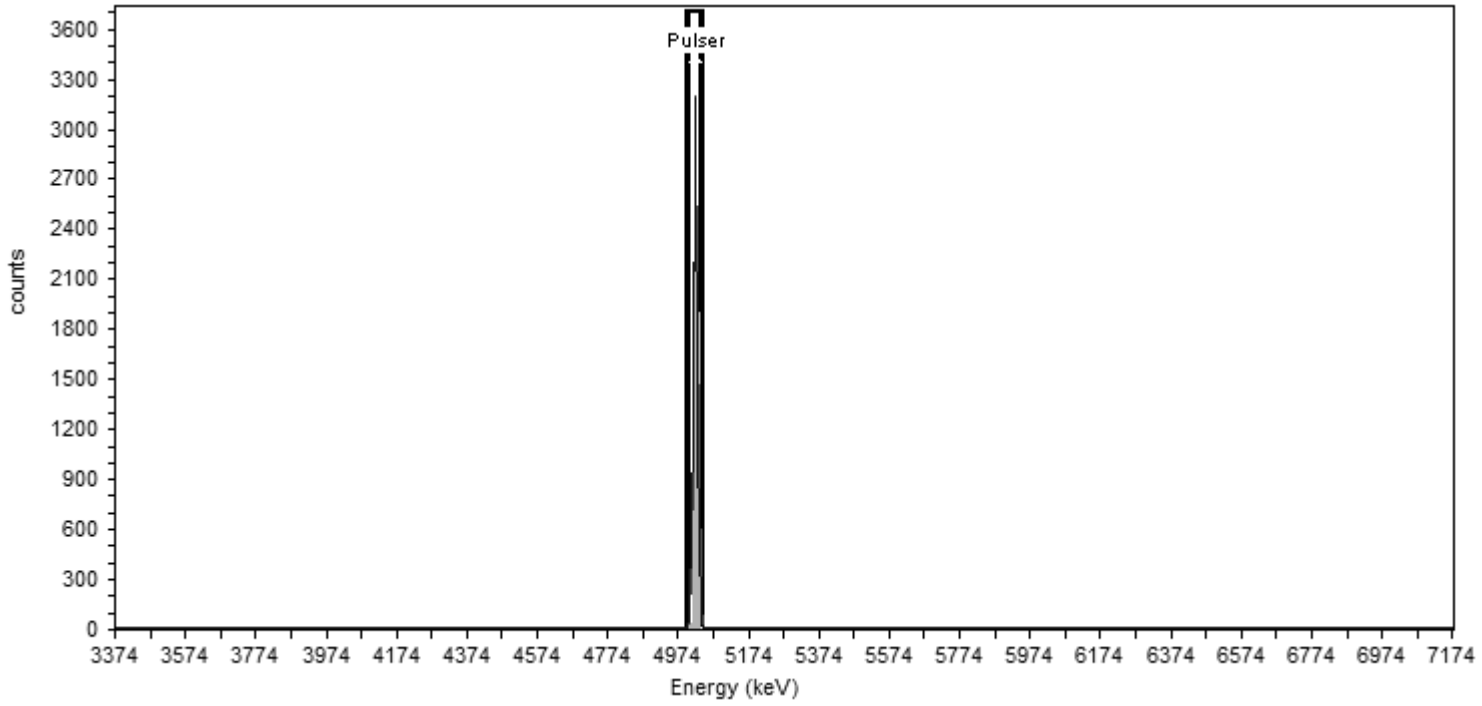
Batch Name: July2016c
Description:

Acquisition

Detector: AV245 , SN: 51-005EE2
Acquisition Start Date: 8/12/2016 9:12:24AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-7107;AV245-20151019
Calibration Date: 10/19/2015 10:52:31PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.332	5001.423	5043.241	12.28	5,626.82	5,863.54

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:55:45PM 8/15/2016

Sample

Sample Name: Pulser;AV245
Comment:

Spectrum #16 Analysis #1

Batch

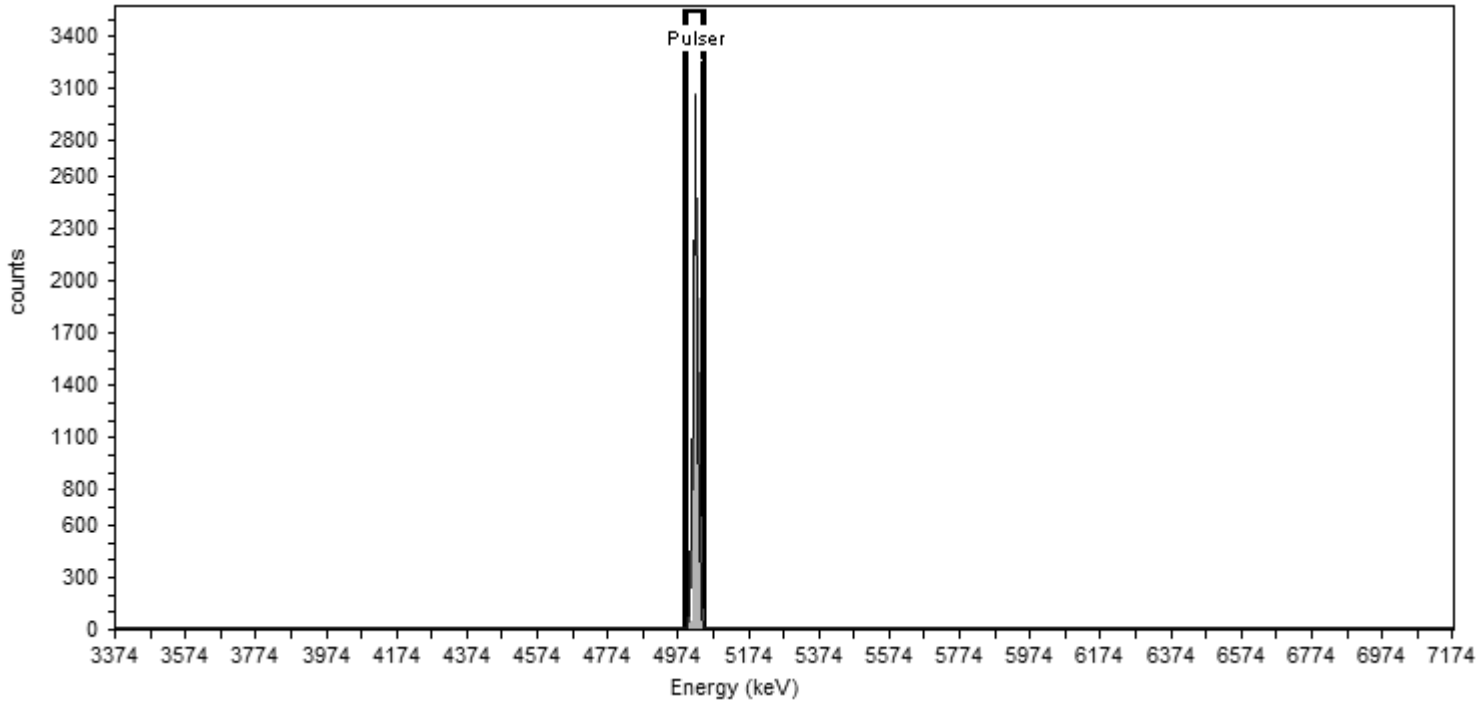
Batch Name: July2016c
Description:

Acquisition

Detector: AV245 , SN: 51-005EE2
Acquisition Start Date: 8/15/2016 2:40:00PM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-7107;AV245-20151019
Calibration Date: 10/19/2015 10:52:31PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.228	4999.322	5045.134	13.46	5,917.75	6,020.00

Initial Calibrations

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:26:56PM 11/23/2015

Calibration

Sample Name: IC-8875;AV149-20151016
Description:
Detector: AV149

Analyst: 60040
Analysis Date: 10/16/2015 6:46:43PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82234-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

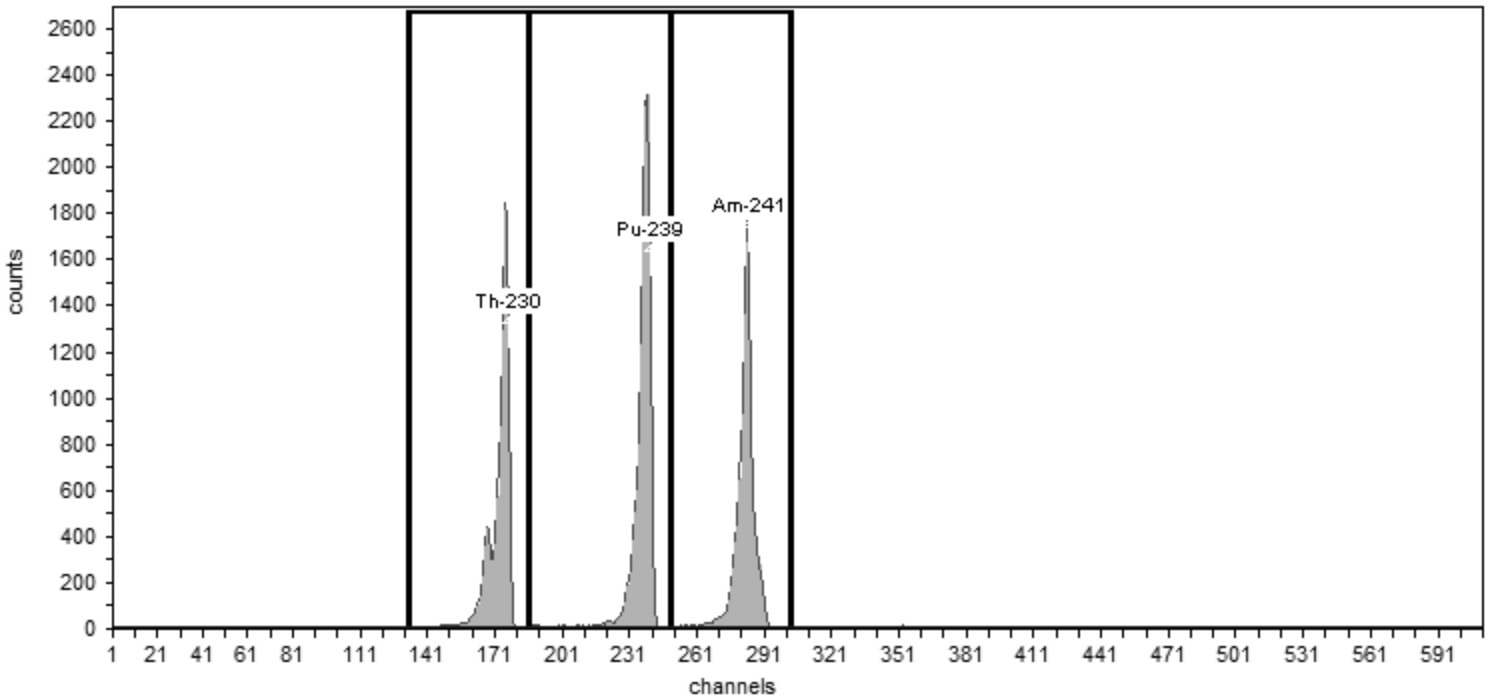
Detector: AV149 , SN: 50-05/R3
Acquisition Start Date: 10/16/2015 3:51:18PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-8875;AV149-20151016

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.03% +/- 0.34% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	31.48	10,971.00	78.36
Pu-239	240	5,155.40	186	249	33.62	12,896.00	92.11
Am-241	284	5,485.70	249	303	31.58	11,033.00	78.81

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:46:47PM 10/16/2015

Calibration

Sample Name: IC-8876;AV150-20151016
Description:
Detector: AV150

Analyst: 60040
Analysis Date: 10/16/2015 6:46:46PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82235-334
Prepared by: Analytics
Description:

Certification Date: 6/4/2010 12:00:00PM

Acquisition

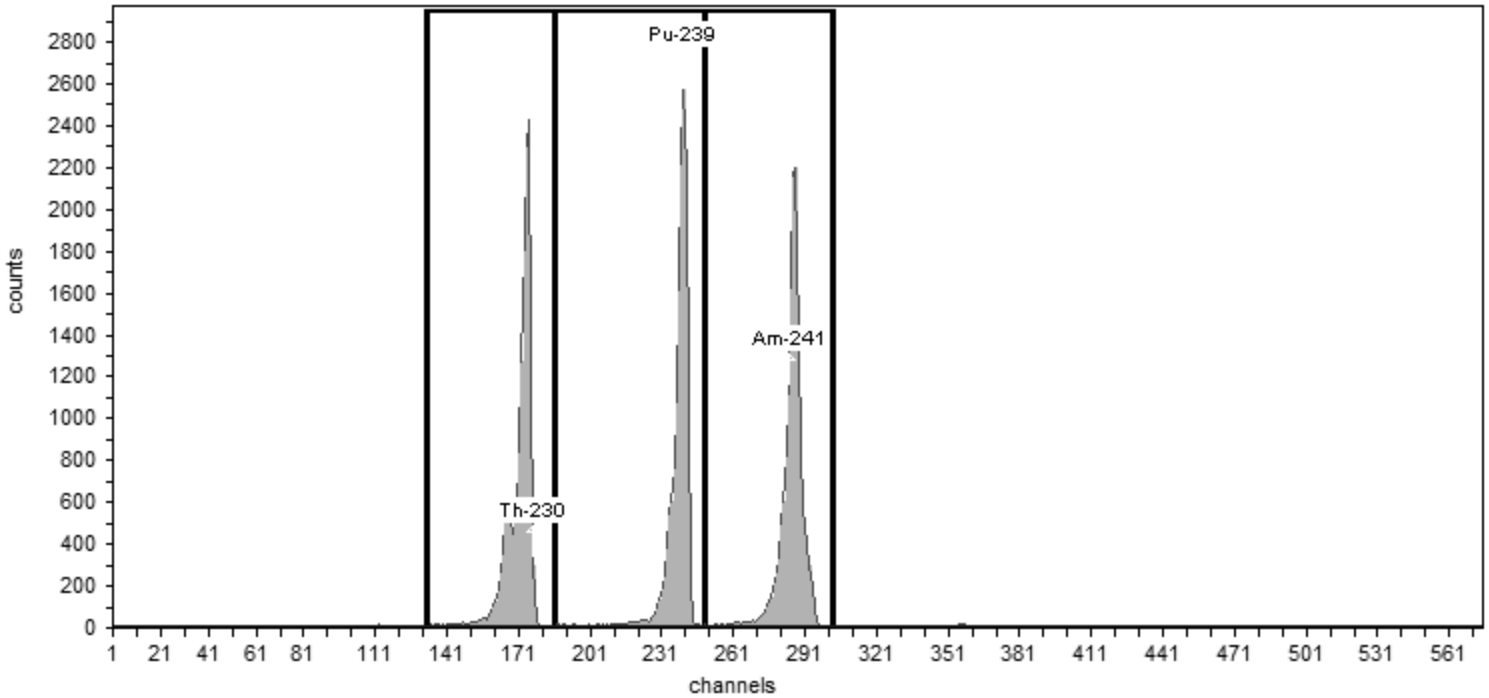
Detector: AV150 , SN: 50-05/R4
Acquisition Start Date: 10/16/2015 3:51:29PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-8876;AV150-20151016

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.45% +/- 0.29% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	31.57	14,812.00	105.80
Pu-239	240	5,155.40	186	249	32.92	14,414.00	102.96
Am-241	284	5,485.70	249	303	34.04	14,906.00	106.47

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:46:50PM 10/16/2015

Calibration

Sample Name: IC-8877;AV151-20151016
Description:
Detector: AV151

Analyst: 60040
Analysis Date: 10/16/2015 6:46:50PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82236-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

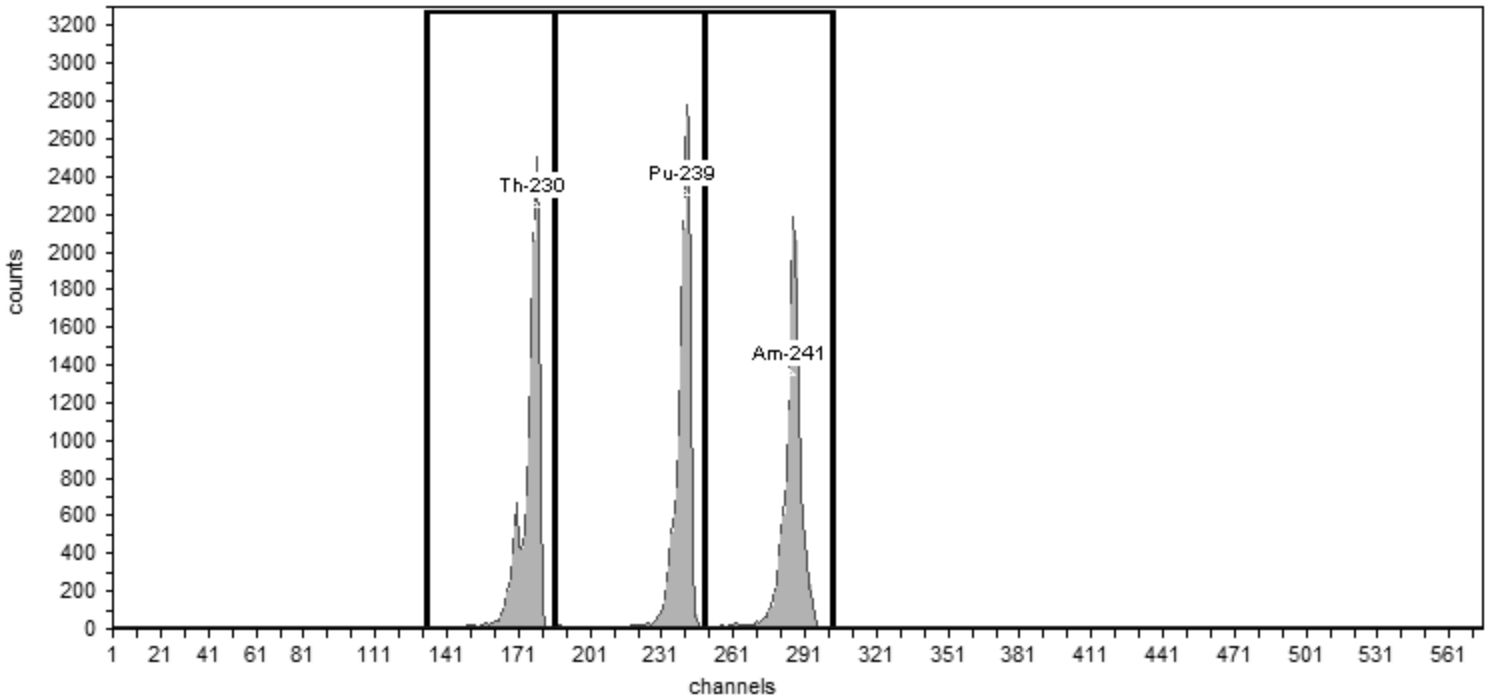
Detector: AV151 , SN: 50-05/R5
Acquisition Start Date: 10/16/2015 3:51:50PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-8877;AV151-20151016

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.28% +/- 0.31% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.27	14,588.00	104.20
Pu-239	240	5,155.40	186	249	32.53	15,116.00	107.97
Am-241	284	5,485.70	249	303	33.58	14,215.00	101.54

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:05PM 11/23/2015

Calibration

Sample Name: IC-9520;AV152-20151016
Description:
Detector: AV152

Analyst: 60040
Analysis Date: 10/16/2015 6:46:53PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82237-334
Prepared by: Analytics
Description:

Certification Date: 6/1/2010 12:00:00PM

Acquisition

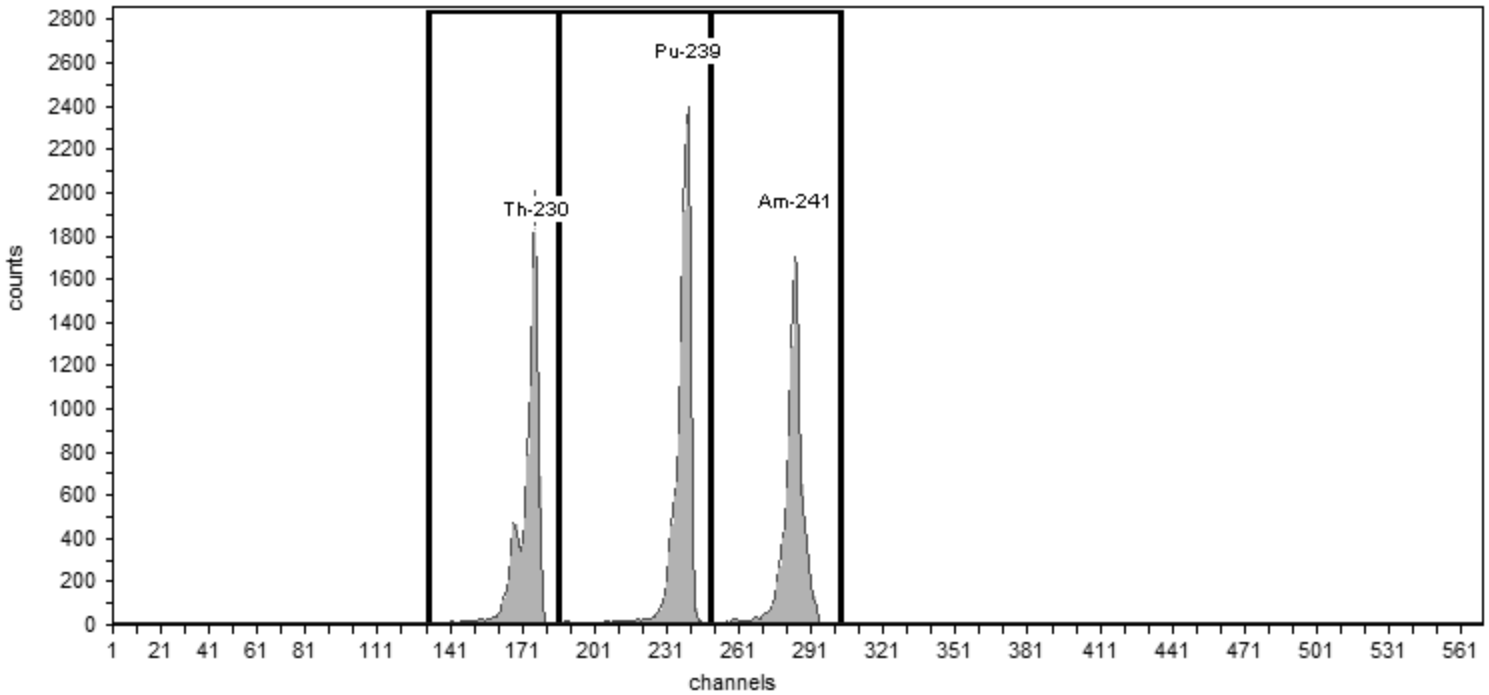
Detector: AV152 , SN: 50-05/R6
Acquisition Start Date: 10/16/2015 3:52:05PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9520;AV152-20151016

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.54% +/- 0.35% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.71	11,699.00	83.56
Pu-239	240	5,155.40	186	249	33.73	13,727.00	98.05
Am-241	284	5,485.70	249	303	34.89	11,357.00	81.12

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:46:57PM 10/16/2015

Calibration

Sample Name: IC-9792;AV153-20151016
Description:
Detector: AV153

Analyst: 60040
Analysis Date: 10/16/2015 6:46:57PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82240-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

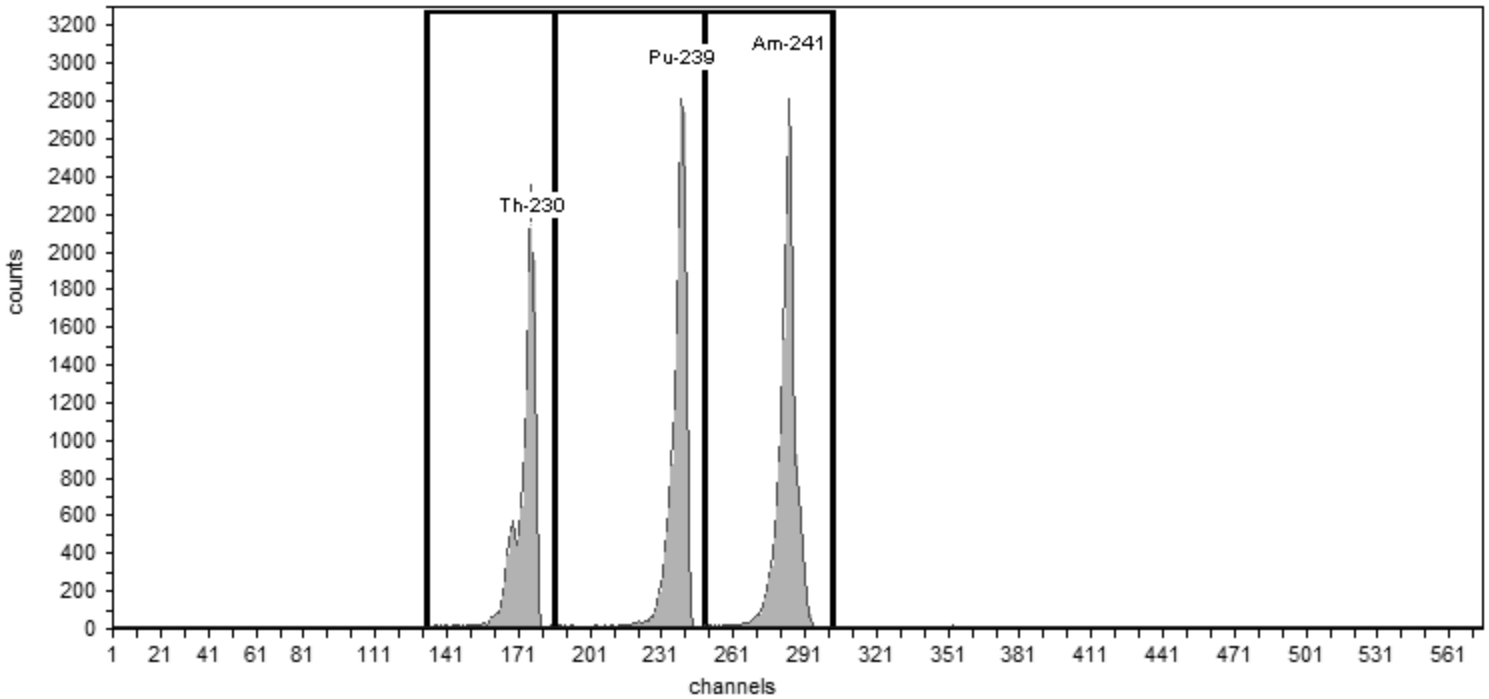
Detector: AV153 , SN: 54-011 Y6
Acquisition Start Date: 10/16/2015 3:52:22PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9792;AV153-20151016

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.60% +/- 0.31% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.79	13,953.00	99.66
Pu-239	240	5,155.40	186	249	34.07	16,216.00	115.83
Am-241	284	5,485.70	249	303	33.42	18,314.00	130.81

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:47:30PM 10/16/2015

Calibration

Sample Name: IC-9795;AV156-20151016a
Description:
Detector: AV156

Analyst: 60040
Analysis Date: 10/16/2015 6:47:28PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82243-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

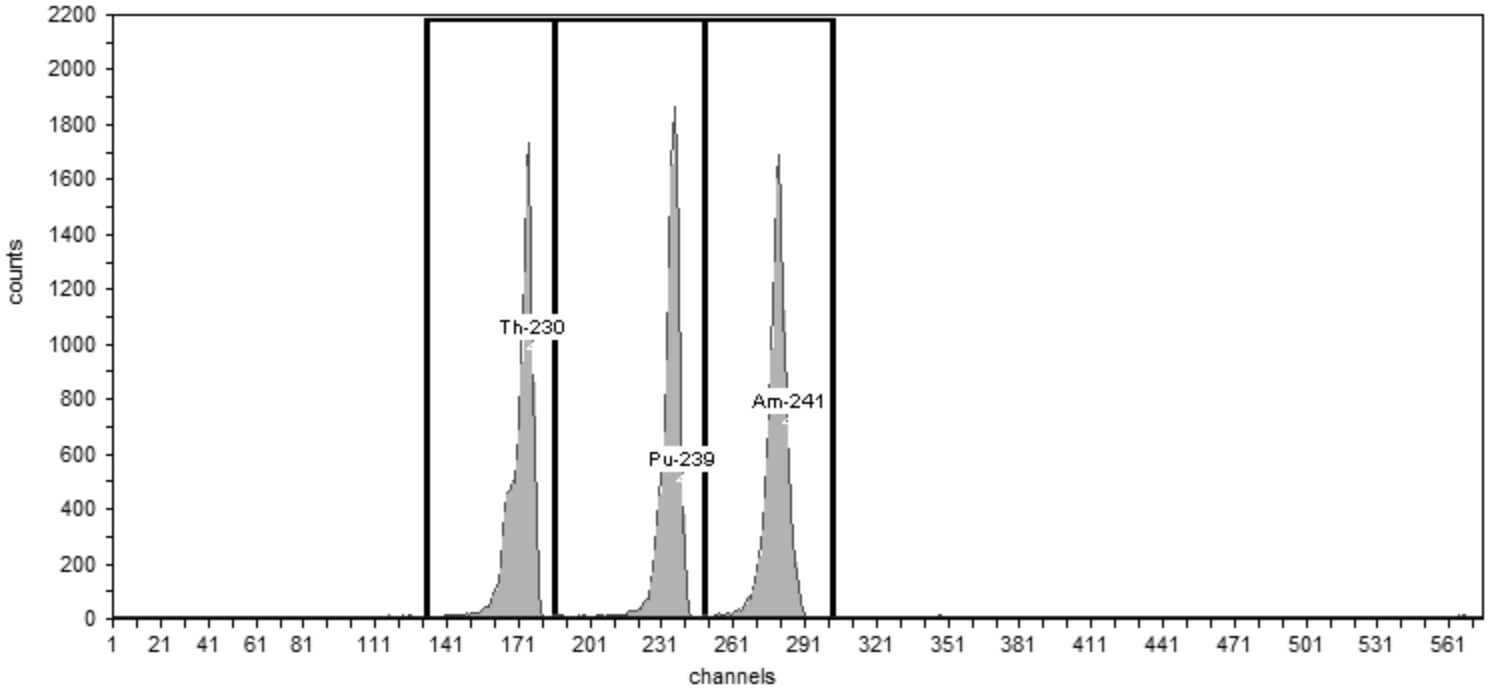
Detector: AV156 , SN: 49-155n4
Acquisition Start Date: 10/16/2015 4:27:27PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9795;AV156-20151016a

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.08% +/- 0.34% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	38.92	12,938.00	92.41
Pu-239	240	5,155.40	186	249	42.72	13,072.00	93.37
Am-241	284	5,485.70	249	303	48.22	13,814.00	98.67

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:47:08PM 10/16/2015

Calibration

Sample Name: IC-9817;AV157-20151016
Description:
Detector: AV157

Analyst: 60040
Analysis Date: 10/16/2015 6:47:07PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82244-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

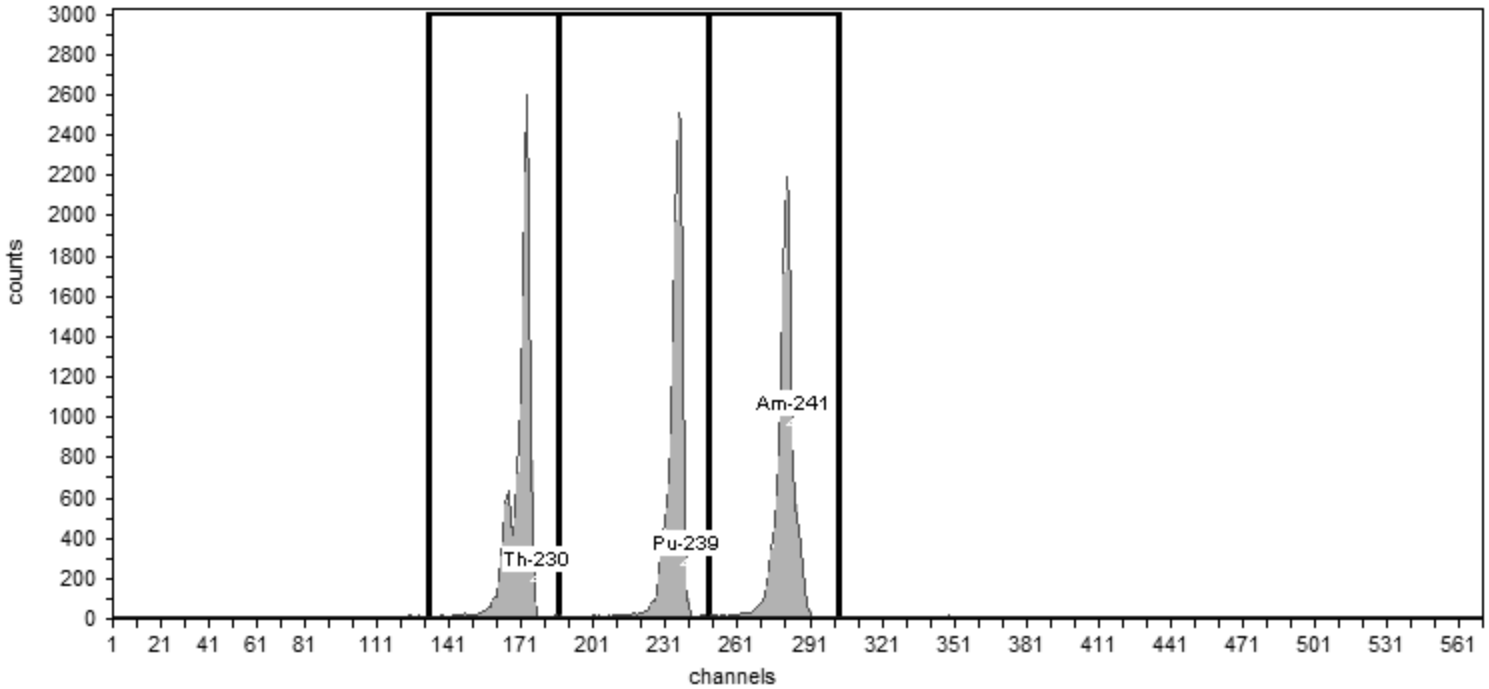
Detector: AV157 , SN: 50-05/II3
Acquisition Start Date: 10/16/2015 3:53:14PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9817;AV157-20151016

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.78% +/- 0.30% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.82	15,163.00	108.31
Pu-239	240	5,155.40	186	249	33.33	14,109.00	100.78
Am-241	284	5,485.70	249	303	34.11	14,283.00	102.02

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:36:24PM 10/17/2015

Calibration

Sample Name: IC-7107;AV161-20151016
Description:
Detector: AV161

Analyst: 60040
Analysis Date: 10/17/2015 2:36:23PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82232-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

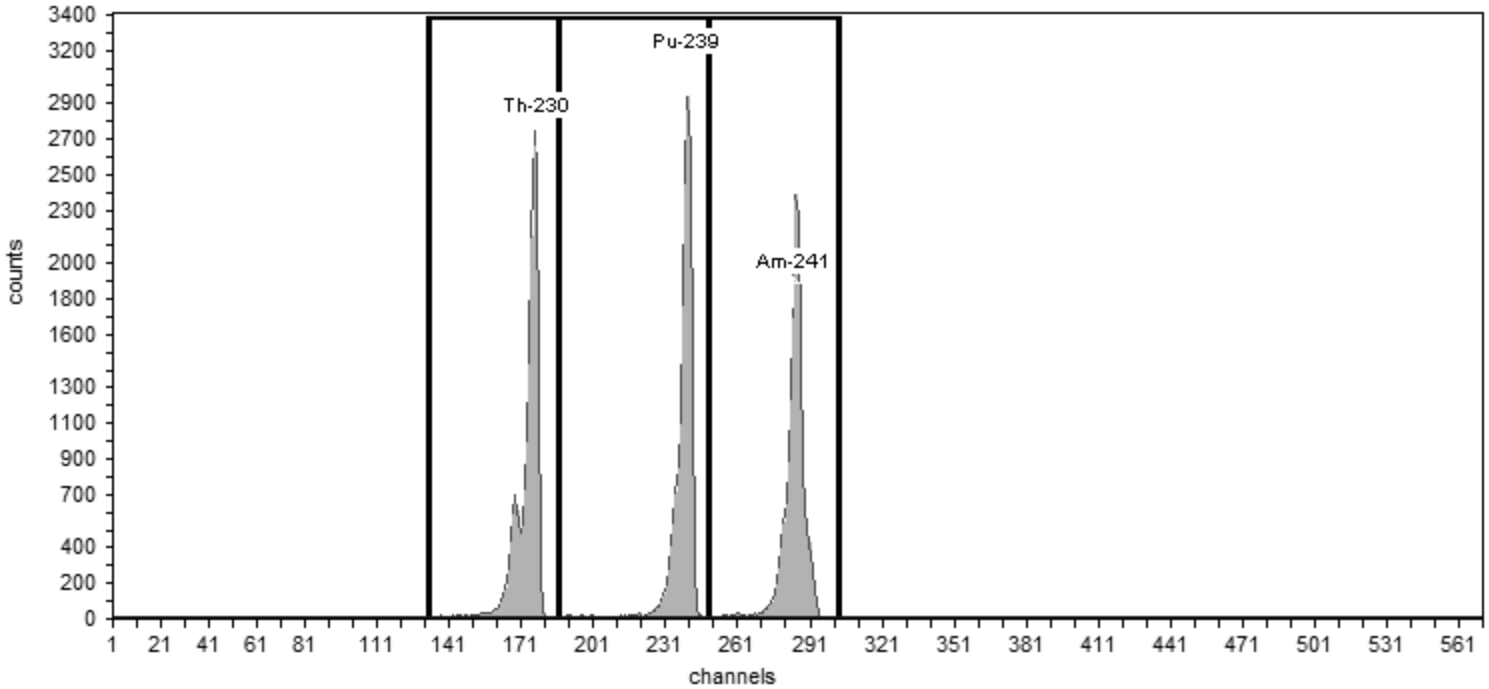
Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 10/16/2015 6:57:20PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-7107;AV161-20151016

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.14% +/- 0.30% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.68	16,596.00	118.54
Pu-239	240	5,155.40	186	249	32.25	16,176.00	115.54
Am-241	284	5,485.70	249	303	34.34	15,558.00	111.13

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:01:53PM 10/17/2015

Calibration

Sample Name: IC-8874;AV176-20151017
Description:
Detector: AV176

Analyst: 60040
Analysis Date: 10/17/2015 6:01:52PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82233-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

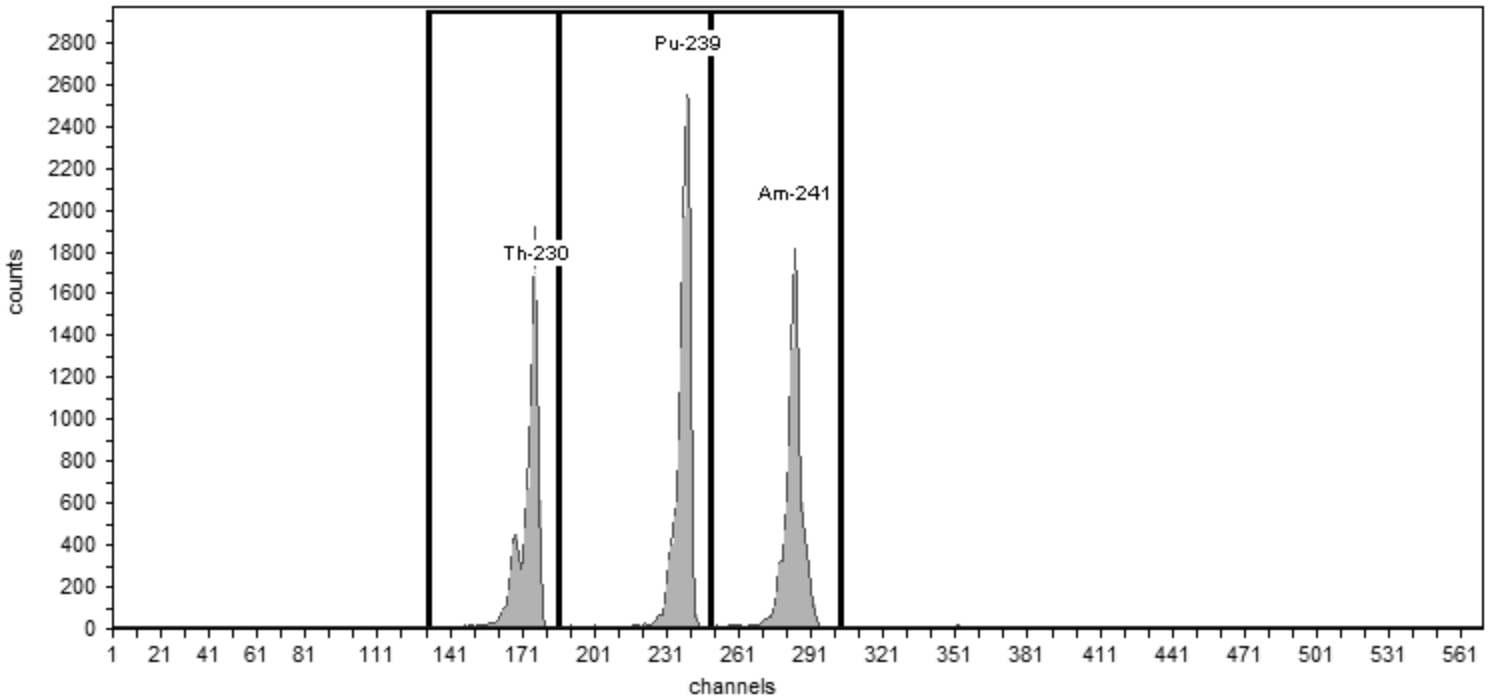
Detector: AV176 , SN: 50-117H2
Acquisition Start Date: 10/17/2015 2:48:41PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-8874;AV176-20151017

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.19% +/- 0.37% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.94	10,499.00	74.99
Pu-239	240	5,155.40	186	249	32.38	13,813.00	98.66
Am-241	284	5,485.70	249	303	31.56	11,072.00	79.09

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:29:34PM 11/23/2015

Calibration

Sample Name: IC-9817;AV227-20151018
Description:
Detector: AV227

Analyst: 60040
Analysis Date: 10/18/2015 9:20:24PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82244-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

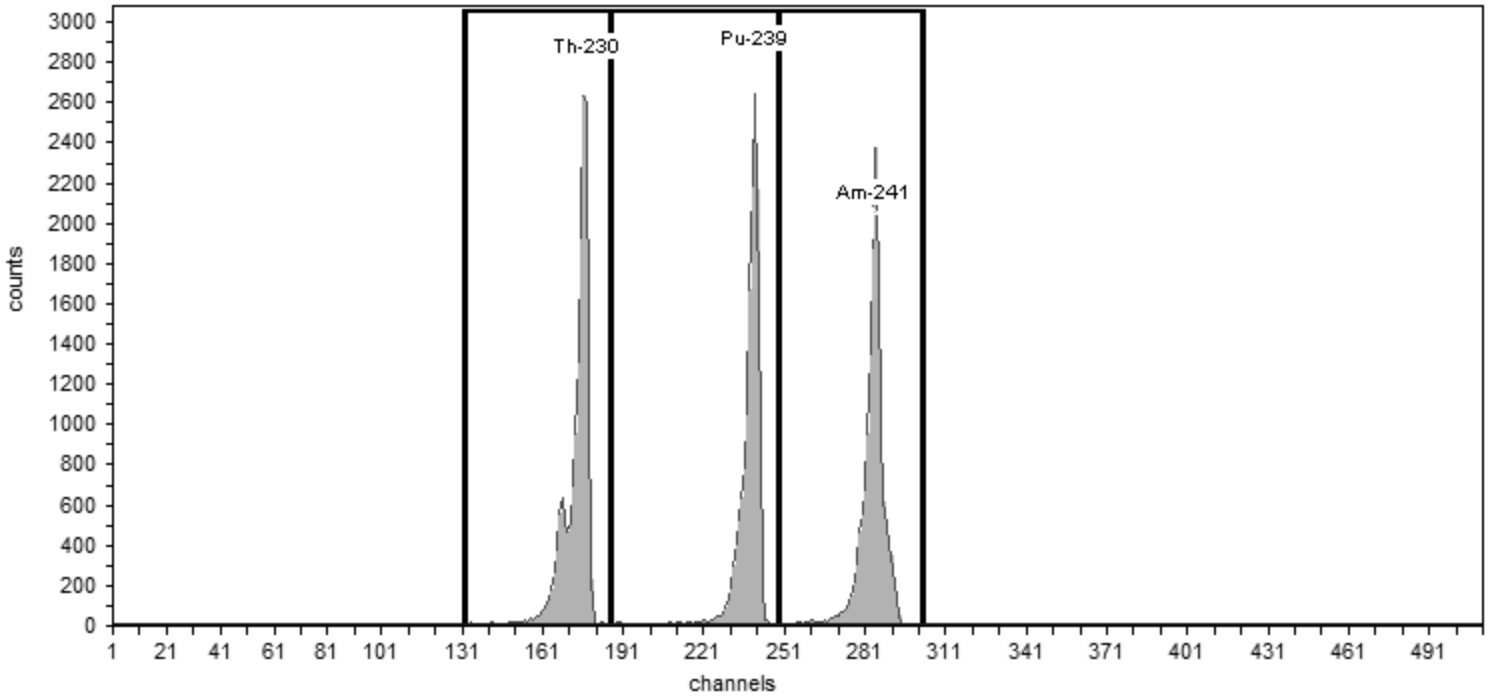
Detector: AV227 , SN: 50-120DD5
Acquisition Start Date: 10/18/2015 6:59:28PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9817;AV227-20151018

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.29% +/- 0.31% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.26	15,658.00	111.84
Pu-239	240	5,155.40	186	249	31.74	14,298.00	102.13
Am-241	284	5,485.70	249	303	30.94	14,467.00	103.34

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:20:30PM 10/18/2015

Calibration

Sample Name: IC-9884;AV228-20151018
Description:
Detector: AV228

Analyst: 60040
Analysis Date: 10/18/2015 9:20:29PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82245-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

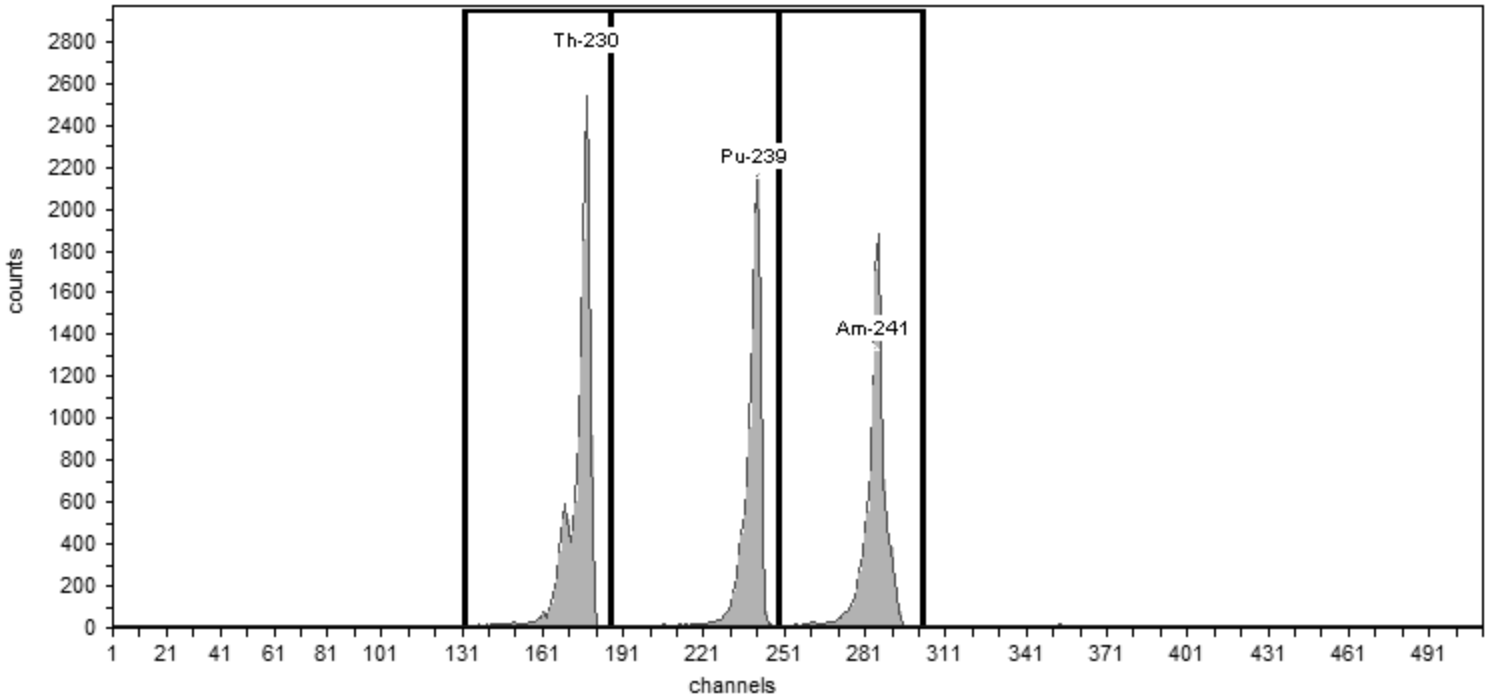
Detector: AV228 , SN: 51-005Q6
Acquisition Start Date: 10/18/2015 6:59:41PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9884;AV228-20151018

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.26% +/- 0.36% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.01	14,209.00	101.49
Pu-239	240	5,155.40	186	249	30.75	11,540.00	82.43
Am-241	284	5,485.70	249	303	30.80	11,714.00	83.67

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:20:42PM 10/18/2015

Calibration

Sample Name: IC-9886;AV230-20151018
Description:
Detector: AV230

Analyst: 60040
Analysis Date: 10/18/2015 9:20:40PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82247-334
Prepared by: Analytics
Description:

Certification Date: 6/10/2010 12:00:00PM

Acquisition

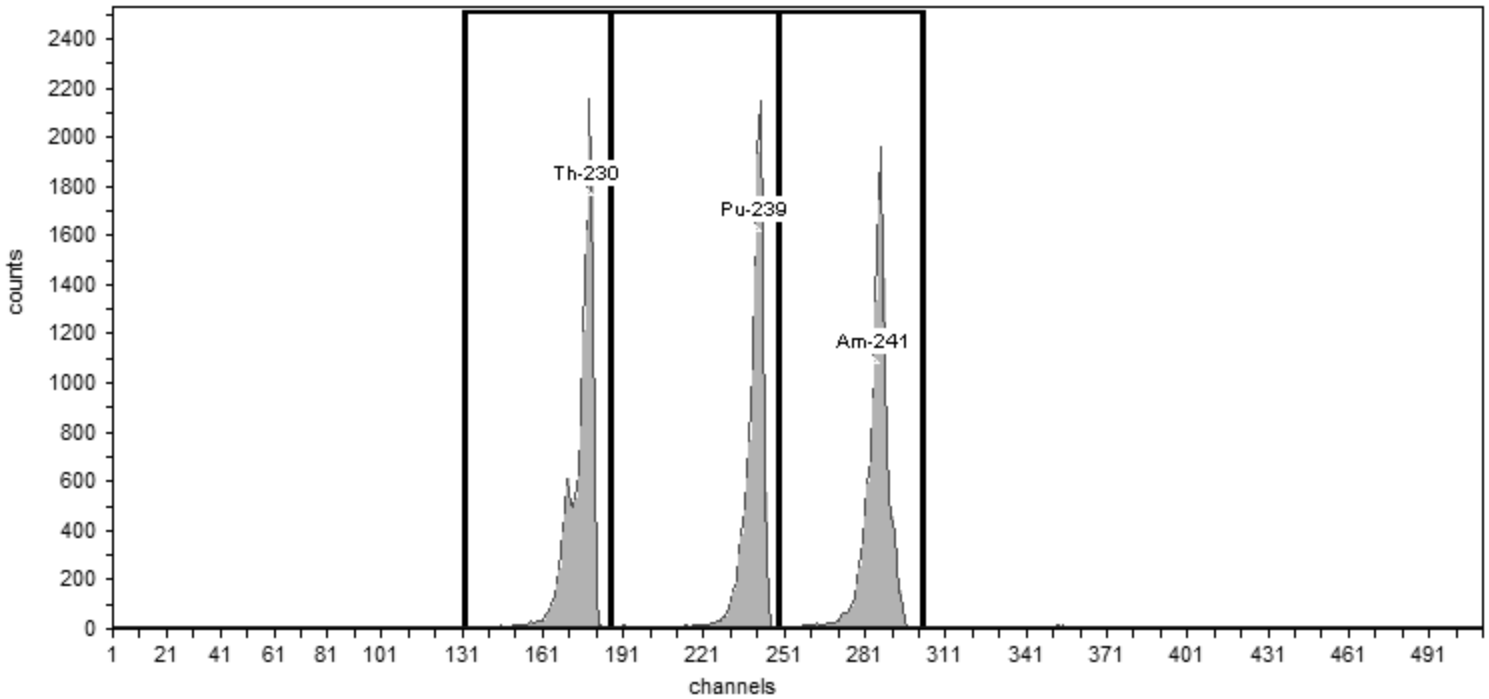
Detector: AV230 , SN: 49-045J5
Acquisition Start Date: 10/18/2015 7:00:06PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9886;AV230-20151018

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.09% +/- 0.34% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.02	13,112.00	93.66
Pu-239	240	5,155.40	186	249	32.97	12,156.00	86.83
Am-241	284	5,485.70	249	303	33.83	13,181.00	94.15

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:11:41PM 10/19/2015

Calibration

Sample Name: IC-8877;AV235-20151018
Description:
Detector: AV235

Analyst: 60040
Analysis Date: 10/19/2015 4:11:39PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82236-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

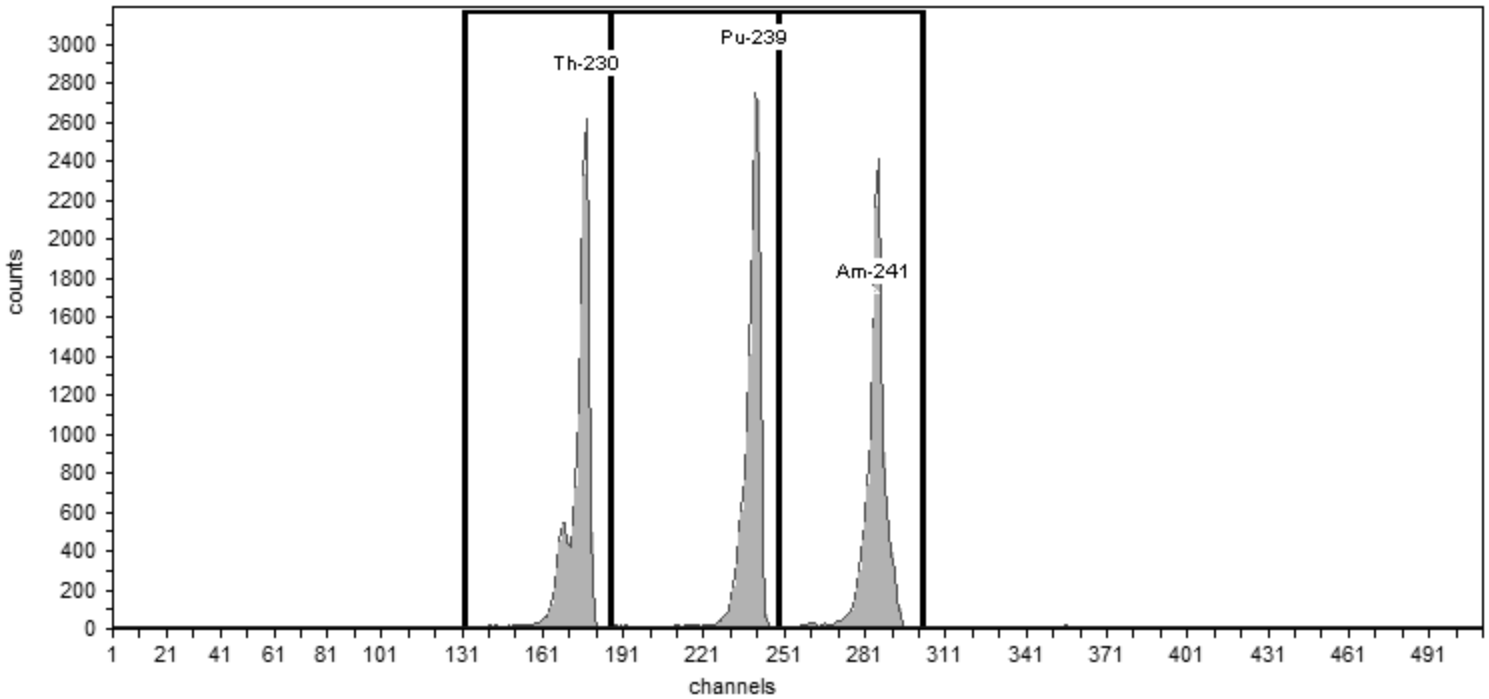
Detector: AV235 , SN: 51-005Q5
Acquisition Start Date: 10/18/2015 9:32:08PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-8877;AV235-20151018

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.57% +/- 0.31% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.88	14,697.00	104.98
Pu-239	240	5,155.40	186	249	32.18	15,135.00	108.11
Am-241	284	5,485.70	249	303	30.94	14,563.00	104.02

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:11:45PM 10/19/2015

Calibration

Sample Name: IC-9520;AV236-20151018
Description:
Detector: AV236

Analyst: 60040
Analysis Date: 10/19/2015 4:11:44PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82237-334
Prepared by: Analytics
Description:

Certification Date: 6/1/2010 12:00:00PM

Acquisition

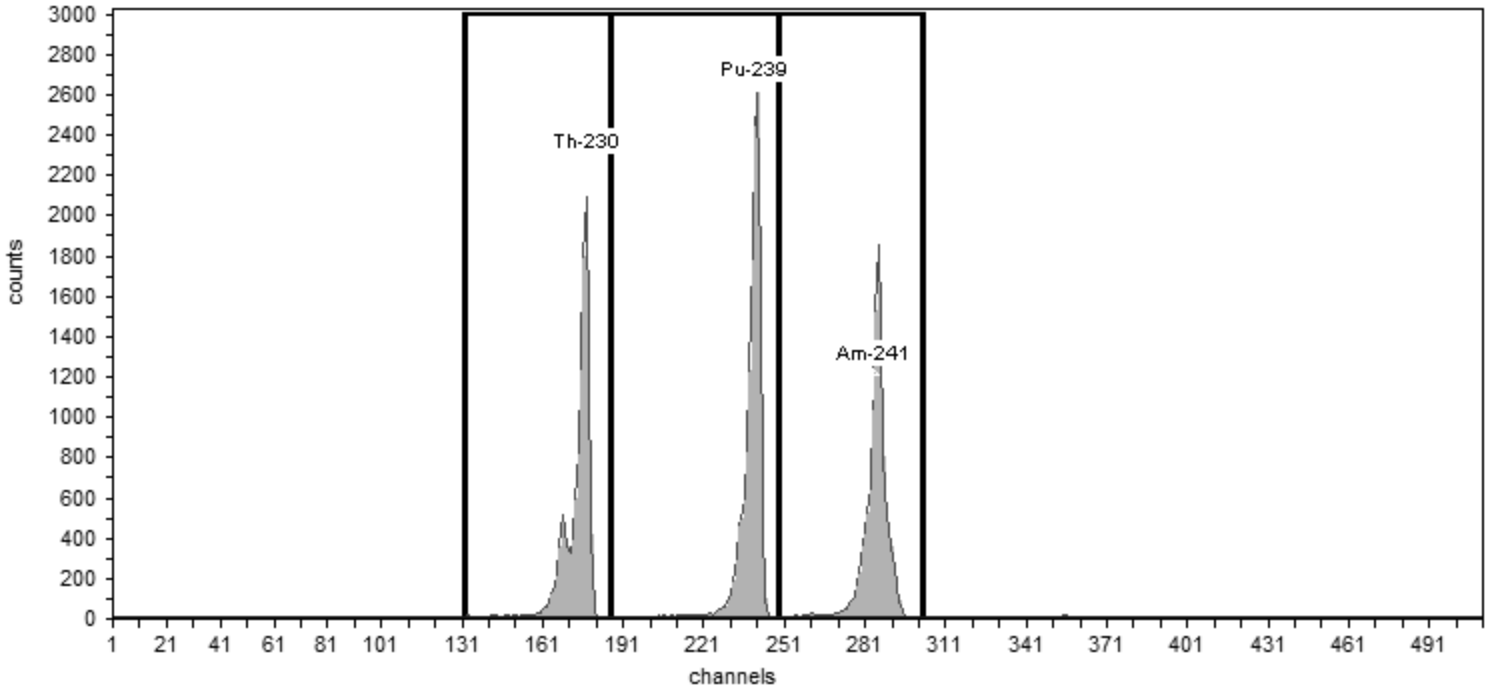
Detector: AV236 , SN: 51-005P3
Acquisition Start Date: 10/18/2015 9:32:19PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9520;AV236-20151018

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.47% +/- 0.34% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.26	11,521.00	82.29
Pu-239	240	5,155.40	186	249	31.34	13,821.00	98.72
Am-241	284	5,485.70	249	303	30.54	11,354.00	81.10

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:11:50PM 10/19/2015

Calibration

Sample Name: IC-9792;AV237-20151018
Description:
Detector: AV237

Analyst: 60040
Analysis Date: 10/19/2015 4:11:48PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82240-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

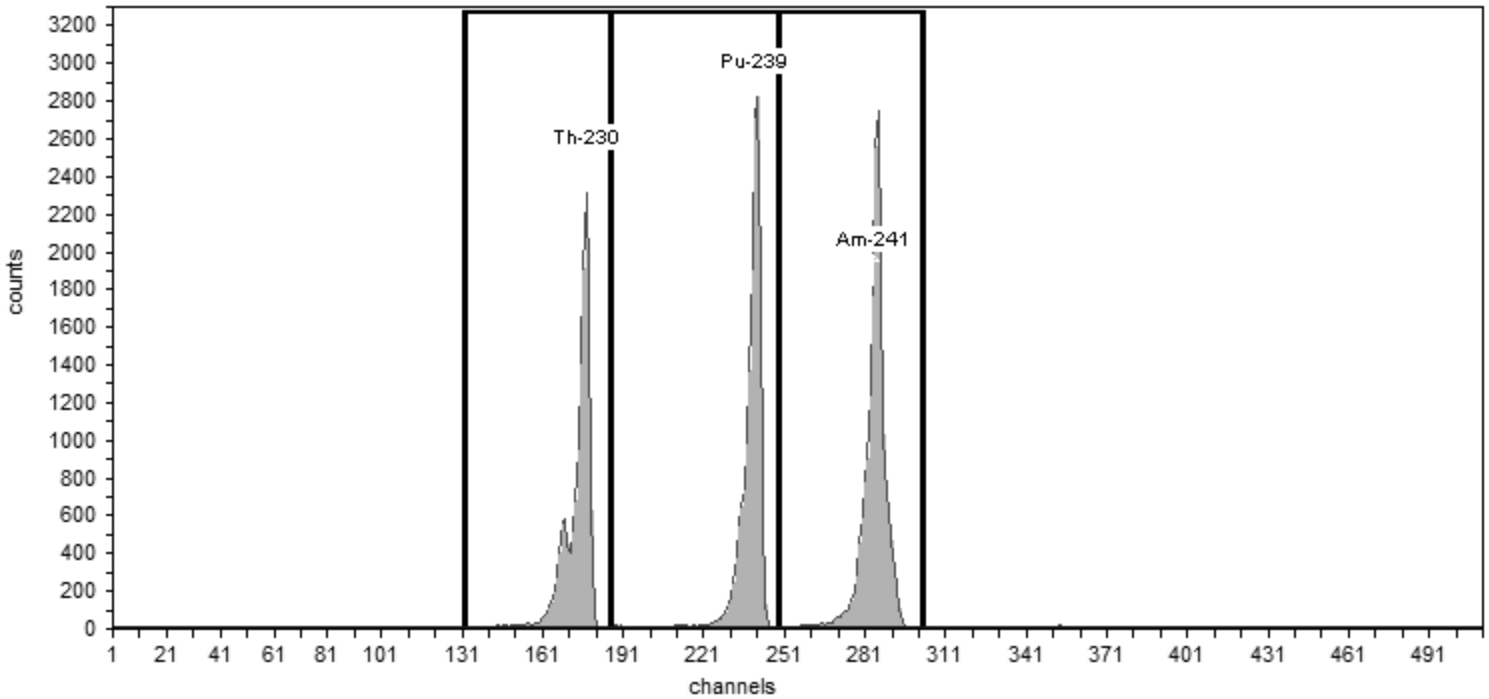
Detector: AV237 , SN: 50-120DD7
Acquisition Start Date: 10/18/2015 9:32:32PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9792;AV237-20151018

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.87% +/- 0.30% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.50	13,753.00	98.24
Pu-239	240	5,155.40	186	249	32.16	15,771.00	112.65
Am-241	284	5,485.70	249	303	32.48	17,661.00	126.15

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:29:41PM 11/23/2015

Calibration

Sample Name: IC-9793;AV238-20151018
Description:
Detector: AV238

Analyst: 60040
Analysis Date: 10/19/2015 4:11:53PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82241-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

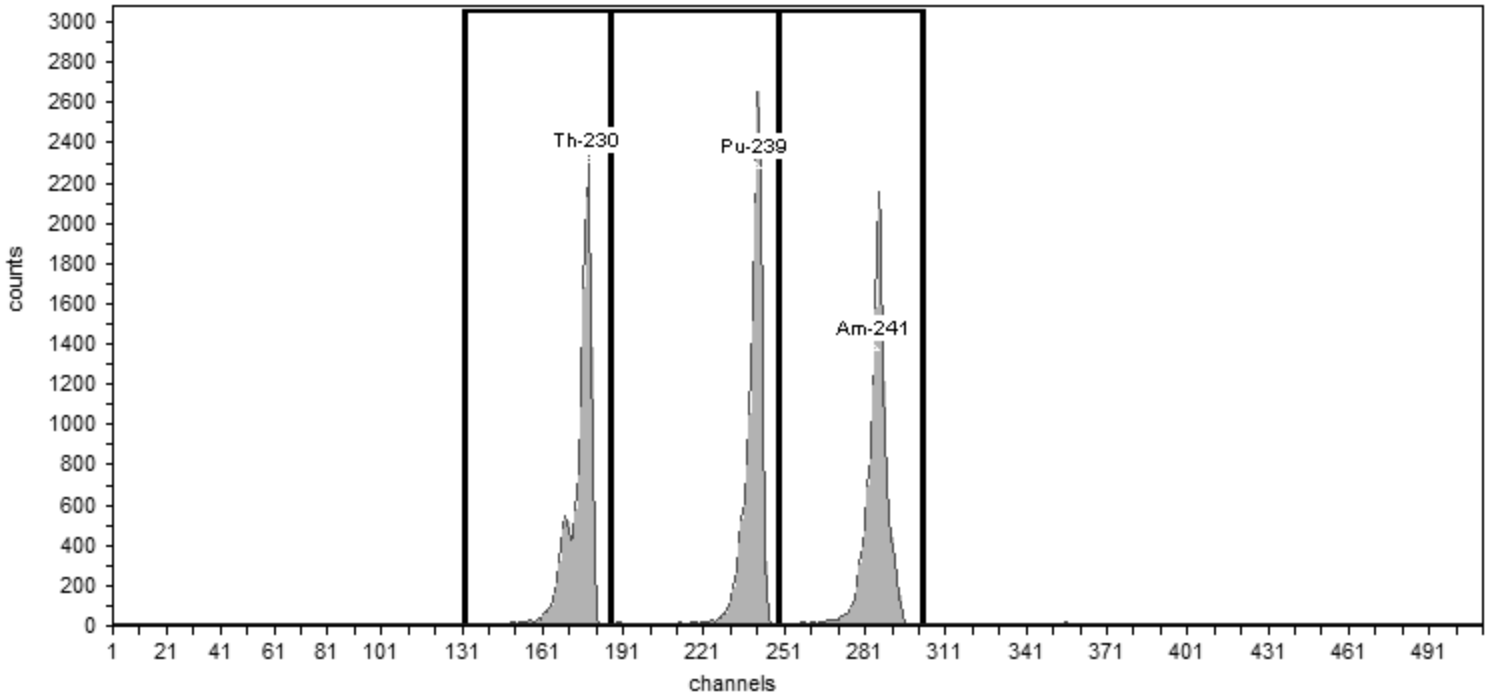
Detector: AV238 , SN: 51-005P7
Acquisition Start Date: 10/18/2015 9:32:47PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9793;AV238-20151018

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.33% +/- 0.31% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.36	13,900.00	99.29
Pu-239	240	5,155.40	186	249	32.15	14,628.00	104.49
Am-241	284	5,485.70	249	303	34.24	14,067.00	100.48

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:12:04PM 10/19/2015

Calibration

Sample Name: IC-9795;AV240-20151018
Description:
Detector: AV240

Analyst: 60040
Analysis Date: 10/19/2015 4:12:02PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82243-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

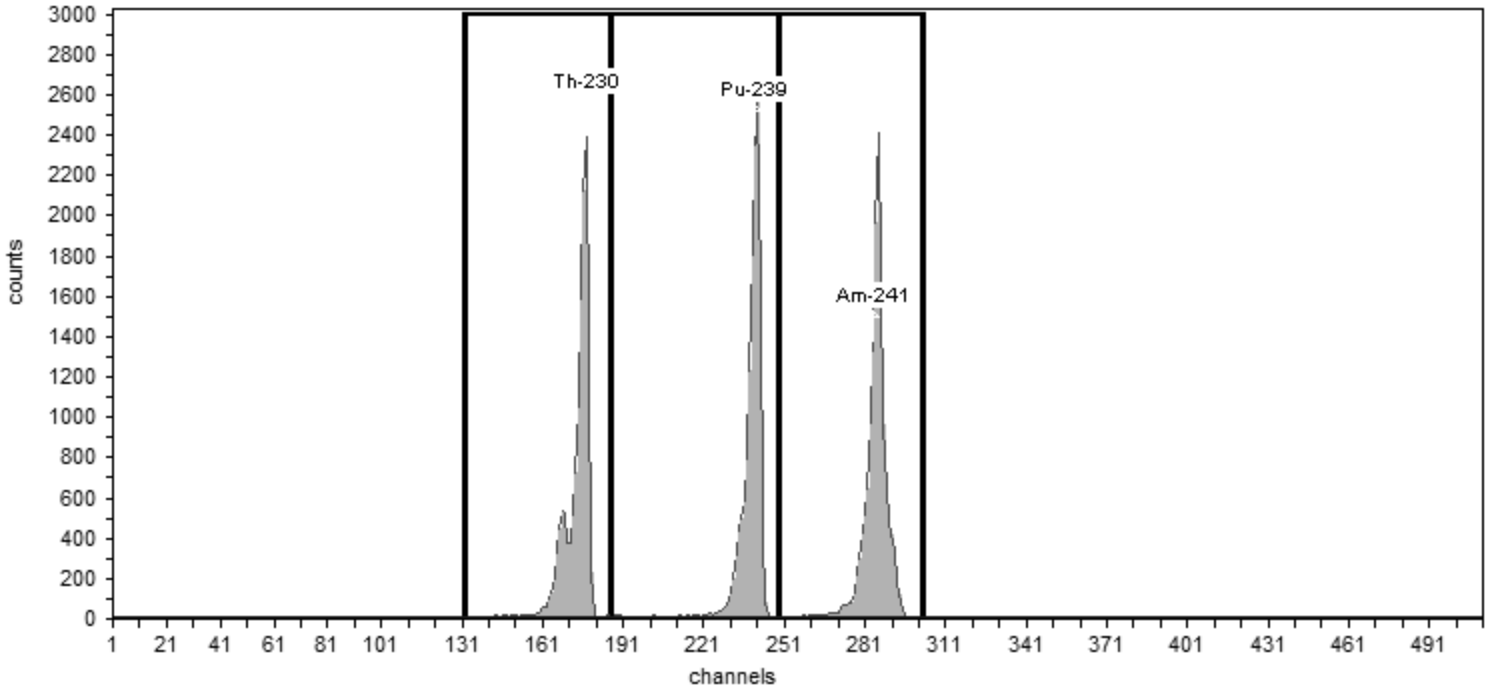
Detector: AV240 , SN: 51-005Q1
Acquisition Start Date: 10/18/2015 9:33:12PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9795;AV240-20151018

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.76% +/- 0.35% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.66	13,193.00	94.24
Pu-239	240	5,155.40	186	249	30.85	13,452.00	96.09
Am-241	284	5,485.70	249	303	29.84	14,212.00	101.51

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:12:22PM 10/19/2015

Calibration

Sample Name: IC-9886;AV244-20151018
Description:
Detector: AV244

Analyst: 60040
Analysis Date: 10/19/2015 4:12:20PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82247-334
Prepared by: Analytics
Description:

Certification Date: 6/10/2010 12:00:00PM

Acquisition

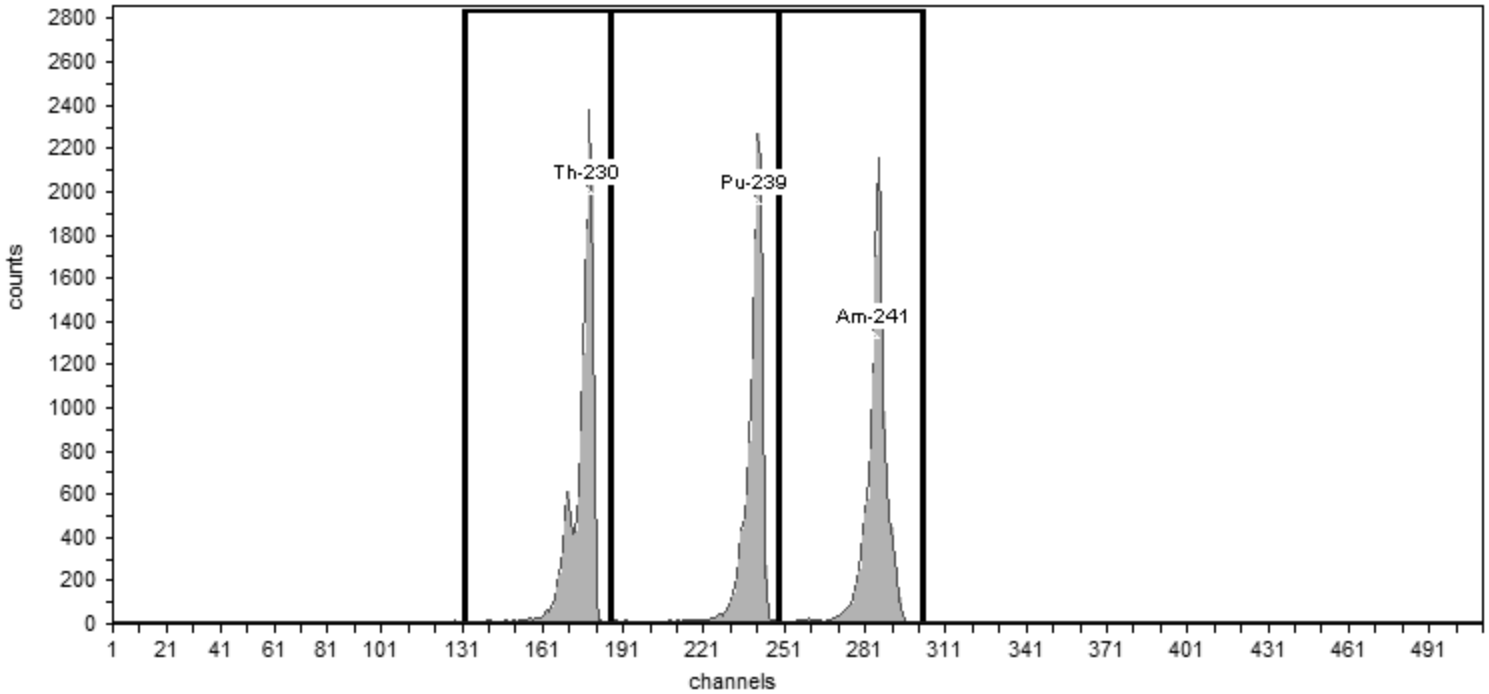
Detector: AV244 , SN: 51-005EE3
Acquisition Start Date: 10/18/2015 9:34:04PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-9886;AV244-20151018

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.87% +/- 0.35% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.84	13,586.00	97.04
Pu-239	240	5,155.40	186	249	32.84	12,558.00	89.70
Am-241	284	5,485.70	249	303	30.70	13,494.00	96.39

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:52:33PM 10/19/2015

Calibration

Sample Name: IC-7107;AV245-20151019
Description:
Detector: AV245

Analyst: 60040
Analysis Date: 10/19/2015 10:52:31PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82232-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

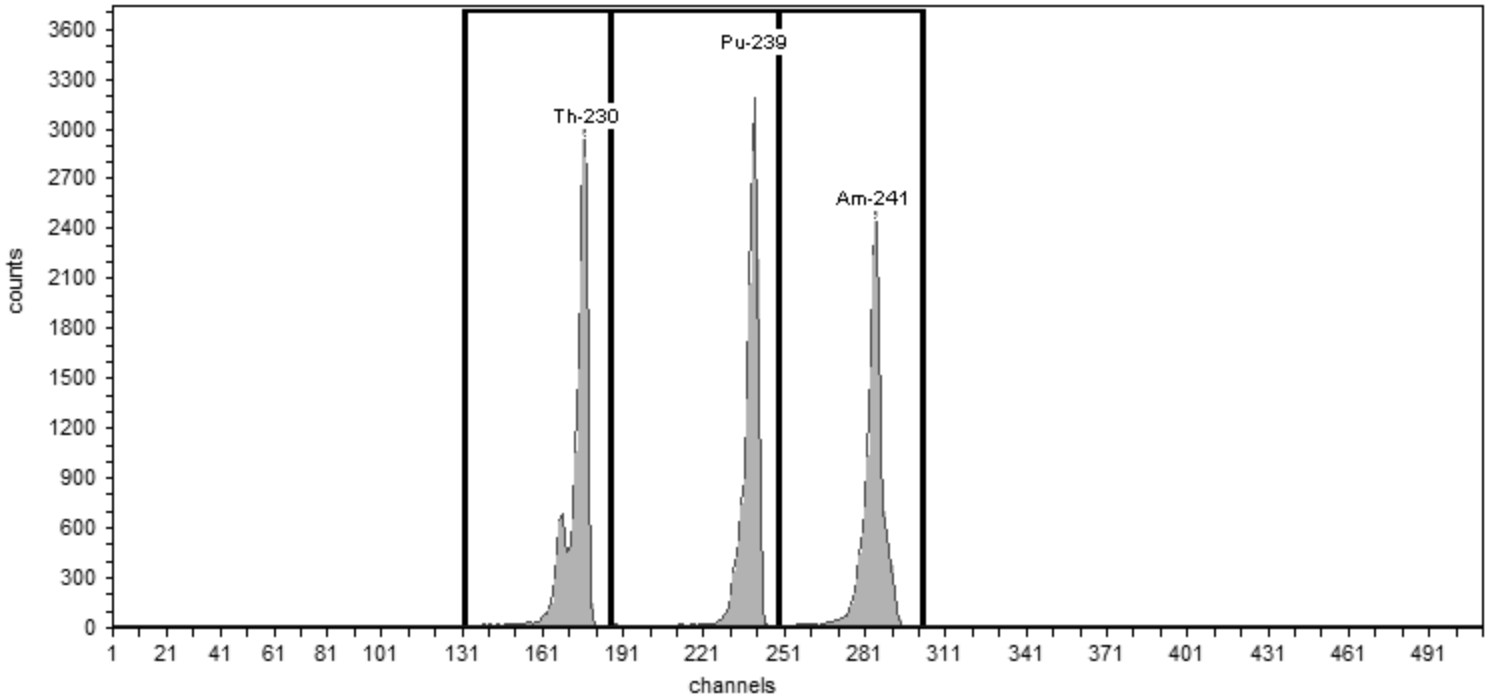
Detector: AV245 , SN: 51-005EE2
Acquisition Start Date: 10/19/2015 5:11:16PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-7107;AV245-20151019

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.43% +/- 0.30% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	27.86	16,746.00	119.61
Pu-239	240	5,155.40	186	249	30.71	16,302.00	116.44
Am-241	284	5,485.70	249	303	31.47	15,815.00	112.96

Initial Calibration Verifications

Alpha Spectroscopy Calibration Summary

Detector: AV149

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223446/1	10/16/15 15:51	82234-334_00001	0.2403	0.20-0.32		
ICV 160-223564/1	10/26/15 19:10	82245-334_00001	0.2396	0.20-0.32	99.7	95-105
CCV 160-262220/1	07/27/16 07:26	82234-334_00001	0.2292	0.20-0.32	95.4	95-105

Detector: AV150

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223447/1	10/16/15 15:51	82235-334_00001	0.2445	0.20-0.32		
ICV 160-223565/1	10/26/15 19:10	82247-334_00001	0.2449	0.20-0.32	100.1	95-105
CCV 160-262322/1	07/26/16 09:13	82235-334_00001	0.2366	0.20-0.32	96.7	95-105

Detector: AV151

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223448/1	10/16/15 15:51	82236-334_00001	0.2528	0.20-0.32		
ICV 160-223566/1	10/26/15 19:11	82246-334_00001	0.2559	0.20-0.32	101.3	95-105
CCV 160-262323/1	07/26/16 09:35	82236-334_00001	0.2529	0.20-0.32	100.0	95-105

Detector: AV152

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223449/1	10/16/15 15:52	82237-334_00003	0.2454	0.20-0.32		
ICV 160-223567/1	10/26/15 19:11	82242-334_00001	0.2417	0.20-0.32	98.5	95-105
CCV 160-262324/1	07/26/16 09:35	82237-334_00003	0.2394	0.20-0.32	97.5	95-105

Detector: AV153

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223450/1	10/16/15 15:52	82240-334_00001	0.2660	0.20-0.32		
ICV 160-223568/1	10/26/15 19:11	82243-334_00001	0.2646	0.20-0.32	99.5	95-105
CCV 160-262325/1	07/26/16 09:14	82240-334_00001	0.2578	0.20-0.32	96.9	95-105

Detector: AV156

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223453/1	10/16/15 16:27	82243-334_00001	0.2608	0.20-0.32		
ICV 160-223571/1	10/26/15 19:12	82240-334_00001	0.2531	0.20-0.32	97.0	95-105
CCV 160-262326/1	07/26/16 09:14	82243-334_00001	0.2590	0.20-0.32	99.3	95-105

Detector: AV157

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223454/1	10/16/15 15:53	82244-334_00001	0.2478	0.20-0.32		
ICV 160-223572/1	10/26/15 19:12	82241-334_00001	0.2553	0.20-0.32	103.0	95-105
CCV 160-262327/1	07/26/16 09:15	82244-334_00001	0.2421	0.20-0.32	97.7	95-105

Detector: AV161

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223458/1	10/16/15 18:57	82232-334_00001	0.2614	0.20-0.32		
ICV 160-223576/1	10/26/15 20:26	82233-334_00001	0.2638	0.20-0.32	100.9	95-105
CCV 160-262331/1	07/26/16 09:12	82232-334_00001	0.2560	0.20-0.32	97.9	95-105

Alpha Spectroscopy Calibration Summary

Detector: AV176

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223473/1	10/17/15 14:48	82233-334_00001	0.2619	0.20-0.32		
ICV 160-223591/1	10/31/15 14:14	82232-334_00001	0.2594	0.20-0.32	99.0	95-105
CCV 160-262168/1	07/26/16 12:11	82233-334_00001	0.2630	0.20-0.32	100.4	95-105

Detector: AV227

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223523/1	10/18/15 18:59	82244-334_00001	0.2529	0.20-0.32		
ICV 160-223642/1	11/01/15 19:19	82241-334_00001	0.2578	0.20-0.32	101.9	95-105
CCV 160-262196/1	07/26/16 13:39	82244-334_00001	0.2528	0.20-0.32	100.0	95-105

Detector: AV228

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223524/1	10/18/15 18:59	82245-334_00001	0.2526	0.20-0.32		
ICV 160-223643/1	11/01/15 19:19	82234-334_00001	0.2459	0.20-0.32	97.4	95-105
CCV 160-262197/1	07/26/16 15:00	82245-334_00001	0.2449	0.20-0.32	97.0	95-105

Detector: AV230

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223526/1	10/18/15 19:00	82247-334_00001	0.2509	0.20-0.32		
ICV 160-223645/1	11/01/15 19:19	82235-334_00001	0.2490	0.20-0.32	99.2	95-105
CCV 160-262199/2	07/26/16 19:07	82247-334_00001	0.2403	0.20-0.32	95.8	95-105

Detector: AV235

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223531/1	10/18/15 21:32	82236-334_00001	0.2557	0.20-0.32		
ICV 160-223650/1	11/01/15 20:30	82246-334_00001	0.2578	0.20-0.32	100.8	95-105
CCV 160-262204/1	07/26/16 15:02	82236-334_00001	0.2499	0.20-0.32	97.7	95-105

Detector: AV236

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223532/1	10/18/15 21:32	82237-334_00003	0.2447	0.20-0.32		
ICV 160-223666/2	11/05/15 18:22	82242-334_00001	0.2437	0.20-0.32	99.6	95-105
CCV 160-262205/1	07/26/16 15:02	82237-334_00003	0.2397	0.20-0.32	97.9	95-105

Detector: AV237

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223533/1	10/18/15 21:32	82240-334_00001	0.2587	0.20-0.32		
ICV 160-223652/1	11/01/15 20:31	82243-334_00001	0.2639	0.20-0.32	102.0	95-105
CCV 160-262206/1	07/26/16 15:03	82240-334_00001	0.2575	0.20-0.32	99.5	95-105

Detector: AV238

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223534/1	10/18/15 21:32	82241-334_00001	0.2533	0.20-0.32		
ICV 160-223653/1	11/01/15 20:31	82244-334_00001	0.2451	0.20-0.32	96.7	95-105
CCV 160-262207/1	07/26/16 12:23	82241-334_00001	0.2454	0.20-0.32	96.9	95-105

Alpha Spectroscopy Calibration Summary

Detector: AV240

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223536/1	10/18/15 21:33	82243-334_00001	0.2676	0.20-0.32		
ICV 160-223655/1	11/01/15 20:31	82240-334_00001	0.2611	0.20-0.32	97.6	95-105
CCV 160-262209/1	07/26/16 12:23	82243-334_00001	0.2667	0.20-0.32	99.7	95-105

Detector: AV244

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223540/1	10/18/15 21:34	82247-334_00001	0.2587	0.20-0.32		
ICV 160-223659/1	11/01/15 20:34	82235-334_00001	0.2565	0.20-0.32	99.2	95-105
CCV 160-262213/1	07/26/16 13:37	82247-334_00001	0.2486	0.20-0.32	96.1	95-105

Detector: AV245

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223541/1	10/19/15 17:11	82232-334_00001	0.2643	0.20-0.32		
ICV 160-223660/1	11/01/15 23:26	82233-334_00001	0.2696	0.20-0.32	102.0	95-105
CCV 160-262214/1	07/26/16 13:49	82232-334_00001	0.2648	0.20-0.32	100.2	95-105

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:20:54PM 10/26/2015

Calibration

Sample Name: ICV-9884;AV149-20151026
Description:
Detector: AV149

Analyst: 60040
Analysis Date: 10/26/2015 8:20:53PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82245-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

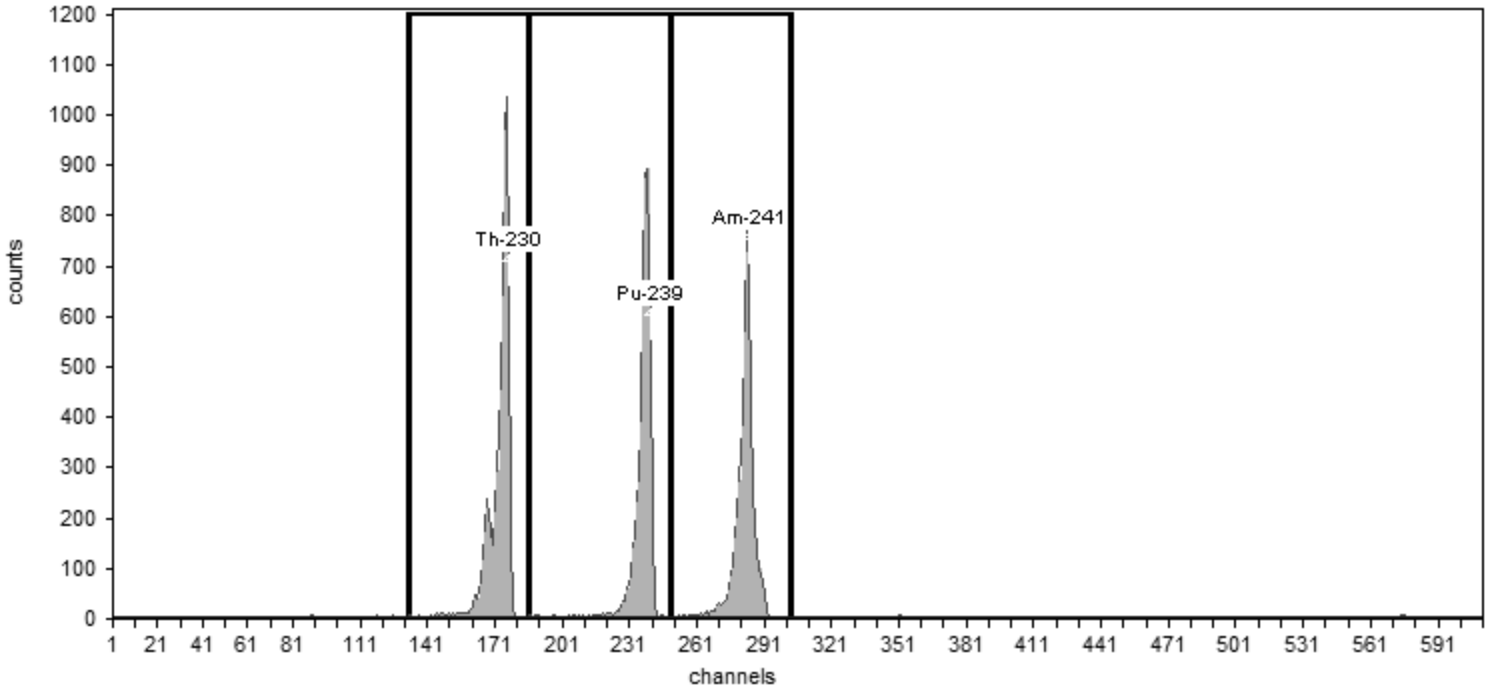
Detector: AV149 , SN: 50-05/R3
Acquisition Start Date: 10/26/2015 7:10:42PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9884;AV149-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 23.96% +/- 0.46% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.24	5,784.00	96.40
Pu-239	240	5,155.40	186	249	30.13	4,711.00	78.52
Am-241	284	5,485.70	249	303	31.22	4,732.00	78.87

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:30:17PM 11/23/2015

Calibration

Sample Name: ICV-9886;AV150-20151026
Description:
Detector: AV150

Analyst: 60040
Analysis Date: 10/26/2015 8:20:57PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82247-334
Prepared by: Analytics
Description:

Certification Date: 6/10/2010 12:00:00PM

Acquisition

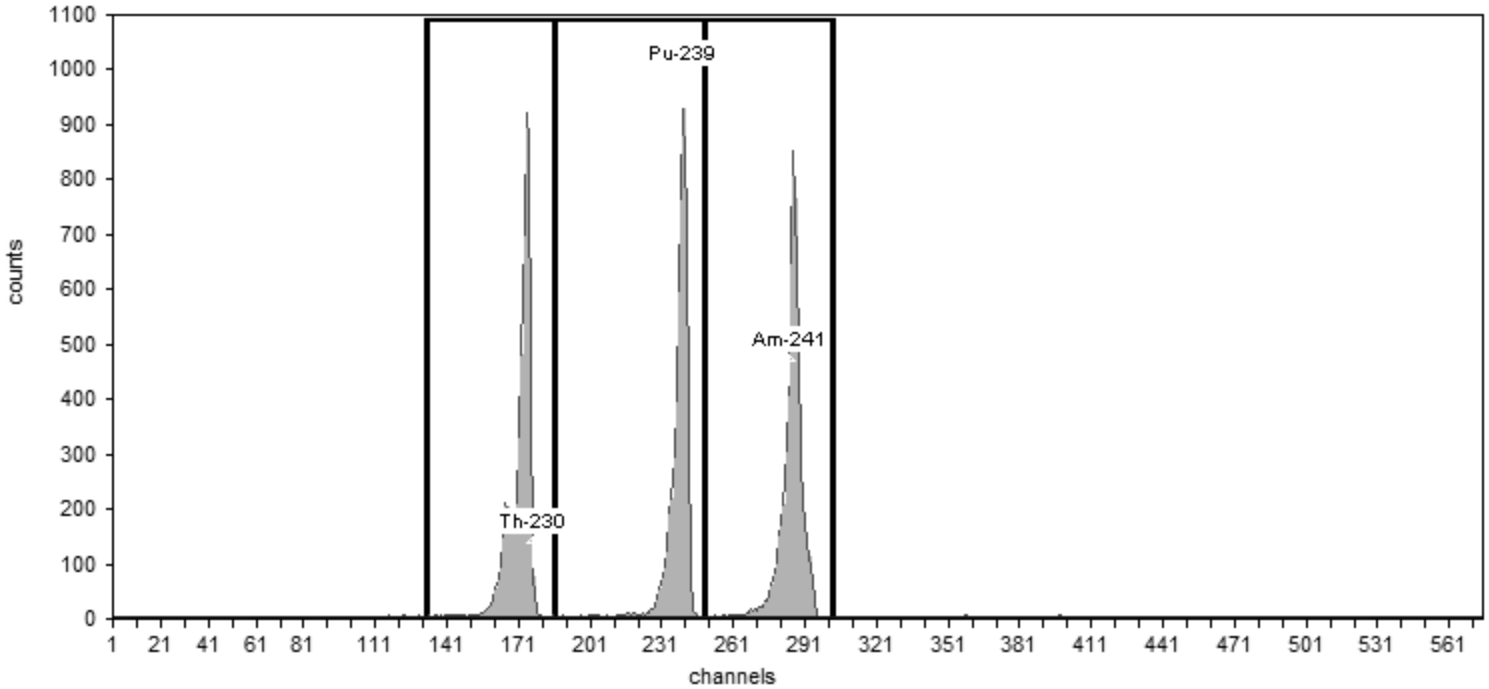
Detector: AV150 , SN: 50-05/R4
Acquisition Start Date: 10/26/2015 7:10:54PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9886;AV150-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.49% +/- 0.44% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.59	5,506.00	91.77
Pu-239	240	5,155.40	186	249	32.24	5,075.00	84.58
Am-241	284	5,485.70	249	303	31.73	5,498.00	91.63

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:21:01PM 10/26/2015

Calibration

Sample Name: ICV-9885;AV151-20151026
Description:
Detector: AV151

Analyst: 60040
Analysis Date: 10/26/2015 8:21:00PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82246-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

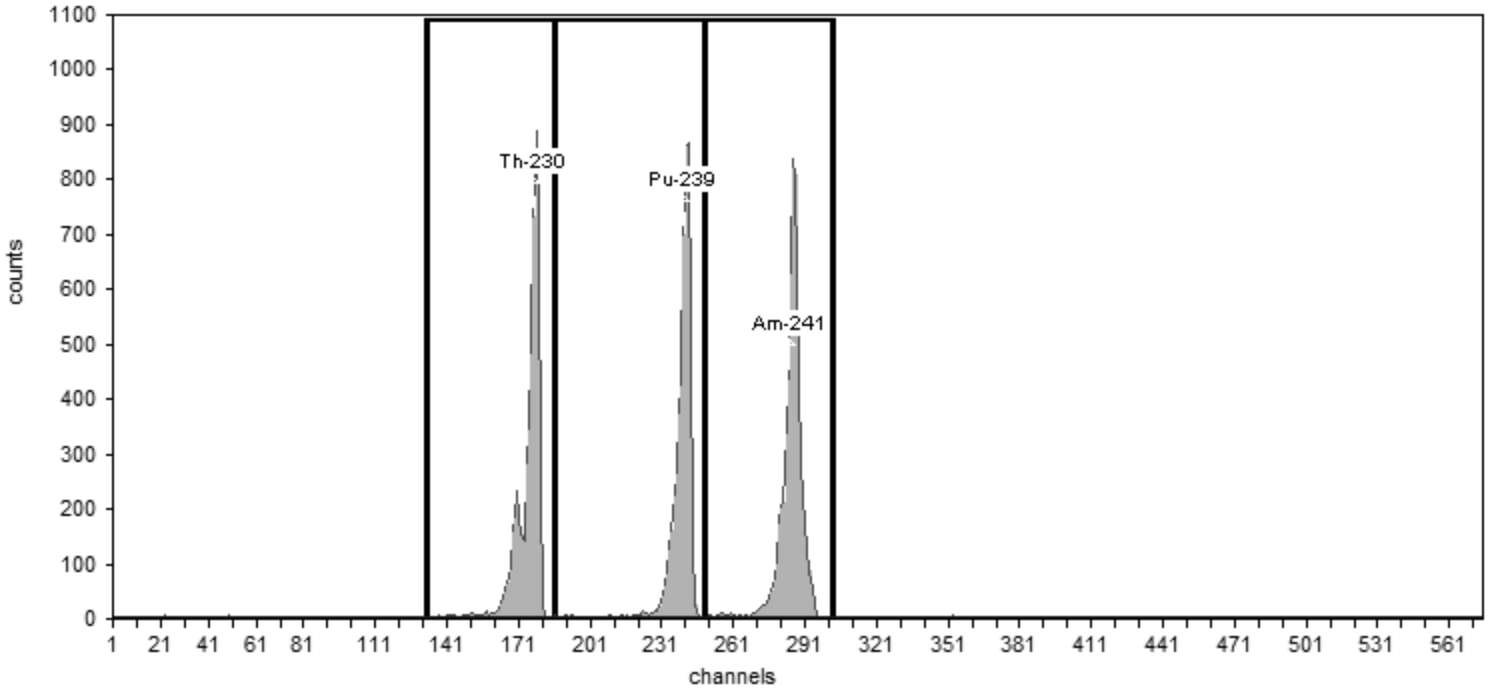
Detector: AV151 , SN: 50-05/R5
Acquisition Start Date: 10/26/2015 7:11:09PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9885;AV151-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.59% +/- 0.49% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.66	5,115.00	85.25
Pu-239	240	5,155.40	186	249	31.32	4,991.00	83.18
Am-241	284	5,485.70	249	303	31.95	5,449.00	90.82

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:30:25PM 11/23/2015

Calibration

Sample Name: ICV-9794;AV152-20151026
Description:
Detector: AV152

Analyst: 60040
Analysis Date: 10/26/2015 8:21:03PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82242-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

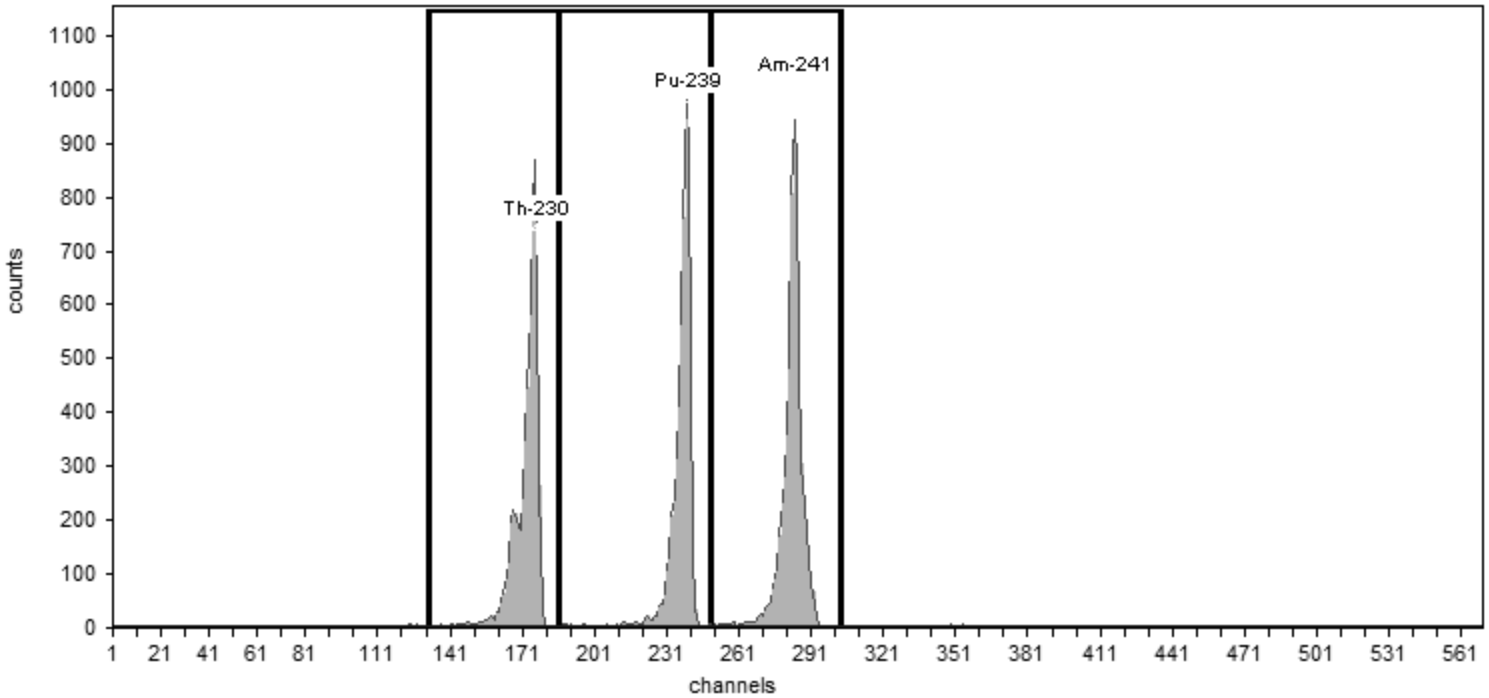
Detector: AV152 , SN: 50-05/R6
Acquisition Start Date: 10/26/2015 7:11:27PM

Live Time: 60.00 min.
Real Time: 60.01 min.

Efficiency Calibration Name: ICV-9794;AV152-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.17% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	34.77	5,721.00	95.35
Pu-239	240	5,155.40	186	249	33.01	5,586.00	93.10
Am-241	284	5,485.70	249	303	31.64	6,169.00	102.82

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:21:07PM 10/26/2015

Calibration

Sample Name: ICV-9795;AV153-20151026
Description:
Detector: AV153

Analyst: 60040
Analysis Date: 10/26/2015 8:21:06PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82243-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

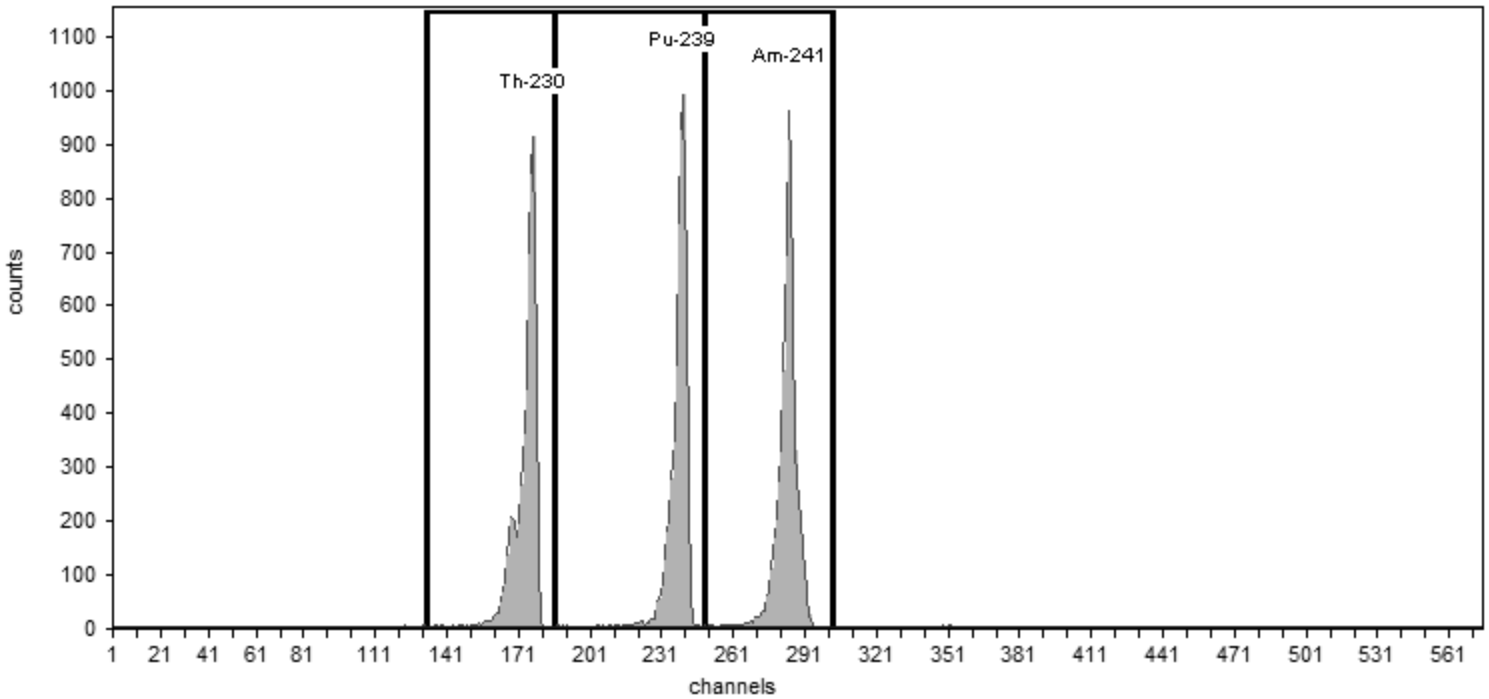
Detector: AV153 , SN: 54-011 Y6
Acquisition Start Date: 10/26/2015 7:11:41PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9795;AV153-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.46% +/- 0.46% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.33	5,618.00	93.63
Pu-239	240	5,155.40	186	249	32.54	5,595.00	93.25
Am-241	284	5,485.70	249	303	32.83	6,103.00	101.72

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:21:17PM 10/26/2015

Calibration

Sample Name: ICV-9792;AV156-20151026
Description:
Detector: AV156

Analyst: 60040
Analysis Date: 10/26/2015 8:21:16PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82240-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

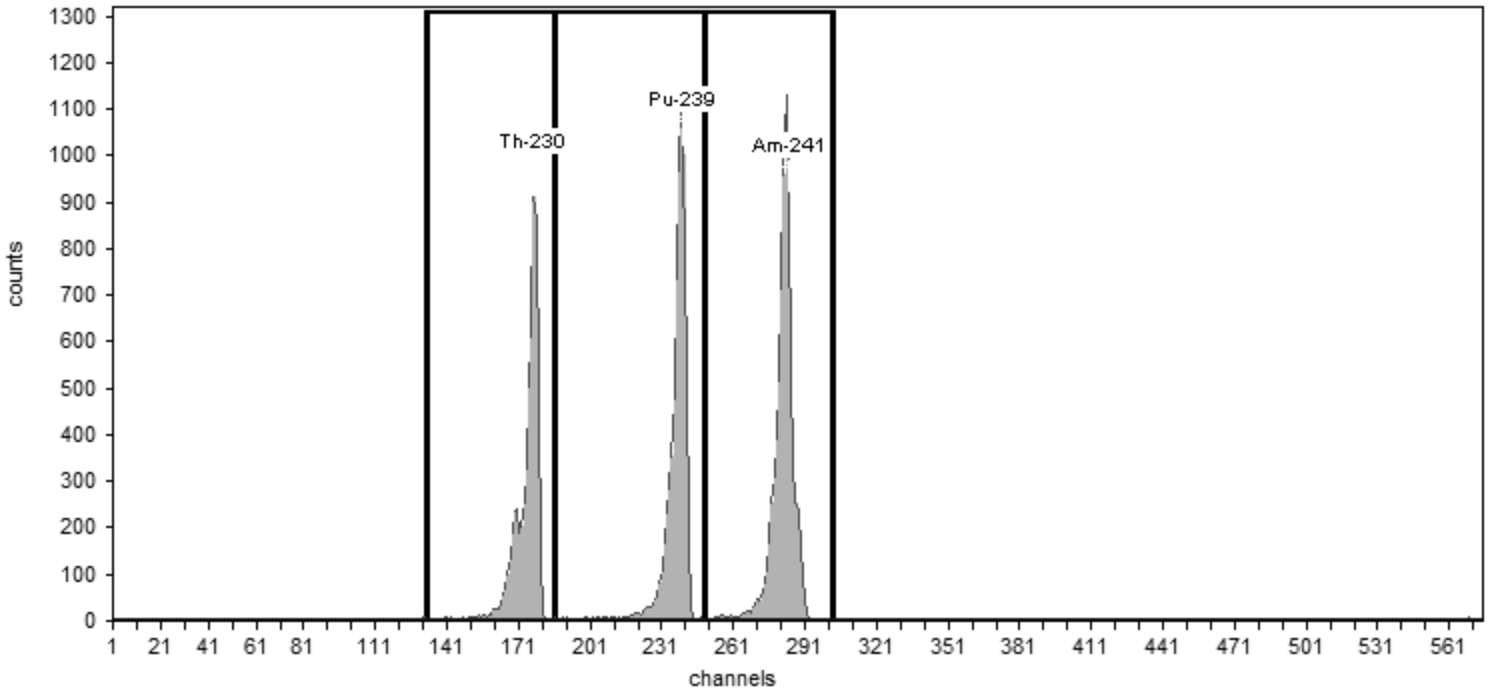
Detector: AV156 , SN: 49-155n4
Acquisition Start Date: 10/26/2015 7:12:28PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9792;AV156-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.31% +/- 0.40% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.33	5,665.00	94.42
Pu-239	240	5,155.40	186	249	34.53	6,598.00	109.97
Am-241	284	5,485.70	249	303	34.62	7,507.00	125.12

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:21:20PM 10/26/2015

Calibration

Sample Name: ICV-9793;AV157-20151026
Description:
Detector: AV157

Analyst: 60040
Analysis Date: 10/26/2015 8:21:20PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82241-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

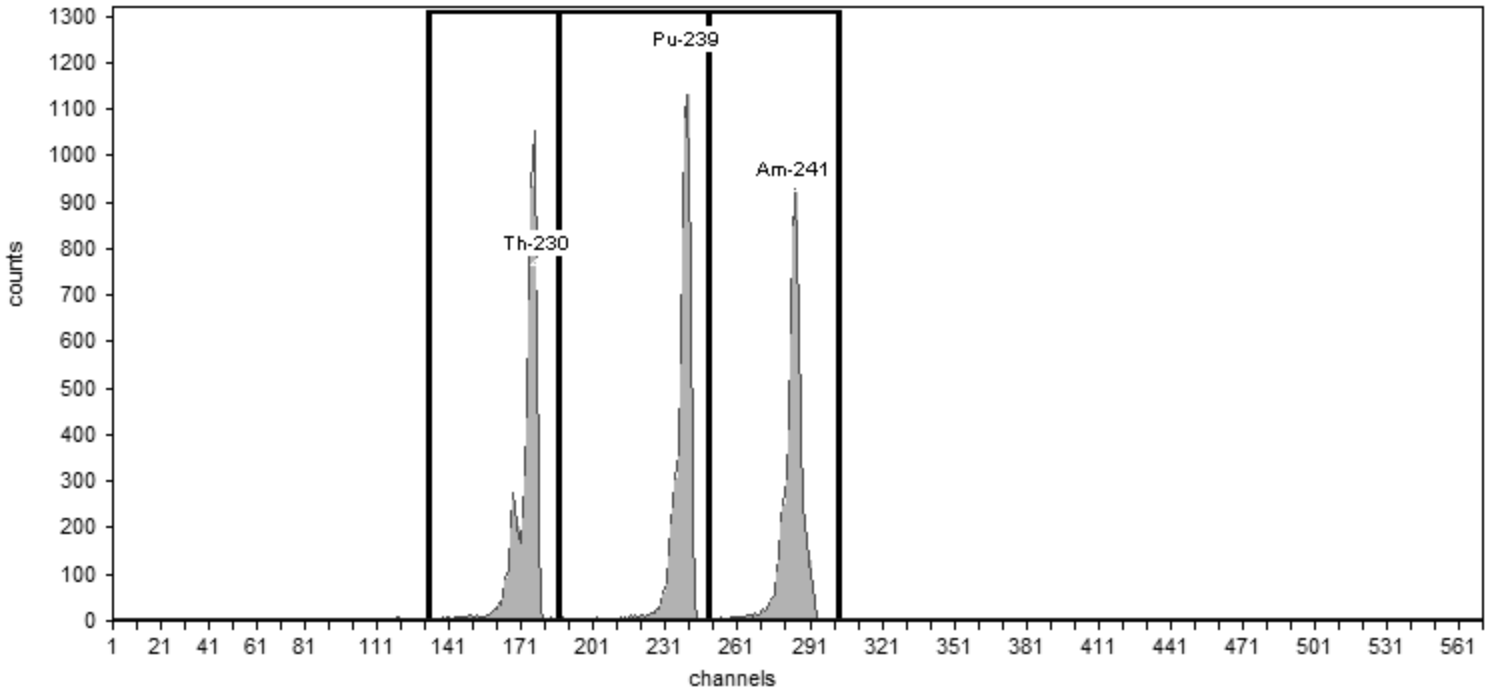
Detector: AV157 , SN: 50-05/II3
Acquisition Start Date: 10/26/2015 7:12:43PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9793;AV157-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.53% +/- 0.43% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.74	6,101.00	101.68
Pu-239	240	5,155.40	186	249	32.30	6,260.00	104.33
Am-241	284	5,485.70	249	303	33.51	6,031.00	100.52

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:13:56PM 10/27/2015

Calibration

Sample Name: ICV-8874;AV161-20151026
Description:
Detector: AV161

Analyst: 60040
Analysis Date: 10/27/2015 2:13:54PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82233-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

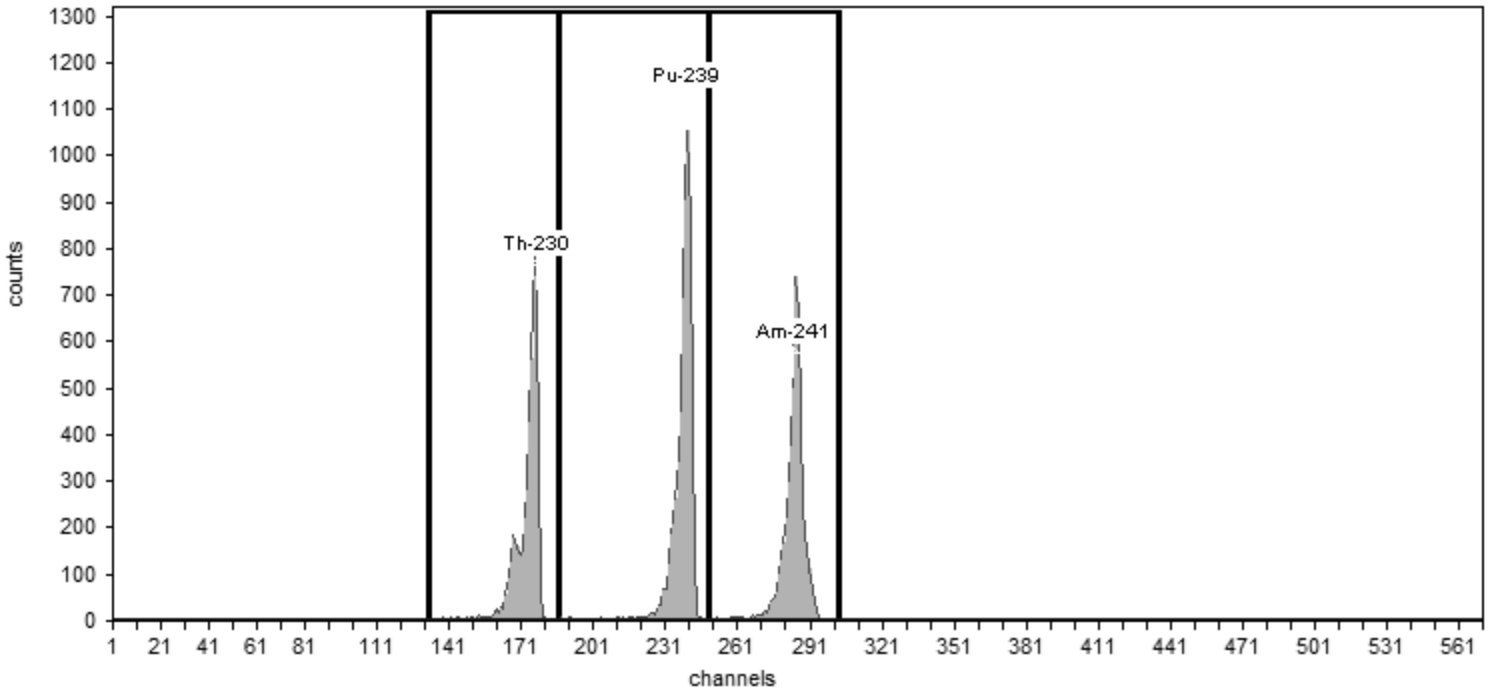
Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 10/26/2015 8:26:29PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-8874;AV161-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.38% +/- 0.50% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.07	4,593.00	76.55
Pu-239	240	5,155.40	186	249	33.01	5,962.00	99.37
Am-241	284	5,485.70	249	303	32.82	4,724.00	78.73

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:50:46PM 10/31/2015

Calibration

Sample Name: ICV-7107;AV176-20151031
Description:
Detector: AV176

Analyst: 60040
Analysis Date: 10/31/2015 3:50:45PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82232-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

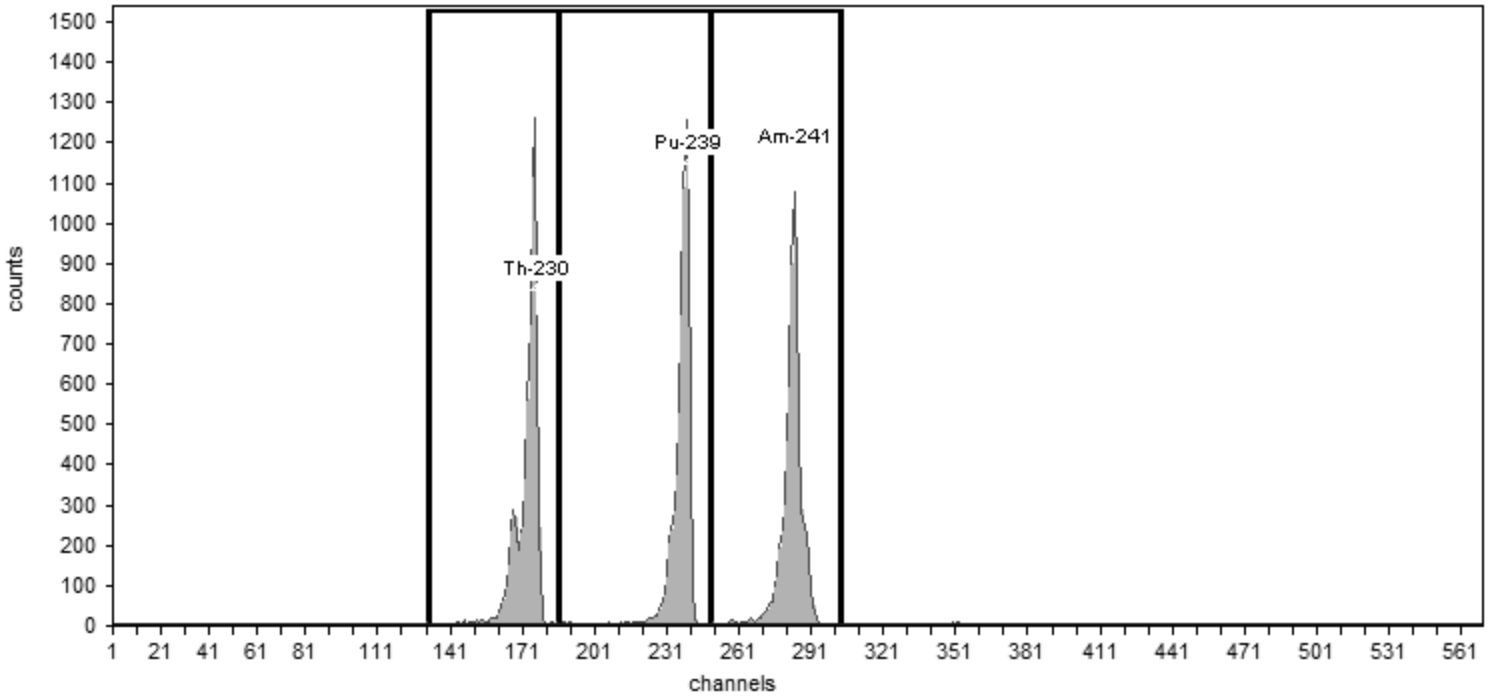
Detector: AV176 , SN: 50-117H2
Acquisition Start Date: 10/31/2015 2:14:13PM

Live Time: 60.00 min.
Real Time: 60.01 min.

Efficiency Calibration Name: ICV-7107;AV176-2015103

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.94% +/- 0.40% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.70	7,016.00	116.93
Pu-239	240	5,155.40	186	249	31.89	6,822.00	113.70
Am-241	284	5,485.70	249	303	32.07	6,708.00	111.80

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:24:06PM 11/1/2015

Calibration

Sample Name: ICV-9793;AV227-20151101
Description:
Detector: AV227

Analyst: 60040
Analysis Date: 11/1/2015 8:24:05PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82241-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

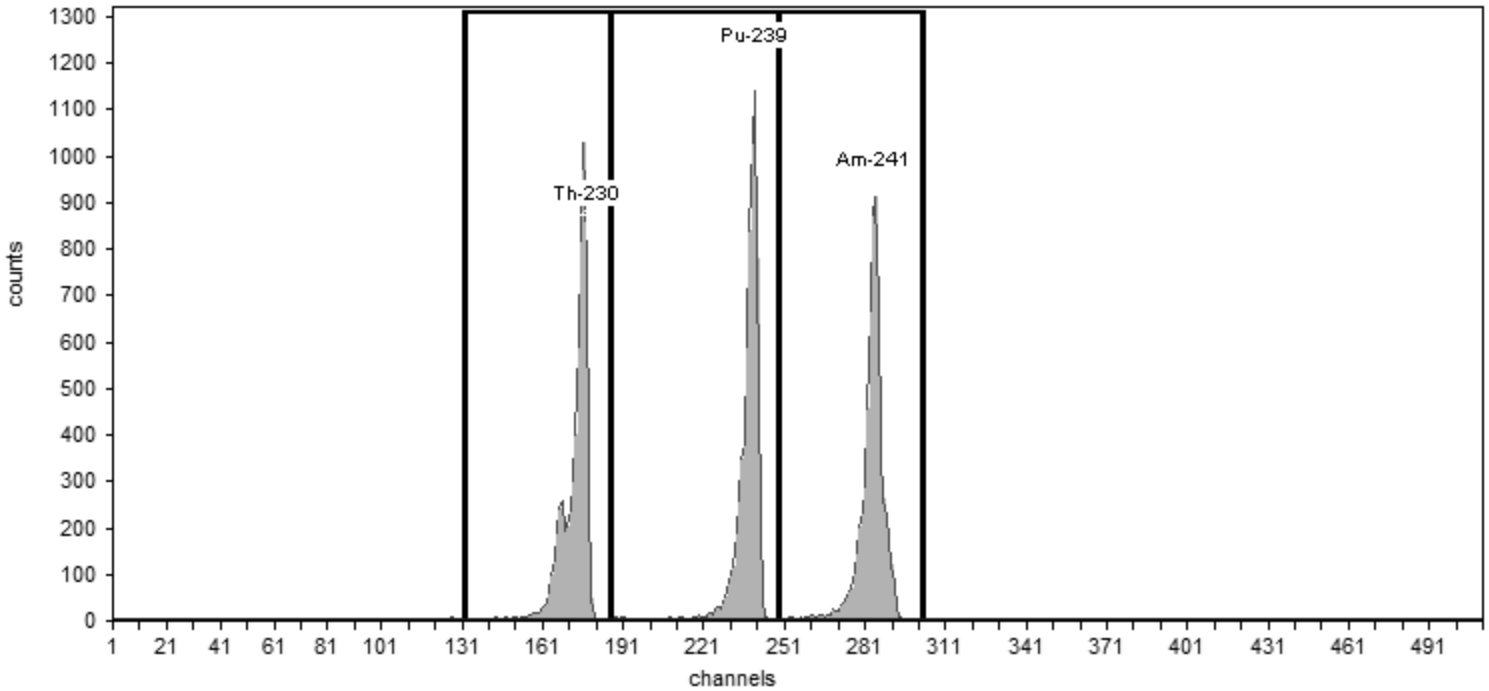
Detector: AV227 , SN: 50-120DD5
Acquisition Start Date: 11/1/2015 7:19:10PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9793;AV227-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.78% +/- 0.43% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.38	6,038.00	100.63
Pu-239	240	5,155.40	186	249	33.15	6,344.00	105.73
Am-241	284	5,485.70	249	303	35.12	6,194.00	103.23

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:33:13PM 11/23/2015

Calibration

Sample Name: ICV-8875;AV228-20151101
Description:
Detector: AV228

Analyst: 60040
Analysis Date: 11/1/2015 8:24:08PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82234-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

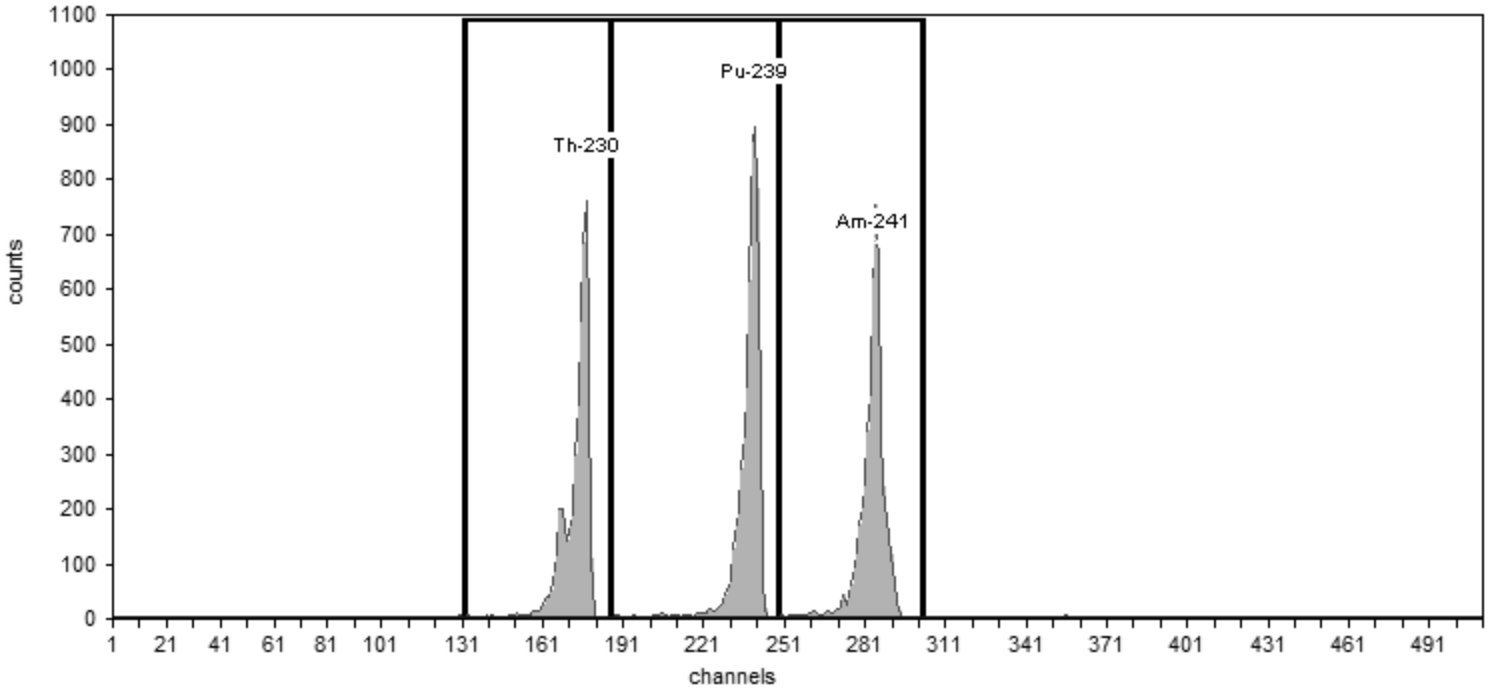
Detector: AV228 , SN: 51-005Q6
Acquisition Start Date: 11/1/2015 7:19:31PM

Live Time: 60.00 min.
Real Time: 60.01 min.

Efficiency Calibration Name: ICV-8875;AV228-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.59% +/- 0.46% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.43	4,764.00	79.40
Pu-239	240	5,155.40	186	249	35.20	5,508.00	91.80
Am-241	284	5,485.70	249	303	32.39	5,014.00	83.57

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:24:17PM 11/1/2015

Calibration

Sample Name: ICV-8876;AV230-20151101
Description:
Detector: AV230

Analyst: 60040
Analysis Date: 11/1/2015 8:24:16PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82235-334
Prepared by: Analytics
Description:

Certification Date: 6/4/2010 12:00:00PM

Acquisition

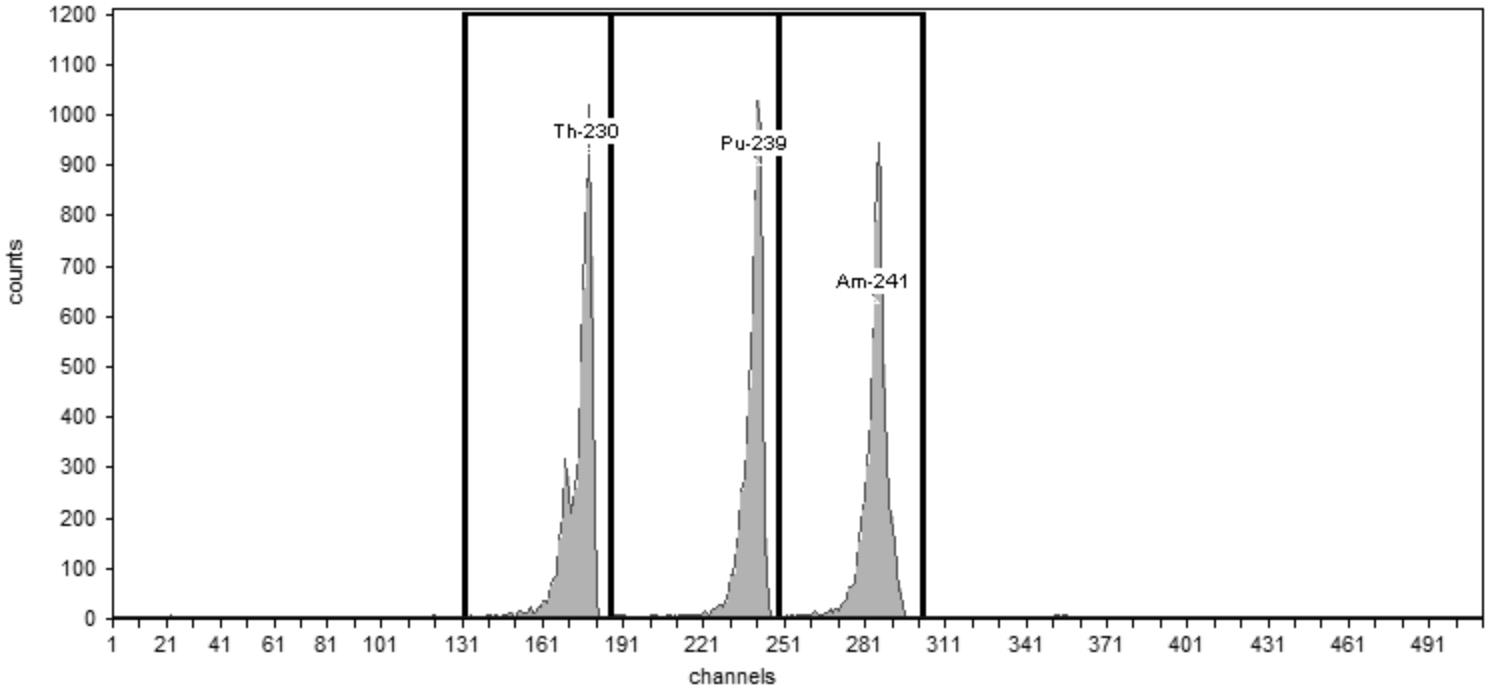
Detector: AV230 , SN: 49-045J5
Acquisition Start Date: 11/1/2015 7:19:55PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-8876;AV230-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.90% +/- 0.40% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.97	6,467.00	107.78
Pu-239	240	5,155.40	186	249	35.00	6,255.00	104.25
Am-241	284	5,485.70	249	303	35.07	6,527.00	108.78

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:16:22PM 11/1/2015

Calibration

Sample Name: ICV-9885;AV235-20151101
Description:
Detector: AV235

Analyst: 60040
Analysis Date: 11/1/2015 11:16:20PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82246-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

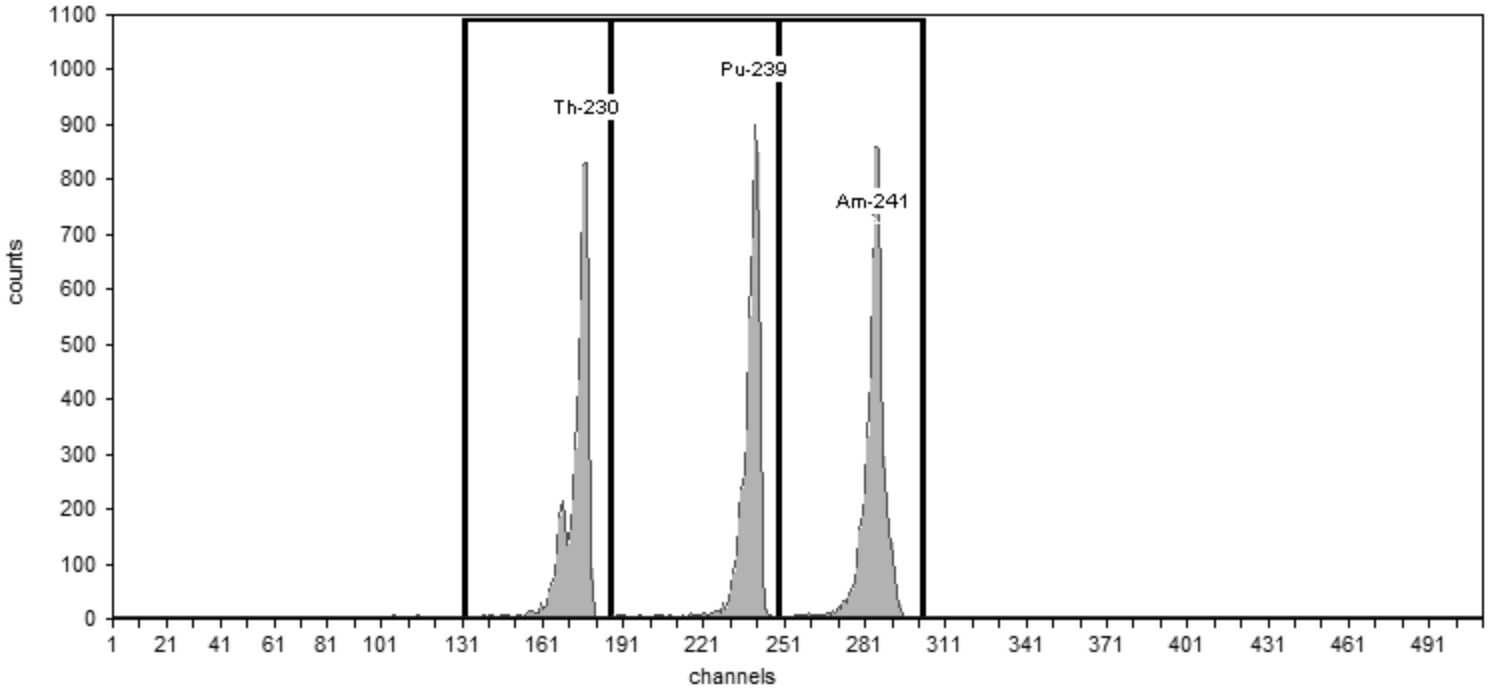
Detector: AV235 , SN: 51-005Q5
Acquisition Start Date: 11/1/2015 8:30:02PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9885;AV235-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.78% +/- 0.49% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.30	5,105.00	85.08
Pu-239	240	5,155.40	186	249	33.27	4,989.00	83.15
Am-241	284	5,485.70	249	303	32.76	5,571.00	92.85

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:05:18PM 11/7/2015

Calibration

Sample Name: ICV-9794;AV236-20151105a
Description:
Detector: AV236

Analyst: 60040
Analysis Date: 11/7/2015 2:05:17PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82242-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

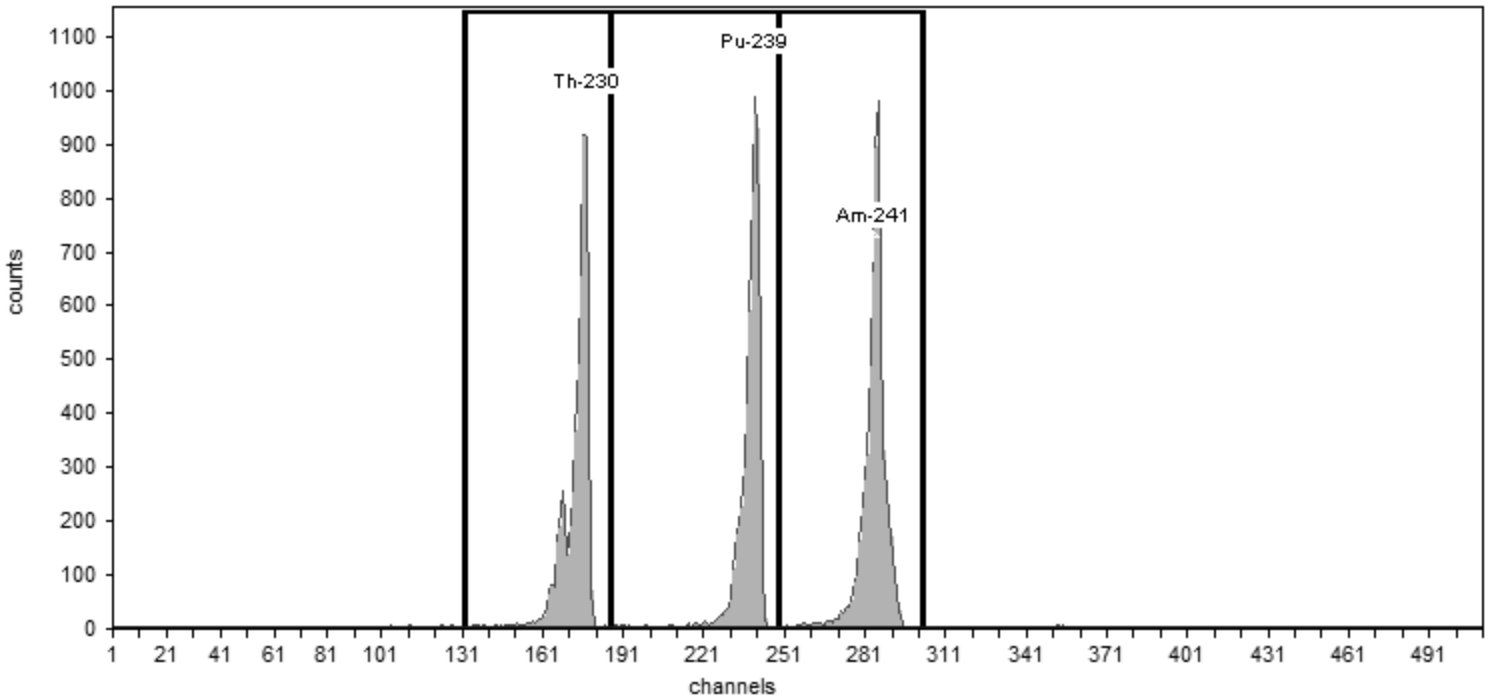
Detector: AV236 , SN: 51-005P3
Acquisition Start Date: 11/5/2015 6:22:59PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9794;AV236-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.37% +/- 0.42% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.30	5,696.00	94.93
Pu-239	240	5,155.40	186	249	34.39	5,670.00	94.50
Am-241	284	5,485.70	249	303	32.72	6,259.00	104.32

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:33:25PM 11/23/2015

Calibration

Sample Name: ICV-9795;AV237-20151101
Description:
Detector: AV237

Analyst: 60040
Analysis Date: 11/1/2015 11:16:28PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82243-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

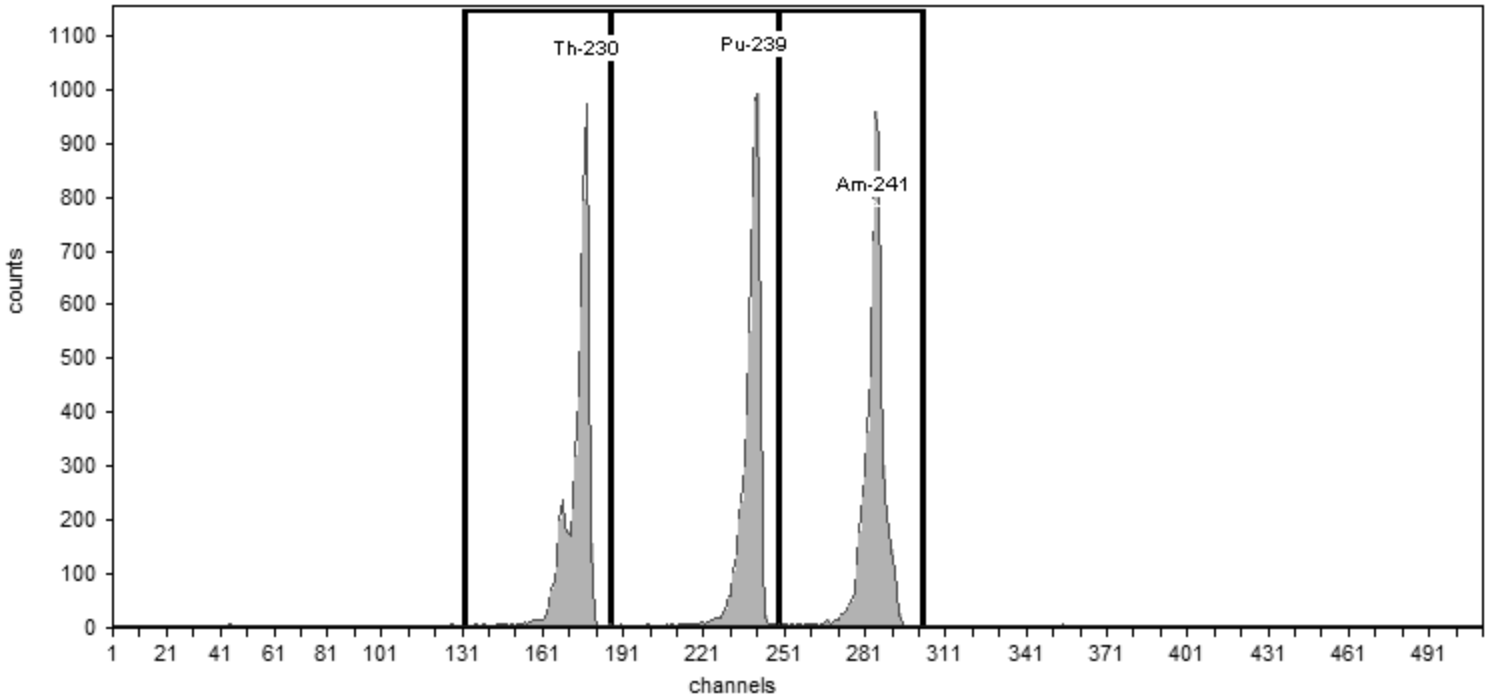
Detector: AV237 , SN: 50-120DD7
Acquisition Start Date: 11/1/2015 8:31:02PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9795;AV237-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.39% +/- 0.46% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.15	5,513.00	91.88
Pu-239	240	5,155.40	186	249	33.06	5,665.00	94.42
Am-241	284	5,485.70	249	303	30.78	6,092.00	101.53

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:16:32PM 11/1/2015

Calibration

Sample Name: ICV-9817;AV238-20151101
Description:
Detector: AV238

Analyst: 60040
Analysis Date: 11/1/2015 11:16:31PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82244-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

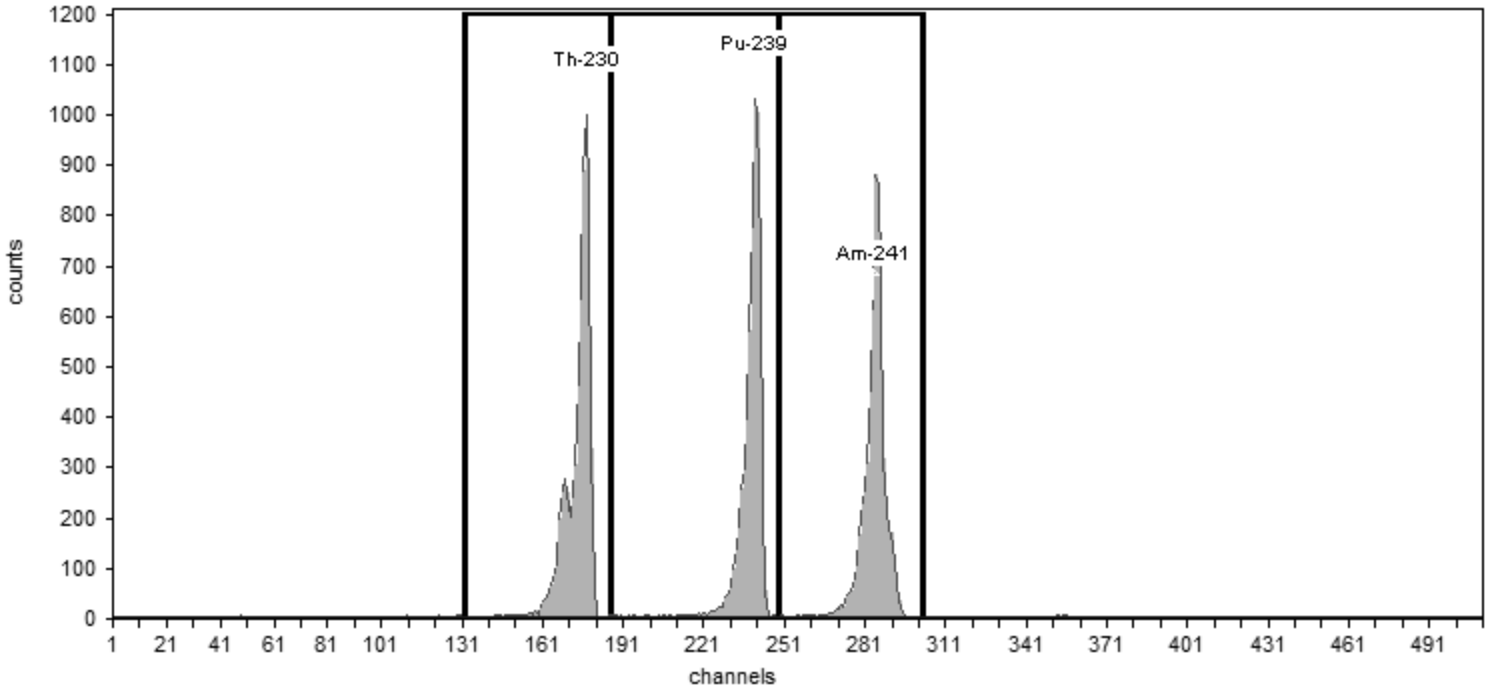
Detector: AV238 , SN: 51-005P7
Acquisition Start Date: 11/1/2015 8:31:15PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9817;AV238-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.51% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	33.17	6,400.00	106.67
Pu-239	240	5,155.40	186	249	35.28	6,070.00	101.17
Am-241	284	5,485.70	249	303	35.24	5,990.00	99.83

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:16:40PM 11/1/2015

Calibration

Sample Name: ICV-9792;AV240-20151101
Description:
Detector: AV240

Analyst: 60040
Analysis Date: 11/1/2015 11:16:39PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82240-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

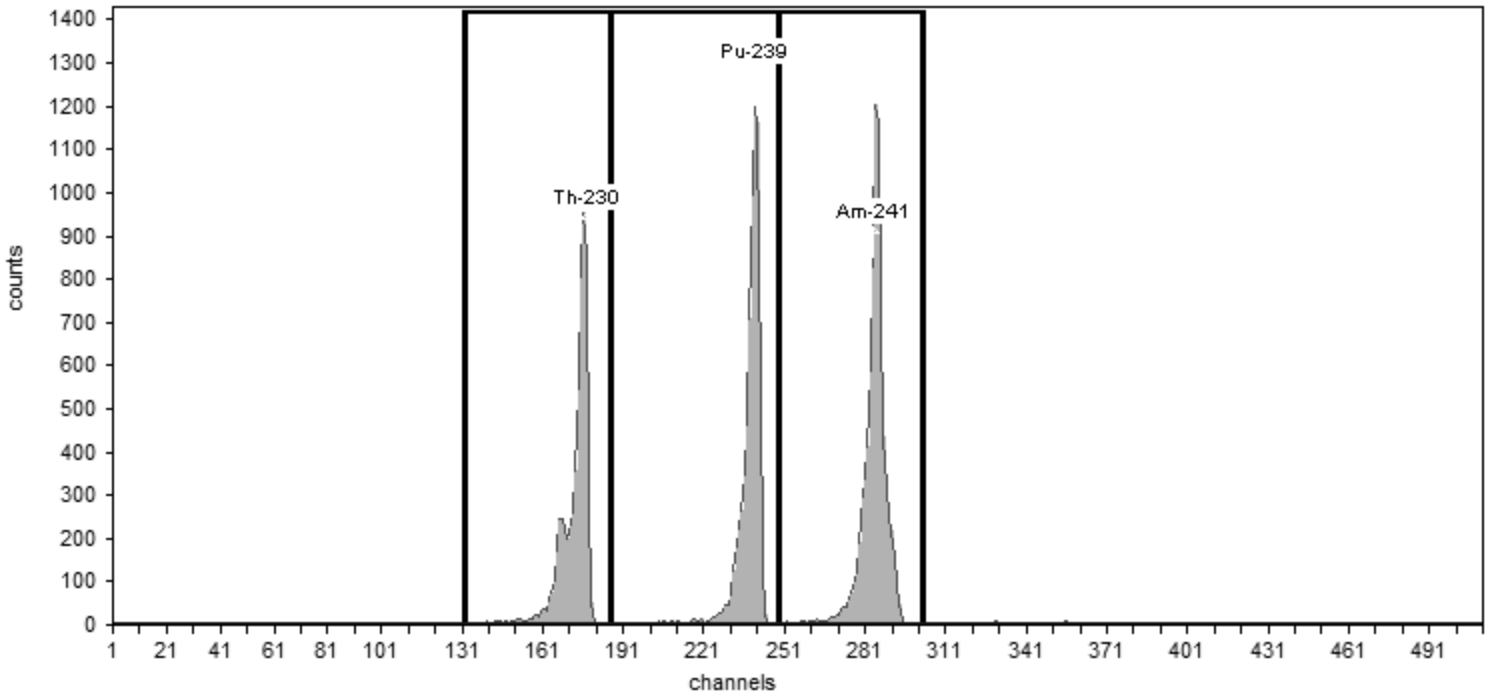
Detector: AV240 , SN: 51-005Q1
Acquisition Start Date: 11/1/2015 8:31:50PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9792;AV240-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.11% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.15	5,861.00	97.68
Pu-239	240	5,155.40	186	249	32.46	6,691.00	111.52
Am-241	284	5,485.70	249	303	32.67	7,840.00	130.67

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:16:56PM 11/1/2015

Calibration

Sample Name: ICV-8876;AV244-20151101a
Description:
Detector: AV244

Analyst: 60040
Analysis Date: 11/1/2015 11:16:54PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82235-334
Prepared by: Analytics
Description:

Certification Date: 6/4/2010 12:00:00PM

Acquisition

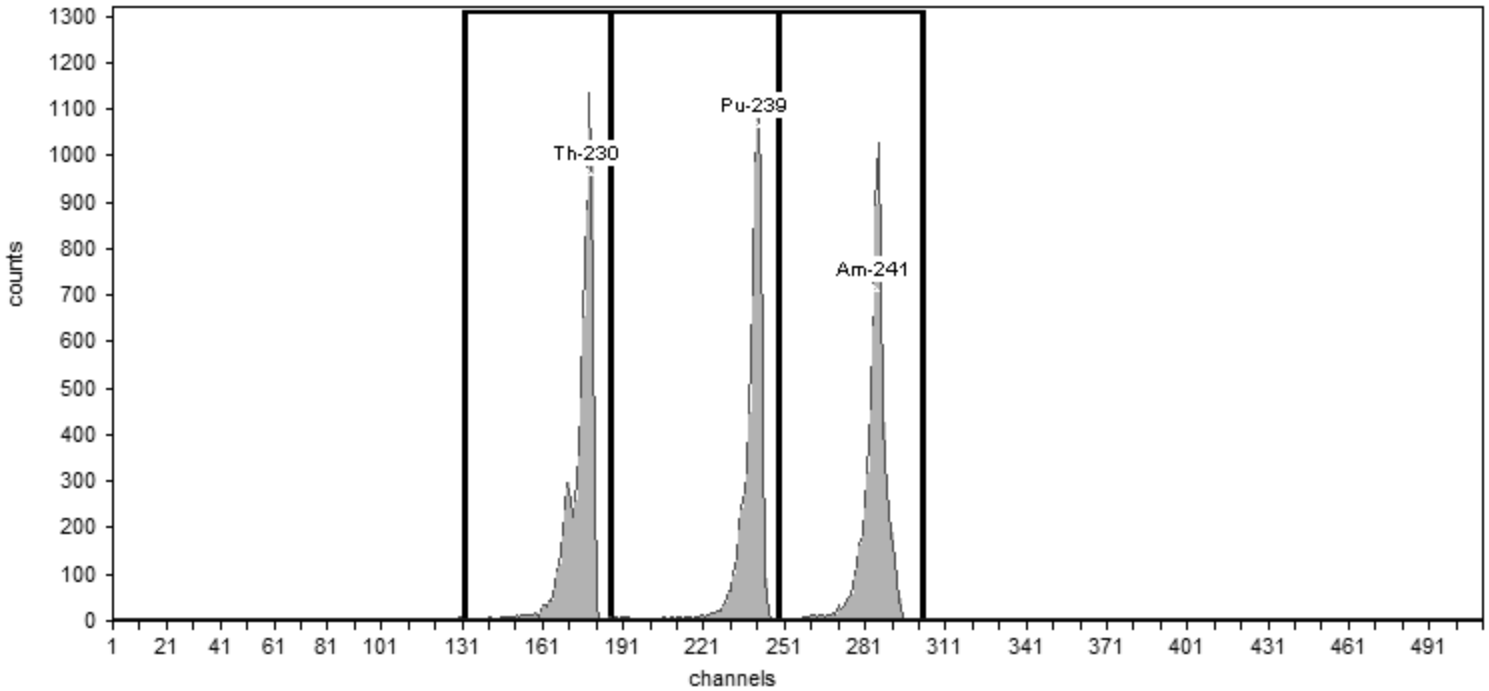
Detector: AV244 , SN: 51-005EE3
Acquisition Start Date: 11/1/2015 8:34:52PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-8876;AV244-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.65% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.67	6,855.00	114.25
Pu-239	240	5,155.40	186	249	31.95	6,375.00	106.25
Am-241	284	5,485.70	249	303	32.85	6,619.00	110.32

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:52:52PM 11/5/2015

Calibration

Sample Name: ICV-8874;AV245-20151101a
Description:
Detector: AV245

Analyst: 60040
Analysis Date: 11/5/2015 4:52:51PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82233-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

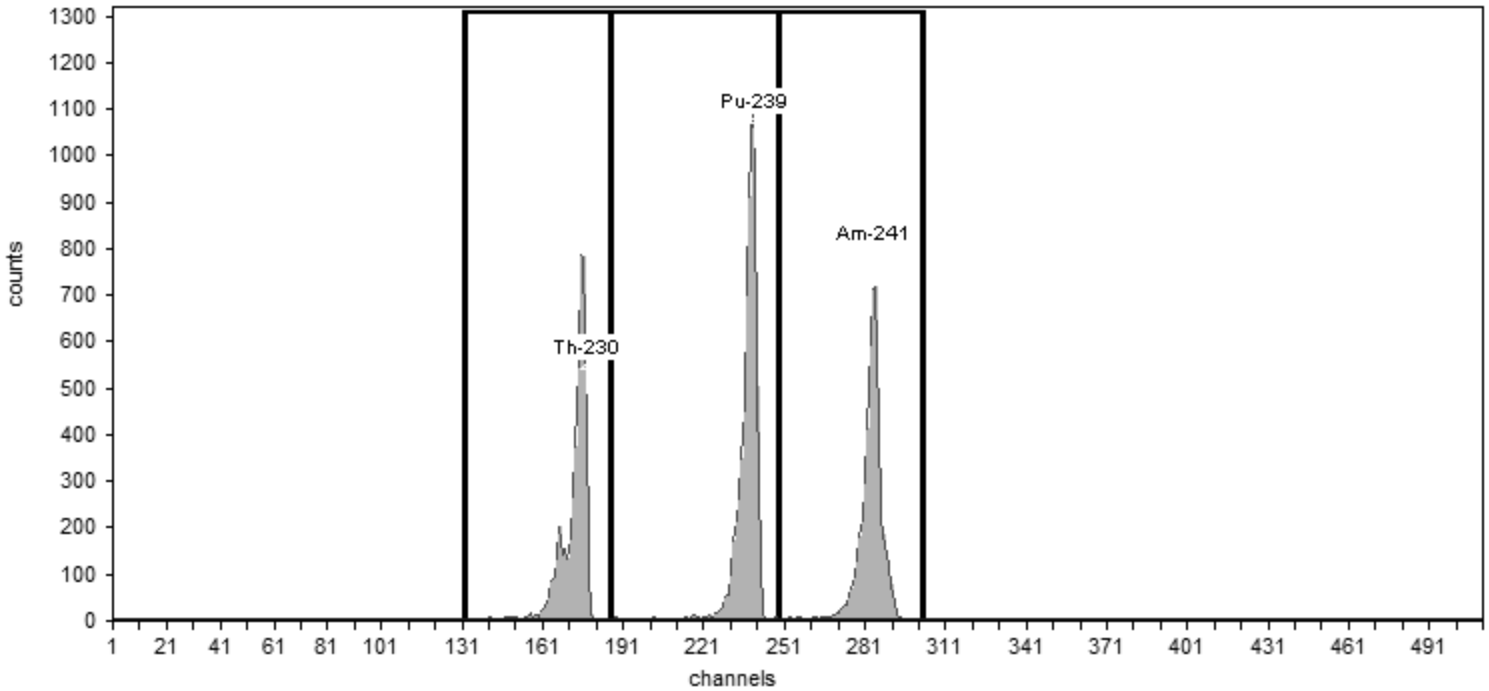
Detector: AV245 , SN: 51-005EE2
Acquisition Start Date: 11/1/2015 11:26:25PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-8874;AV245-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.96% +/- 0.50% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.51	4,645.00	77.42
Pu-239	240	5,155.40	186	249	32.89	6,155.00	102.58
Am-241	284	5,485.70	249	303	35.78	4,820.00	80.33

Monthly Calibration Verifications

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:00AM 7/27/2016

Calibration

Sample Name: CCV-8875;AV149-20160727a
Description:
Detector: AV149

Analyst: 60040
Analysis Date: 7/27/2016 8:26:59AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82234-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

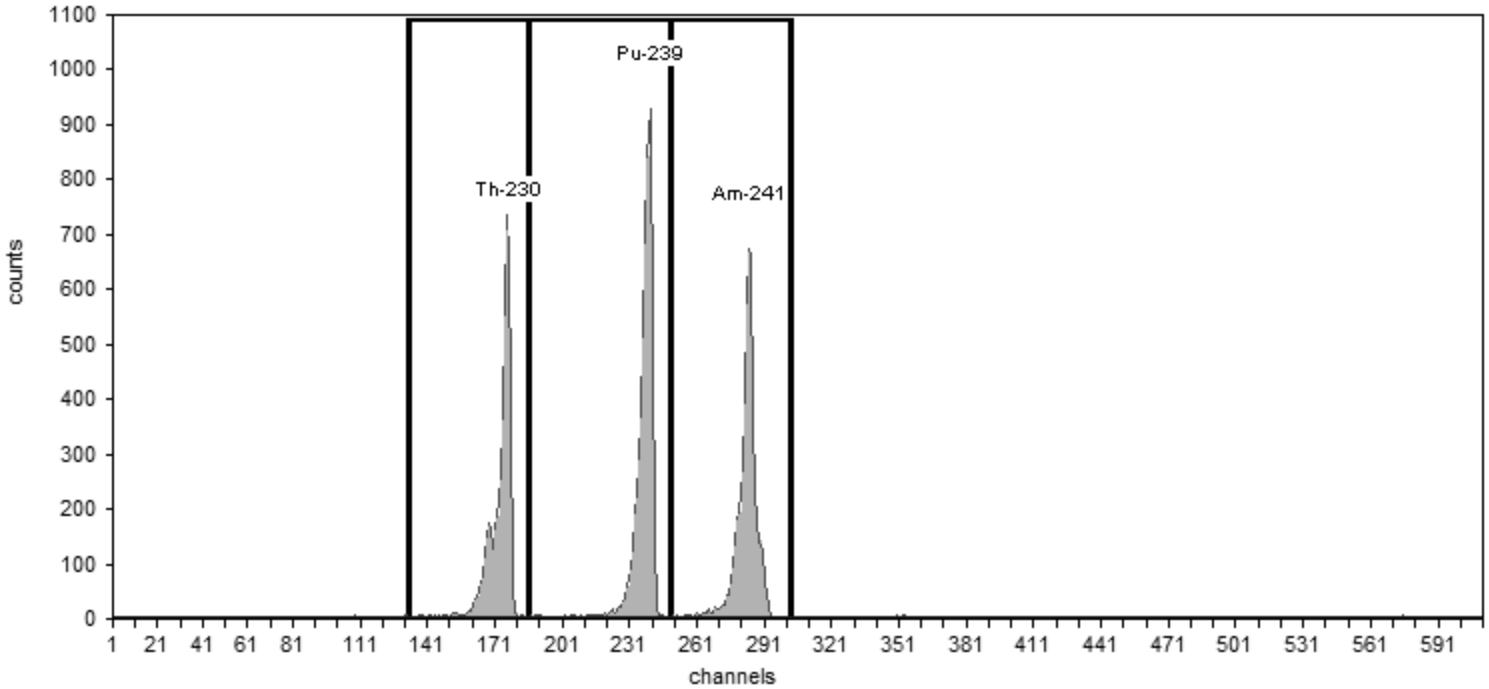
Detector: AV149 , SN: 50-05/R3
Acquisition Start Date: 7/27/2016 7:26:53AM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-8875;AV149-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 22.92% +/- 0.44% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.75	4,412.00	73.53
Pu-239	240	5,155.40	186	249	33.33	5,193.00	86.55
Am-241	284	5,485.70	249	303	34.80	4,648.00	77.47

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:30:30AM 7/26/2016

Calibration

Sample Name: CCV-8876;AV150-20160726
Description:
Detector: AV150

Analyst: 60040
Analysis Date: 7/26/2016 10:30:29AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82235-334
Prepared by: Analytics
Description:

Certification Date: 6/4/2010 12:00:00PM

Acquisition

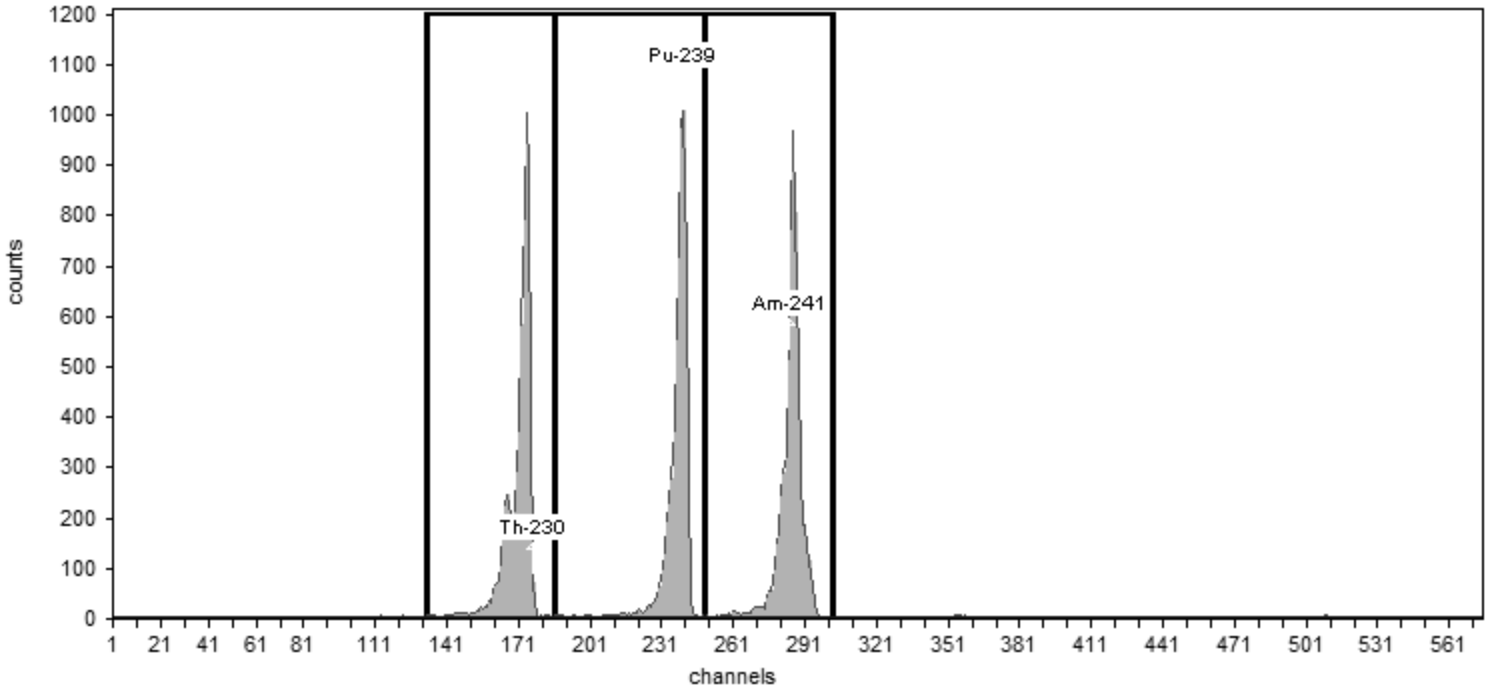
Detector: AV150 , SN: 50-05/R4
Acquisition Start Date: 7/26/2016 9:13:29AM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-8876;AV150-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 23.66% +/- 0.39% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	31.20	6,167.00	102.78
Pu-239	240	5,155.40	186	249	35.53	5,952.00	99.20
Am-241	284	5,485.70	249	303	31.57	6,168.00	102.80

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:35:49AM 7/26/2016

Calibration

Sample Name: CCV-8877;AV151-20160726a
Description:
Detector: AV151

Analyst: 60040
Analysis Date: 7/26/2016 10:35:47AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82236-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

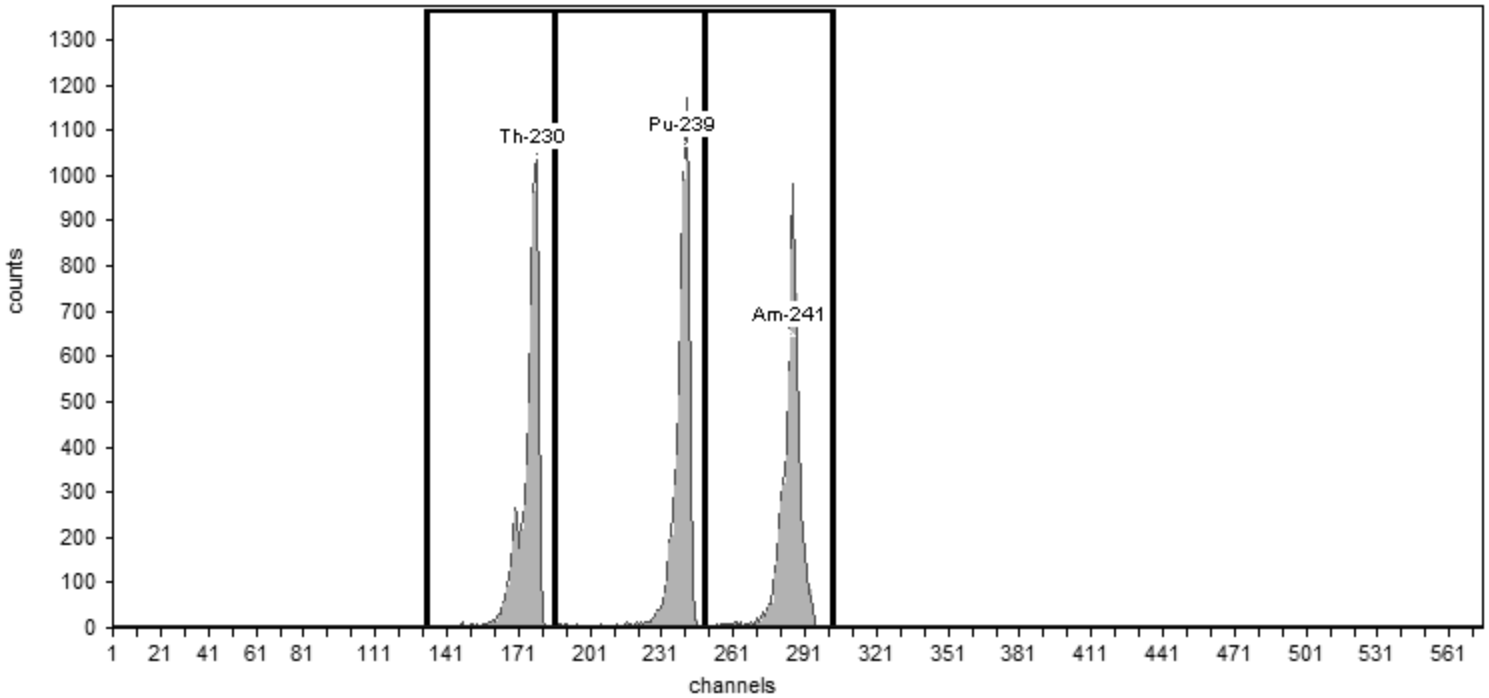
Detector: AV151 , SN: 50-05/R5
Acquisition Start Date: 7/26/2016 9:35:43AM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-8877;AV151-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 25.29% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.47	6,210.00	103.50
Pu-239	240	5,155.40	186	249	31.89	6,352.00	105.87
Am-241	284	5,485.70	249	303	31.95	6,229.00	103.82

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:36:03AM 7/26/2016

Calibration

Sample Name: CCV-9520;AV152-20160726a
Description:
Detector: AV152

Analyst: 60040
Analysis Date: 7/26/2016 10:36:02AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82237-334
Prepared by: Analytics
Description:

Certification Date: 6/1/2010 12:00:00PM

Acquisition

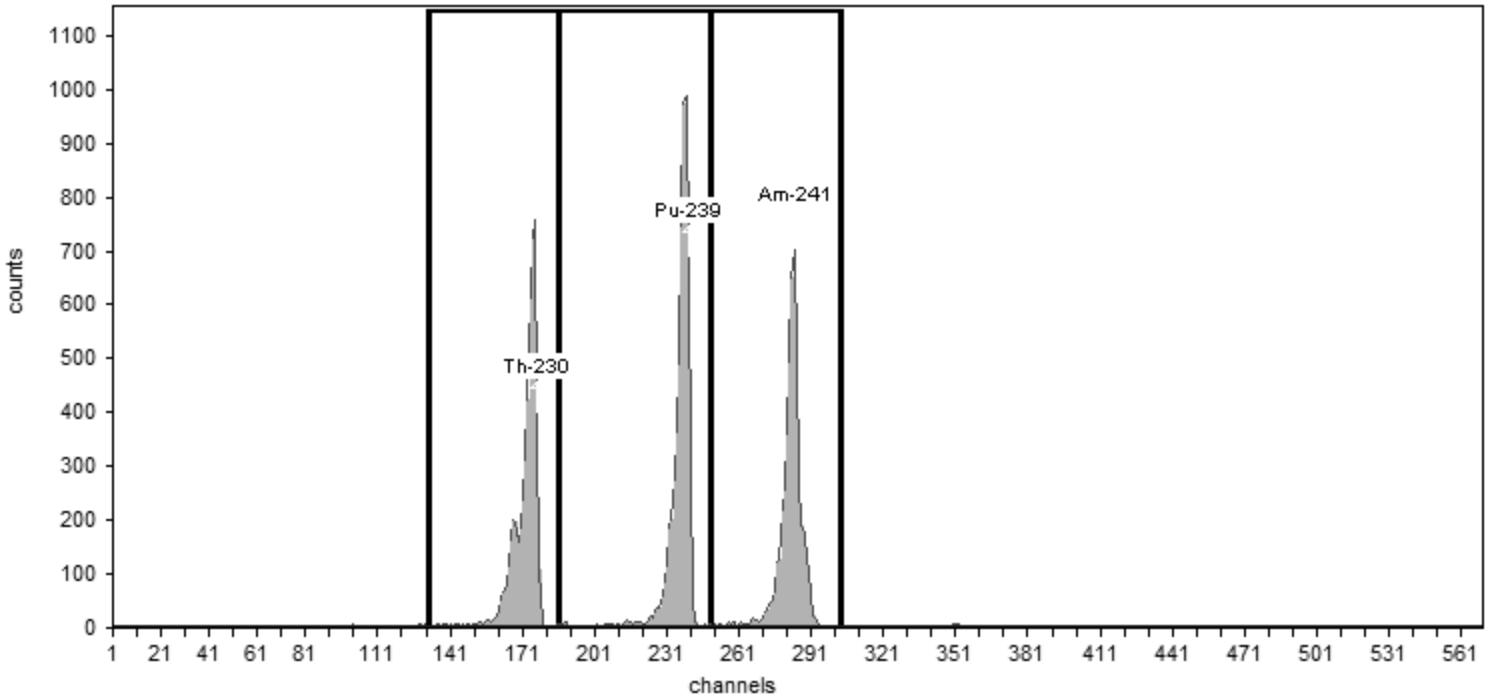
Detector: AV152 , SN: 50-05/R6
Acquisition Start Date: 7/26/2016 9:35:59AM

Live Time: 60.00 min.
Real Time: 60.01 min.

Efficiency Calibration Name: CCV-9520;AV152-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 23.94% +/- 0.45% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.76	4,909.00	81.82
Pu-239	240	5,155.40	186	249	33.12	5,750.00	95.83
Am-241	284	5,485.70	249	303	35.36	4,718.00	78.63

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:30:36AM 7/26/2016

Calibration

Sample Name: CCV-9792;AV153-20160726
Description:
Detector: AV153

Analyst: 60040
Analysis Date: 7/26/2016 10:30:35AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82240-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

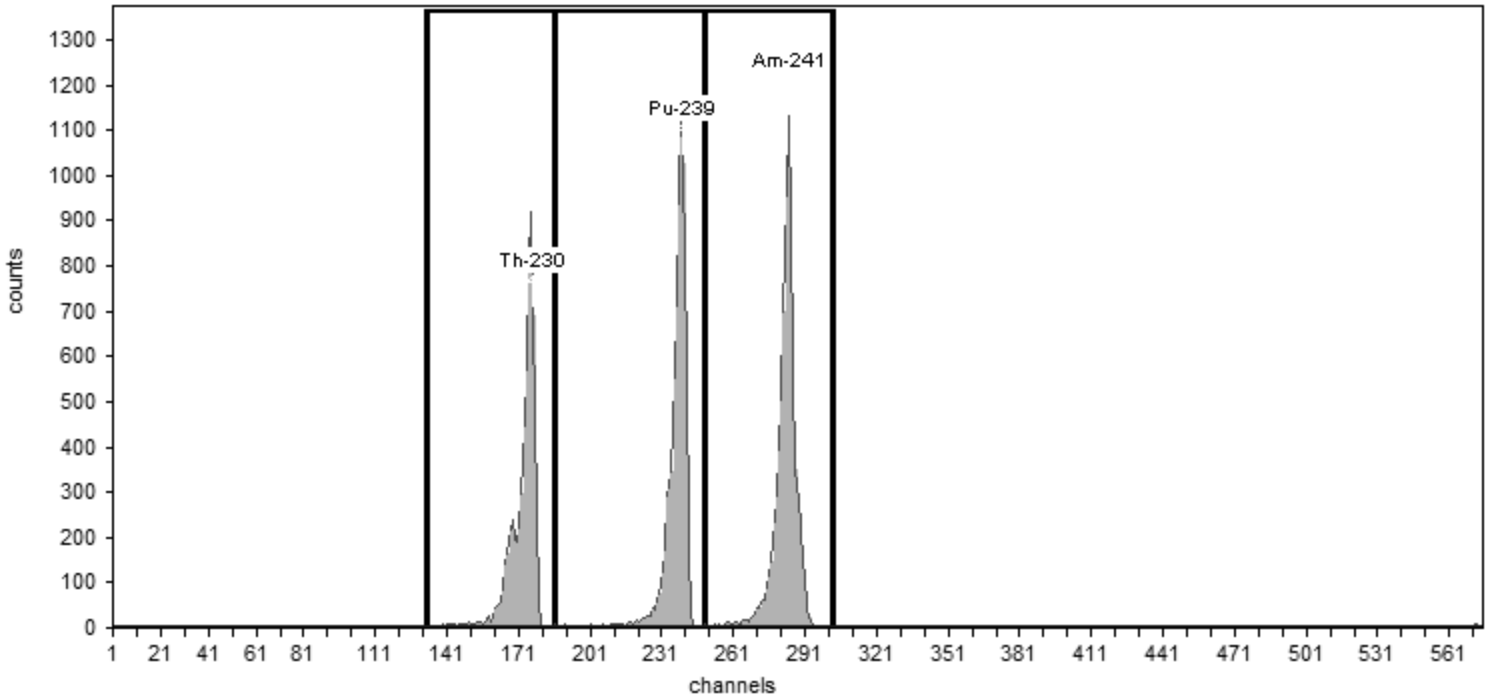
Detector: AV153 , SN: 54-011 Y6
Acquisition Start Date: 7/26/2016 9:14:22AM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9792;AV153-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.78% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.75	5,770.00	96.17
Pu-239	240	5,155.40	186	249	36.50	6,806.00	113.43
Am-241	284	5,485.70	249	303	34.74	7,555.00	125.92

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:30:42AM 7/26/2016

Calibration

Sample Name: CCV-9795;AV156-20160726
Description:
Detector: AV156

Analyst: 60040
Analysis Date: 7/26/2016 10:30:41AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82243-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

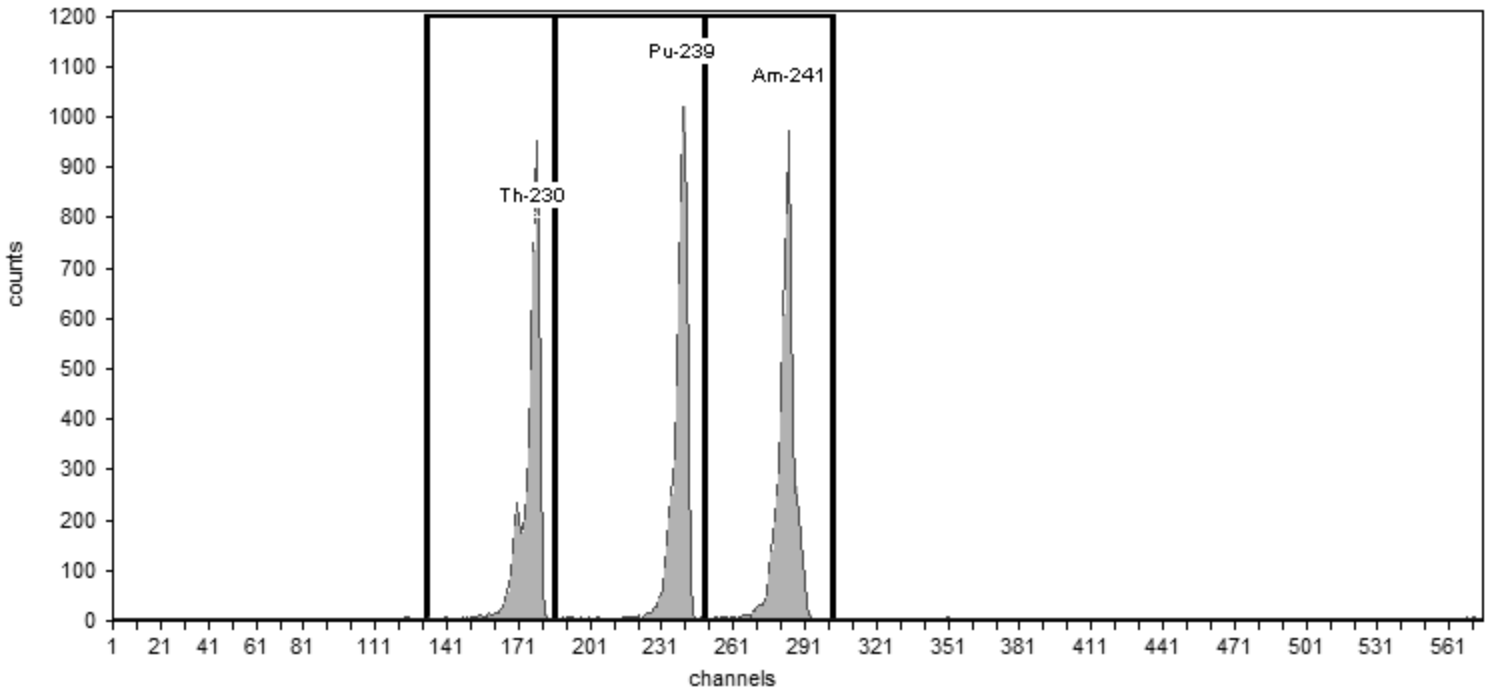
Detector: AV156 , SN: 49-155n4
Acquisition Start Date: 7/26/2016 9:14:52AM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9795;AV156-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.90% +/- 0.46% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.67	5,433.00	90.55
Pu-239	240	5,155.40	186	249	33.25	5,549.00	92.48
Am-241	284	5,485.70	249	303	31.81	5,959.00	99.32

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
12:00:52PM 7/27/2016

Calibration

Sample Name: CCV-9817;AV157-20160726
Description:
Detector: AV157

Analyst: 60040
Analysis Date: 7/26/2016 10:30:47AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82244-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

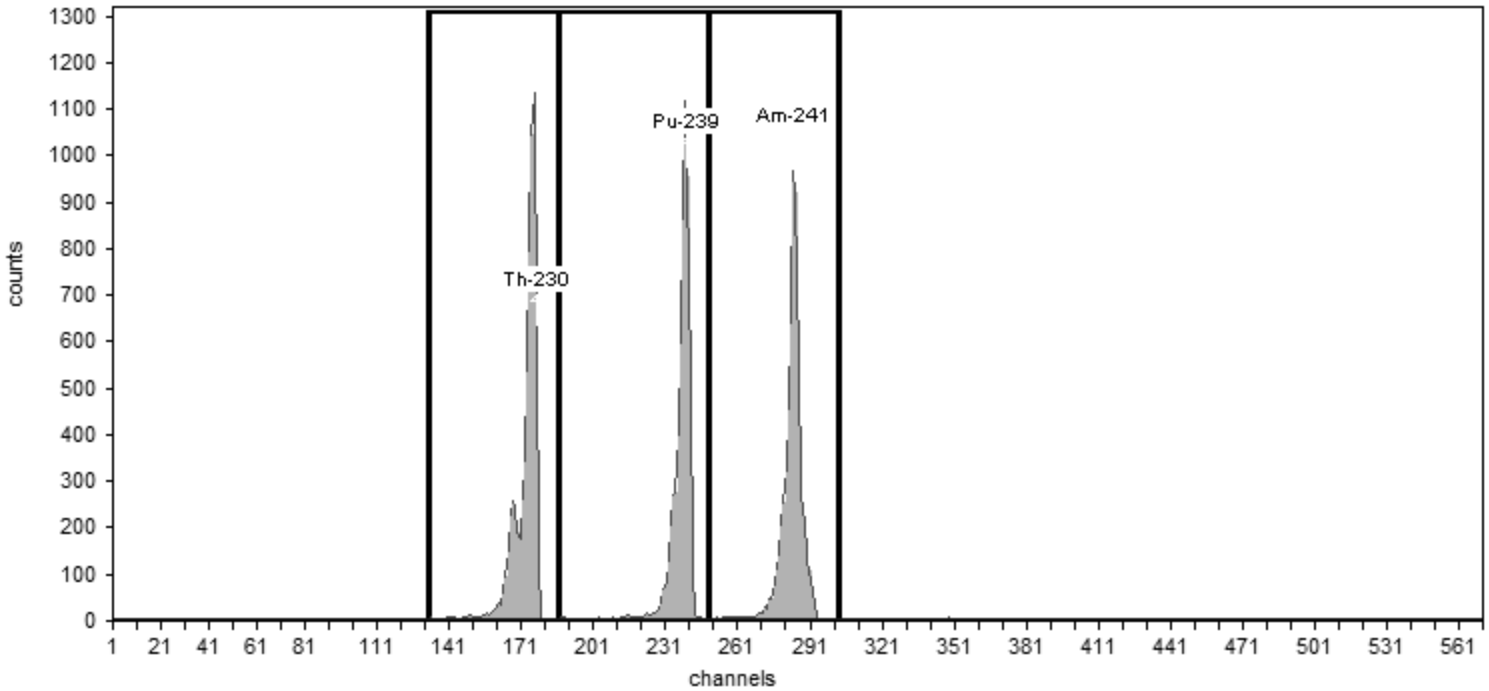
Detector: AV157 , SN: 50-05/II3
Acquisition Start Date: 7/26/2016 9:15:12AM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9817;AV157-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.21% +/- 0.40% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.54	6,466.00	107.77
Pu-239	240	5,155.40	186	249	30.34	5,804.00	96.73
Am-241	284	5,485.70	249	303	30.52	5,949.00	99.15

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:30:12AM 7/26/2016

Calibration

Sample Name: CCV-7107;AV161-20160726
Description:
Detector: AV161

Analyst: 60040
Analysis Date: 7/26/2016 10:30:10AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82232-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

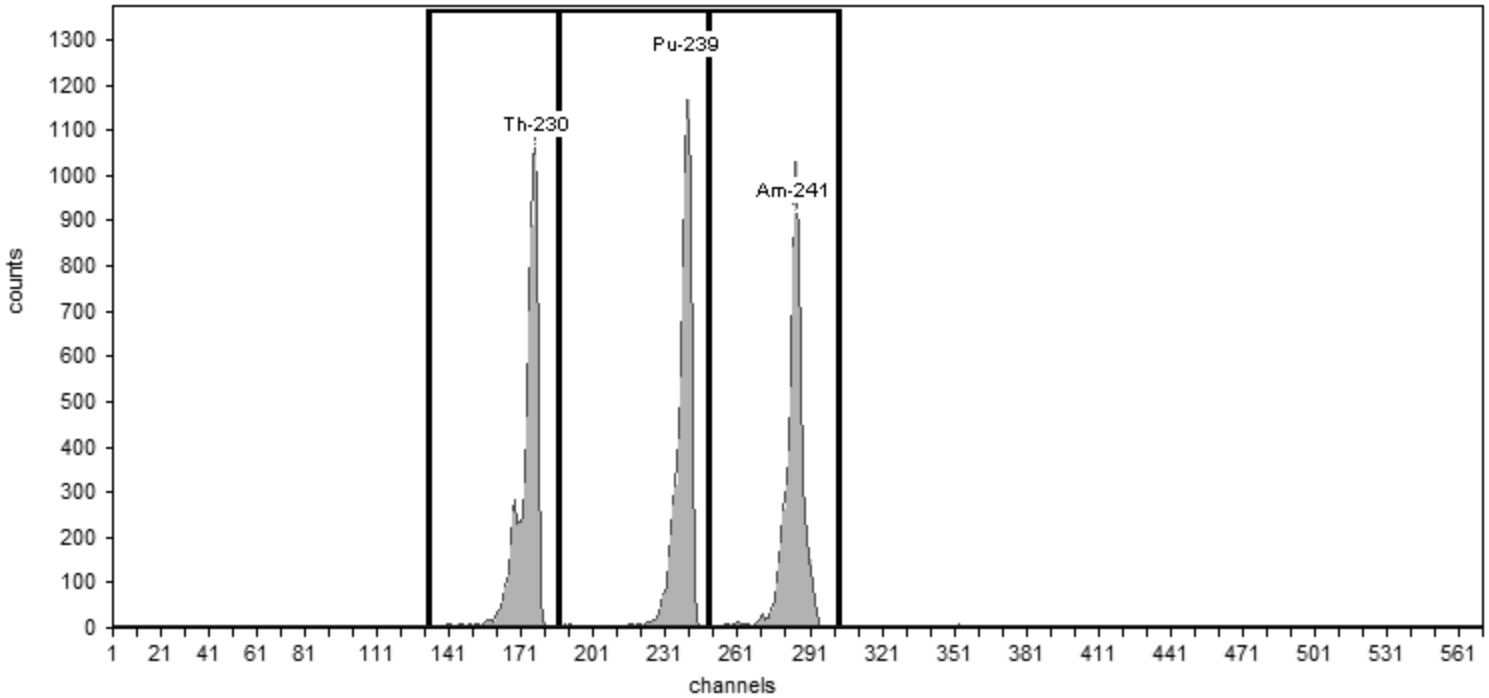
Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 7/26/2016 9:12:36AM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-7107;AV161-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 25.60% +/- 0.40% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	33.13	6,896.00	114.93
Pu-239	240	5,155.40	186	249	34.37	6,786.00	113.10
Am-241	284	5,485.70	249	303	32.27	6,595.00	109.92

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:19:42PM 7/26/2016

Calibration

Sample Name: CCV-8874;AV176-20160726
Description:
Detector: AV176

Analyst: 60040
Analysis Date: 7/26/2016 1:19:41PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82233-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

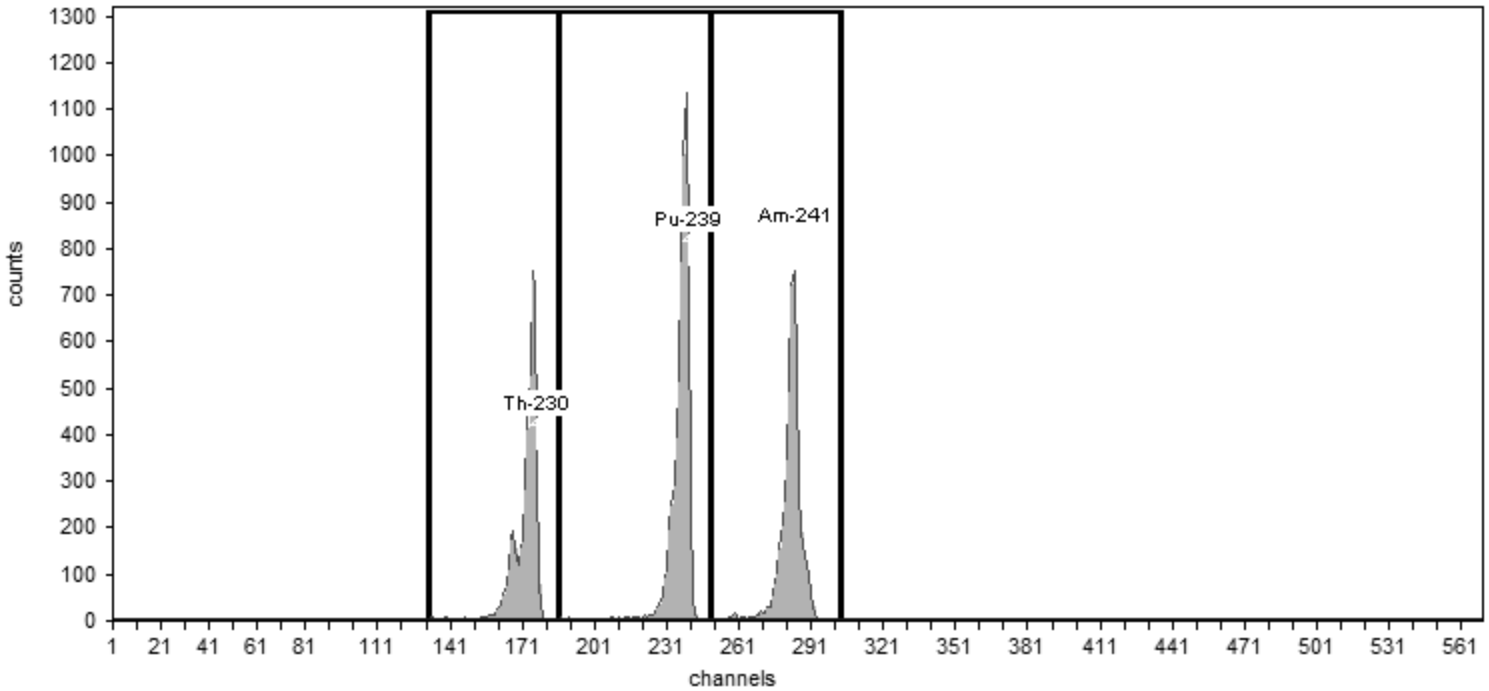
Detector: AV176 , SN: 50-117H2
Acquisition Start Date: 7/26/2016 12:11:00PM

Live Time: 60.00 min.
Real Time: 60.01 min.

Efficiency Calibration Name: CCV-8874;AV176-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.30% +/- 0.49% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	31.13	4,453.00	74.22
Pu-239	240	5,155.40	186	249	30.96	6,015.00	100.25
Am-241	284	5,485.70	249	303	33.04	4,773.00	79.55

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:49:52PM 7/26/2016

Calibration

Sample Name: CCV-9817;AV227-20160726
Description:
Detector: AV227

Analyst: 60040
Analysis Date: 7/26/2016 2:49:51PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82244-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

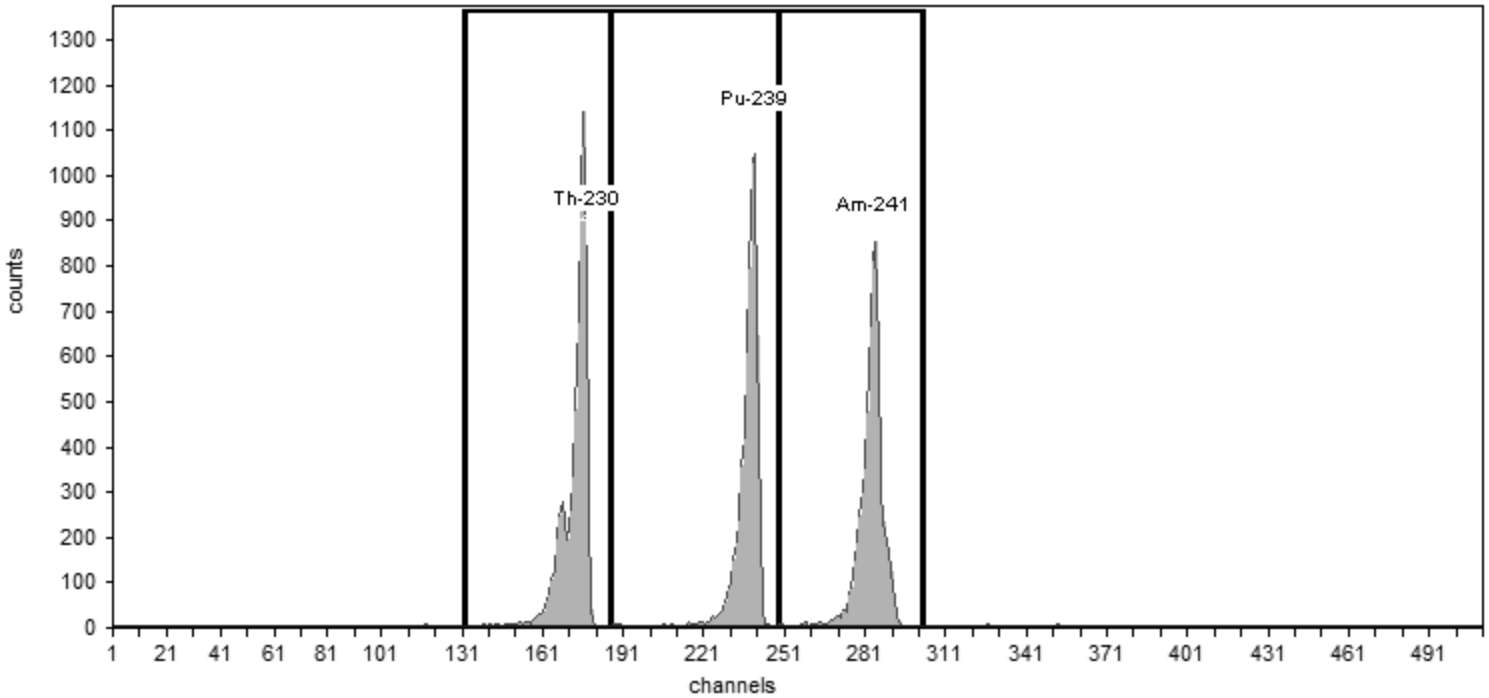
Detector: AV227 , SN: 50-120DD5
Acquisition Start Date: 7/26/2016 1:39:30PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9817;AV227-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.28% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.74	6,680.00	111.33
Pu-239	240	5,155.40	186	249	35.26	6,210.00	103.50
Am-241	284	5,485.70	249	303	37.46	6,139.00	102.32

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:18:16PM 7/26/2016

Calibration

Sample Name: CCV-9884;AV228-20160726
Description:
Detector: AV228

Analyst: 60040
Analysis Date: 7/26/2016 4:18:15PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82245-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

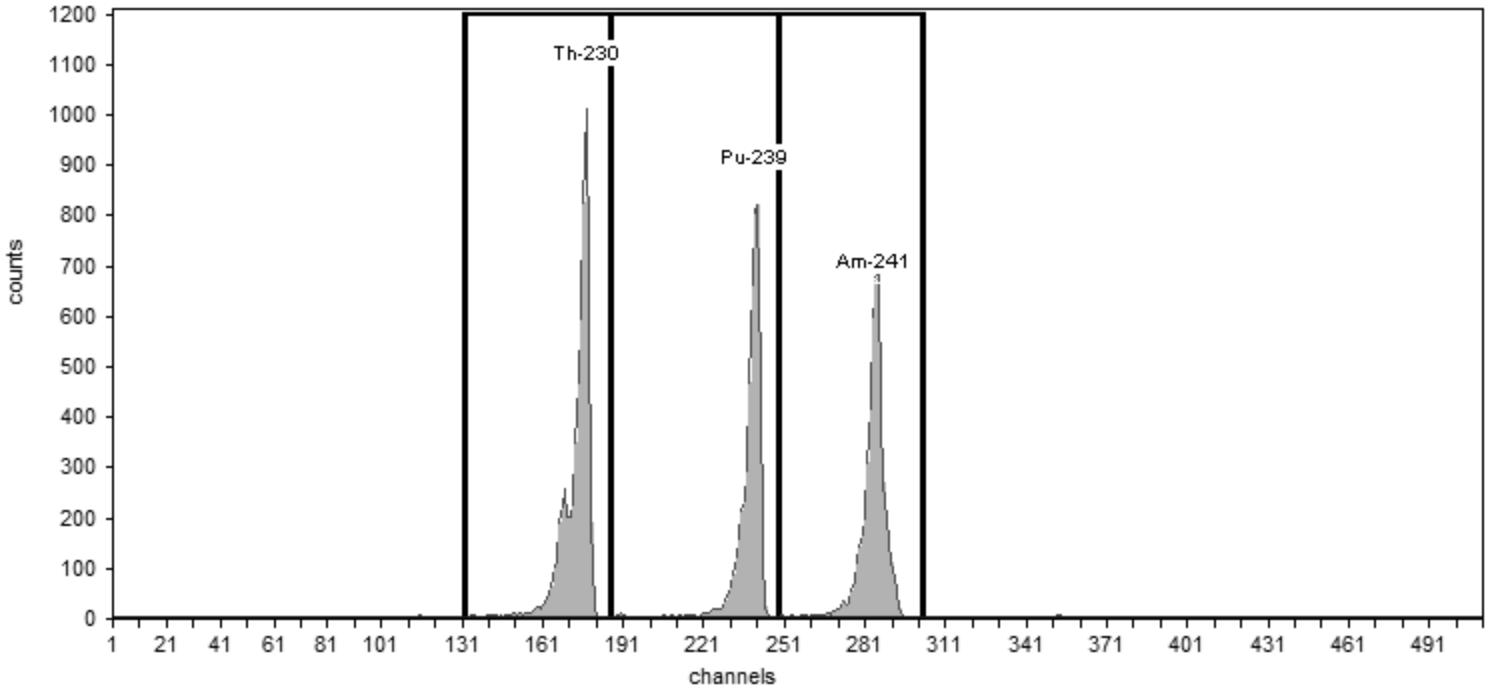
Detector: AV228 , SN: 51-005Q6
Acquisition Start Date: 7/26/2016 3:00:20PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9884;AV228-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.49% +/- 0.46% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.13	5,915.00	98.58
Pu-239	240	5,155.40	186	249	33.77	4,763.00	79.38
Am-241	284	5,485.70	249	303	38.15	4,883.00	81.38

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:07:30AM 7/27/2016

Calibration

Sample Name: CCV-9886;AV230-20160726a
Description:
Detector: AV230

Analyst: 60040
Analysis Date: 7/27/2016 6:07:28AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82247-334
Prepared by: Analytics
Description:

Certification Date: 6/10/2010 12:00:00PM

Acquisition

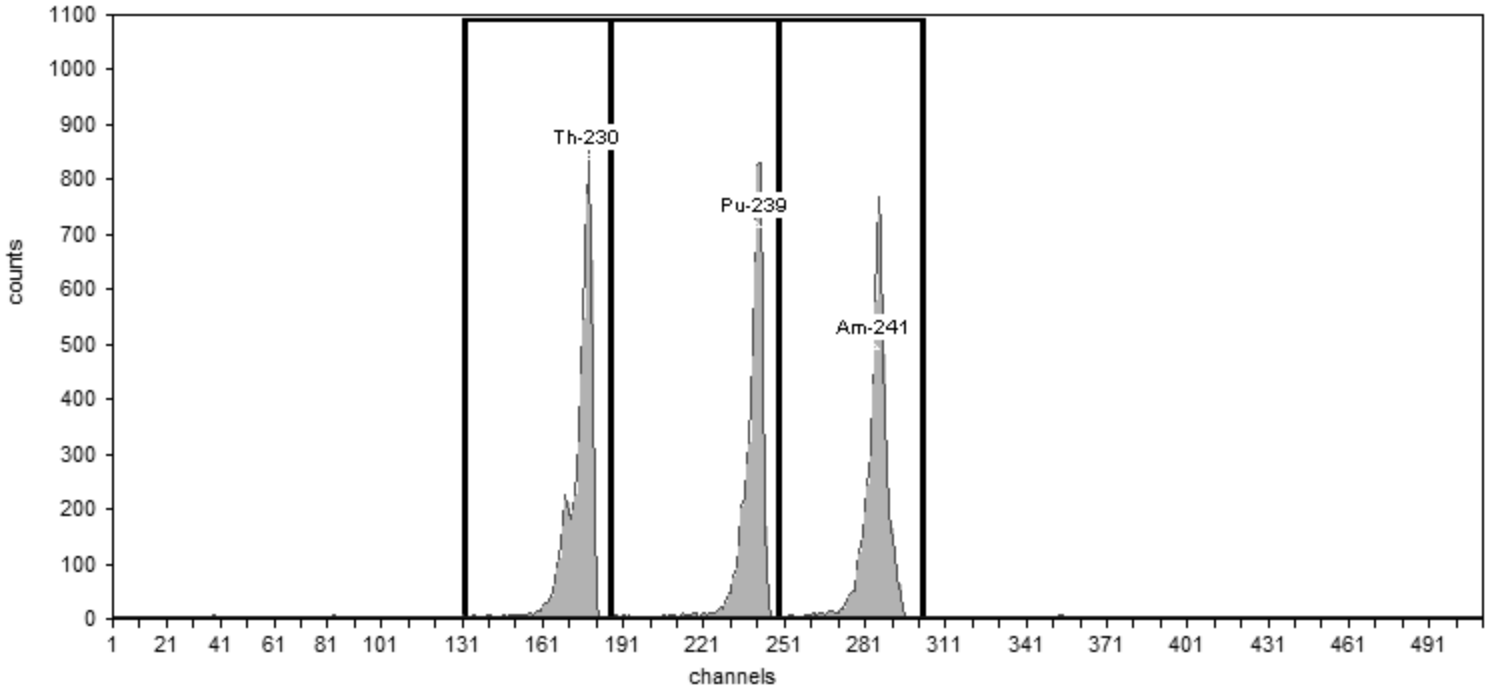
Detector: AV230 , SN: 49-045J5
Acquisition Start Date: 7/26/2016 7:07:43PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9886;AV230-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 24.03% +/- 0.44% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	34.38	5,493.00	91.55
Pu-239	240	5,155.40	186	249	34.71	5,051.00	84.18
Am-241	284	5,485.70	249	303	35.73	5,241.00	87.35

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:18:40PM 7/26/2016

Calibration

Sample Name: CCV-8877;AV235-20160726
Description:
Detector: AV235

Analyst: 60040
Analysis Date: 7/26/2016 4:18:39PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82236-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

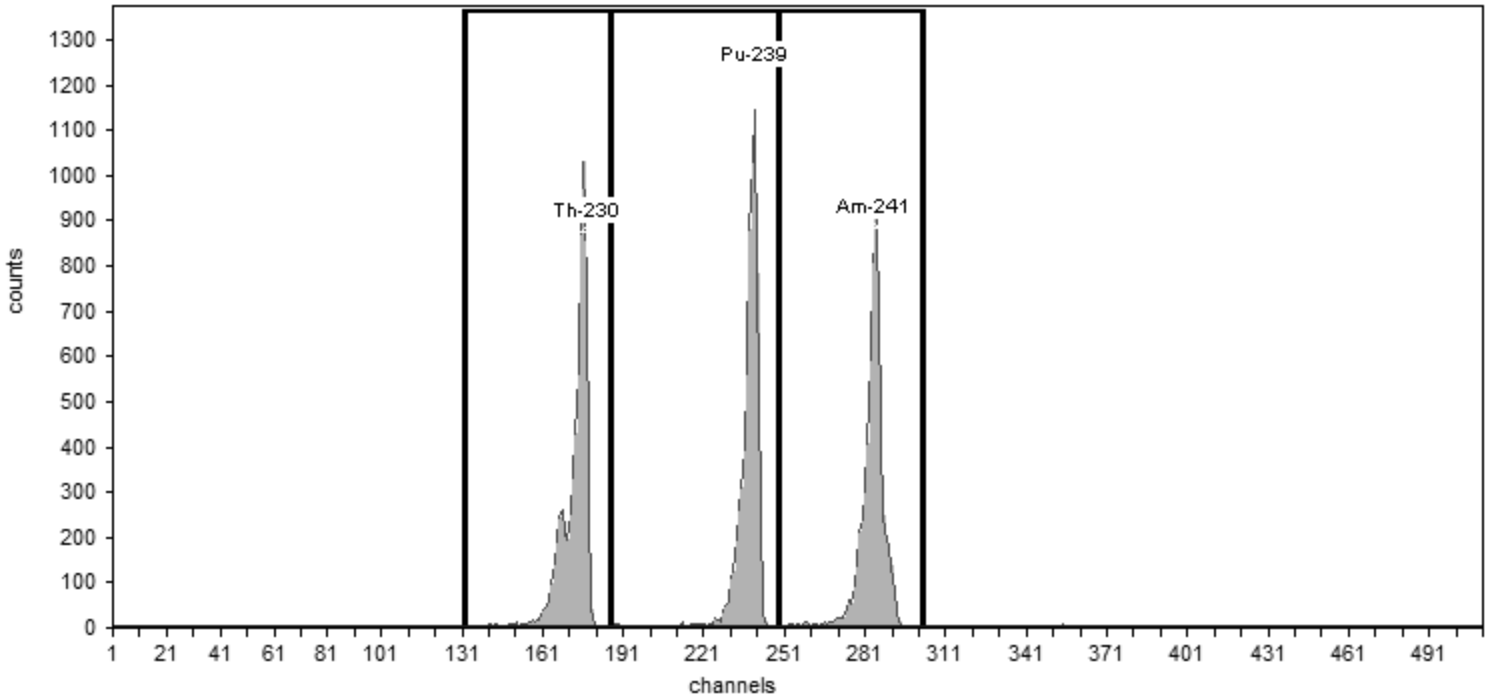
Detector: AV235 , SN: 51-005Q5
Acquisition Start Date: 7/26/2016 3:02:36PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-8877;AV235-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.99% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.11	6,176.00	102.93
Pu-239	240	5,155.40	186	249	32.40	6,339.00	105.65
Am-241	284	5,485.70	249	303	32.87	6,059.00	100.98

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
10:49:05AM 7/27/2016

Calibration

Sample Name: CCV-9520;AV236-20160726
Description:
Detector: AV236

Analyst: 60040
Analysis Date: 7/26/2016 4:18:46PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82237-334
Prepared by: Analytics
Description:

Certification Date: 6/1/2010 12:00:00PM

Acquisition

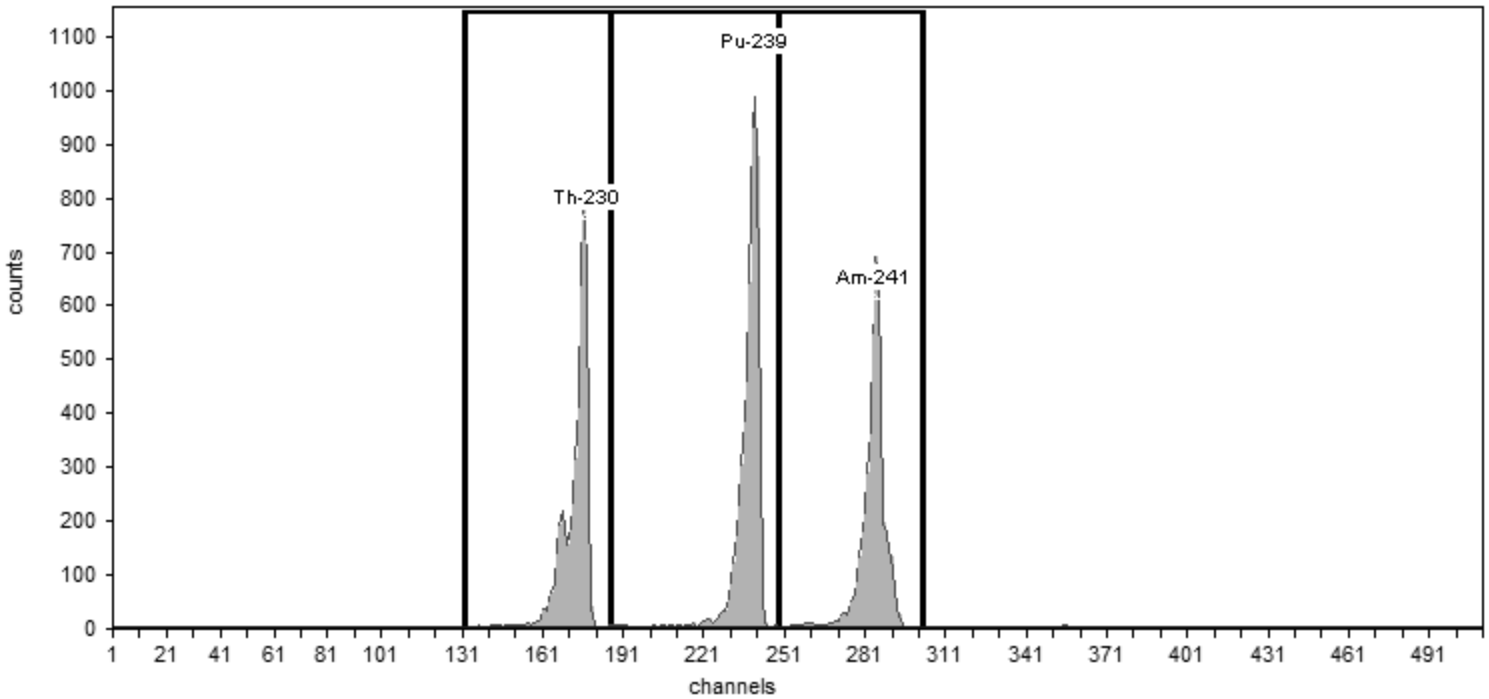
Detector: AV236 , SN: 51-005P3
Acquisition Start Date: 7/26/2016 3:02:55PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9520;AV236-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 23.97% +/- 0.45% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.60	4,835.00	80.58
Pu-239	240	5,155.40	186	249	33.83	5,898.00	98.30
Am-241	284	5,485.70	249	303	34.55	4,681.00	78.02

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:18:51PM 7/26/2016

Calibration

Sample Name: CCV-9792;AV237-20160726
Description:
Detector: AV237

Analyst: 60040
Analysis Date: 7/26/2016 4:18:50PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82240-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

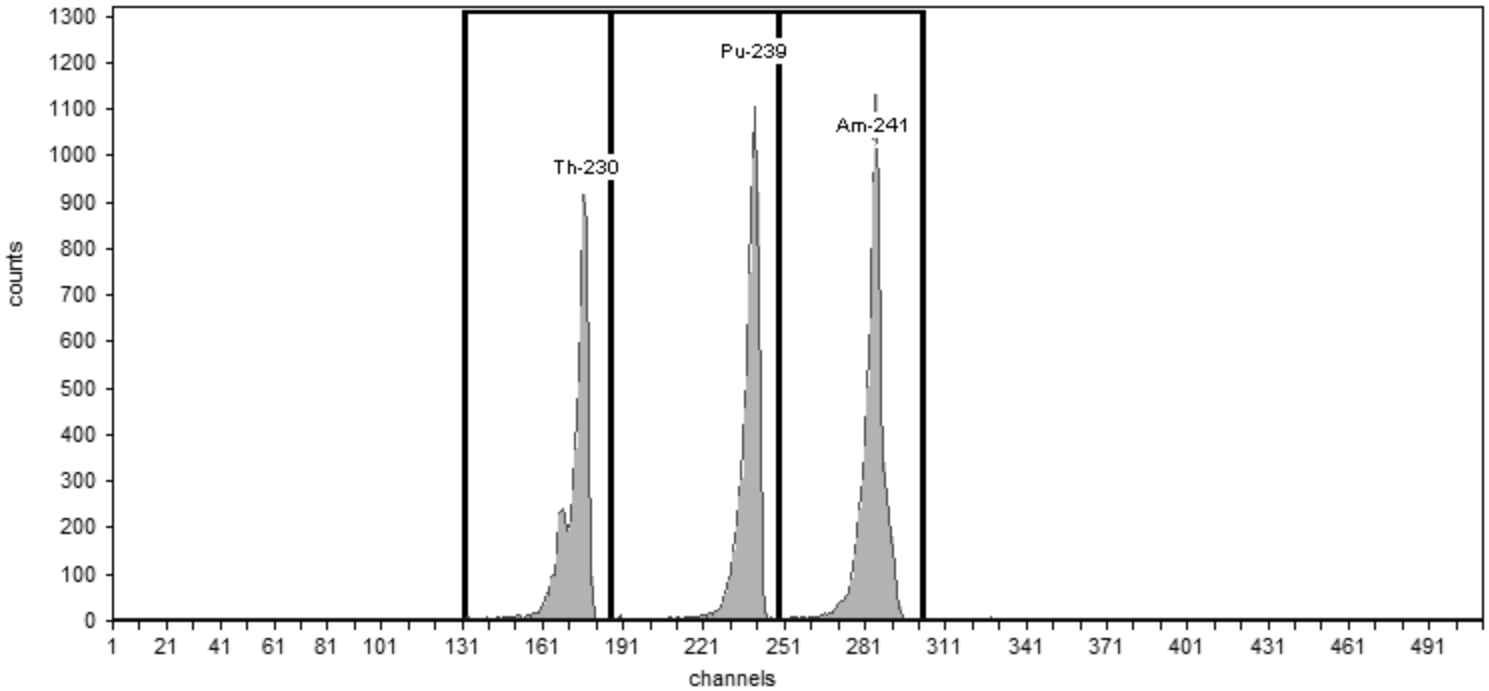
Detector: AV237 , SN: 50-120DD7
Acquisition Start Date: 7/26/2016 3:03:13PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9792;AV237-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 25.75% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.21	5,867.00	97.78
Pu-239	240	5,155.40	186	249	35.03	6,702.00	111.70
Am-241	284	5,485.70	249	303	32.92	7,543.00	125.72

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:23:45PM 7/26/2016

Calibration

Sample Name: CCV-9793;AV238-20160726a
Description:
Detector: AV238

Analyst: 60040
Analysis Date: 7/26/2016 1:23:44PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82241-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

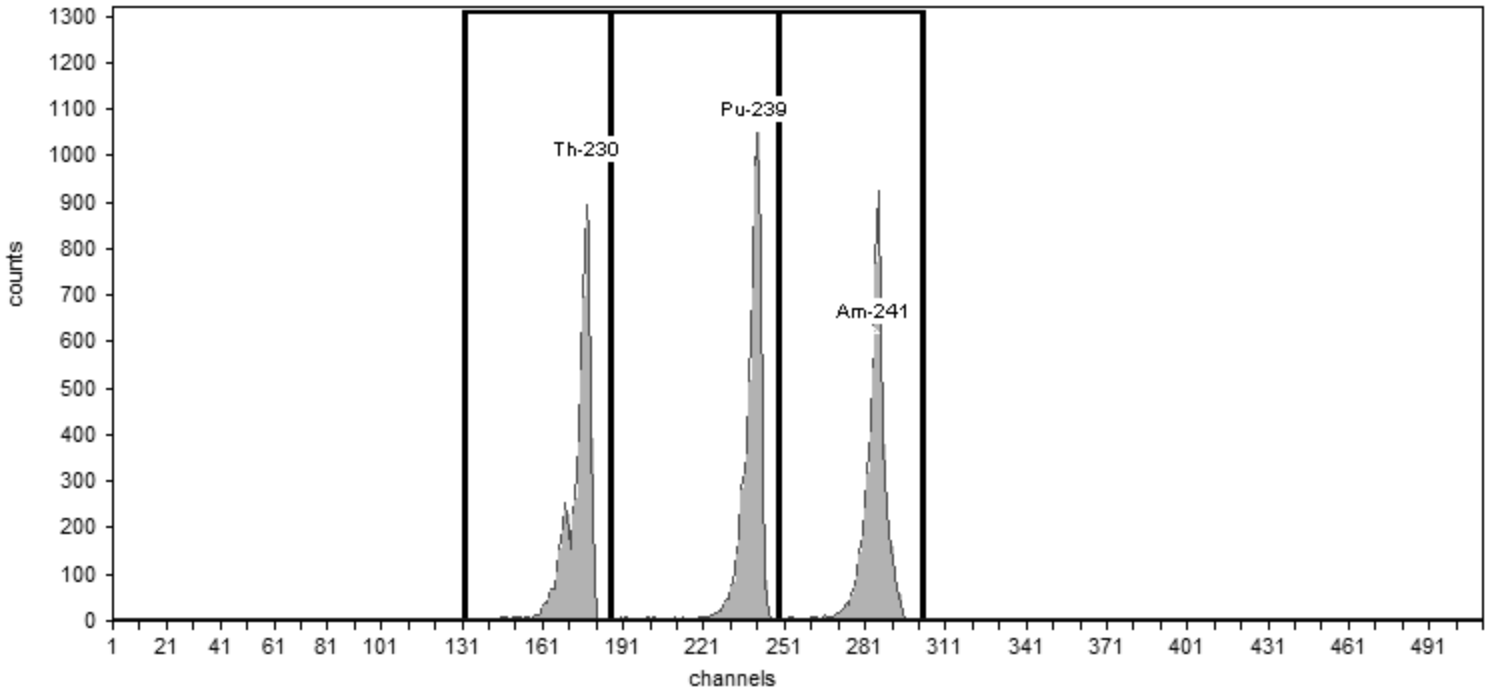
Detector: AV238 , SN: 51-005P7
Acquisition Start Date: 7/26/2016 12:23:40PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9793;AV238-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.54% +/- 0.42% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	33.38	5,741.00	95.68
Pu-239	240	5,155.40	186	249	33.98	6,163.00	102.72
Am-241	284	5,485.70	249	303	31.87	5,778.00	96.30

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:24:03PM 7/26/2016

Calibration

Sample Name: CCV-9795;AV240-20160726a
Description:
Detector: AV240

Analyst: 60040
Analysis Date: 7/26/2016 1:24:02PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82243-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

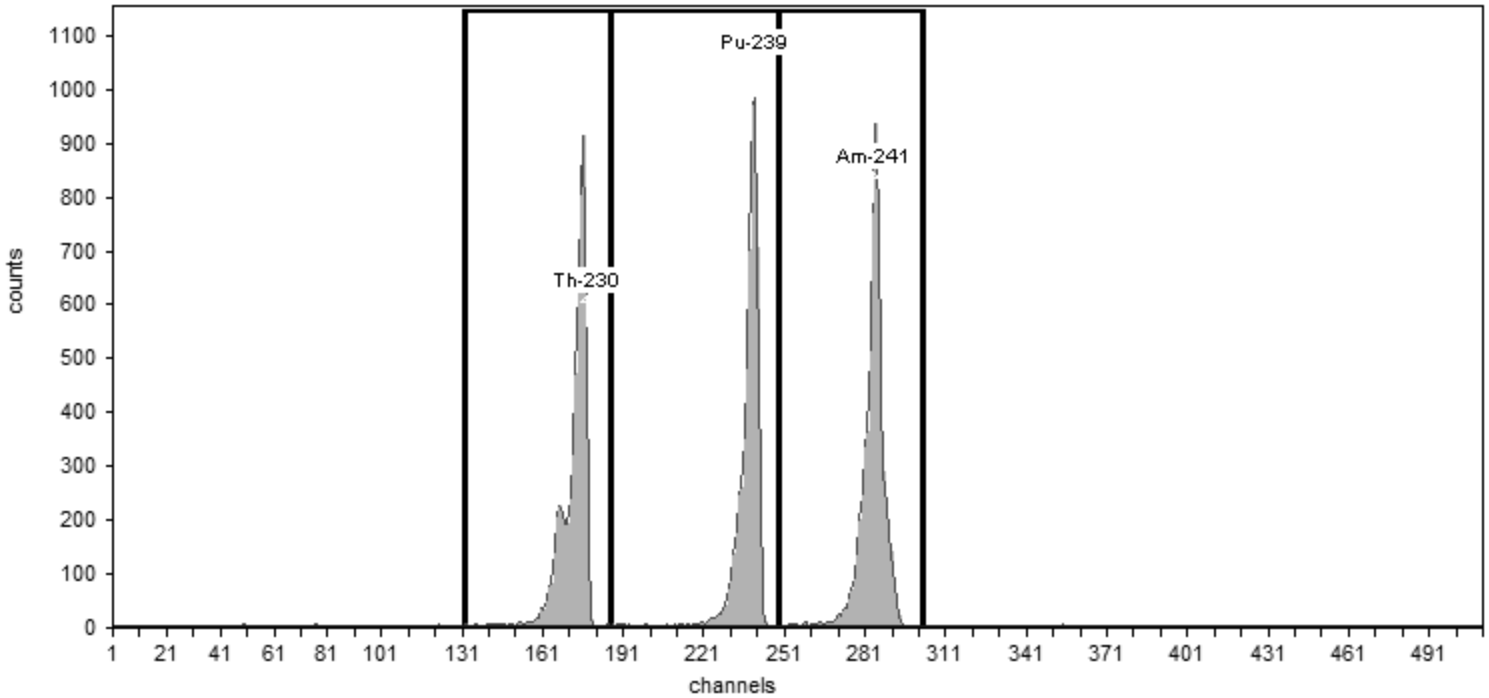
Detector: AV240 , SN: 51-005Q1
Acquisition Start Date: 7/26/2016 12:23:59PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9795;AV240-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.67% +/- 0.46% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.12	5,647.00	94.12
Pu-239	240	5,155.40	186	249	33.01	5,699.00	94.98
Am-241	284	5,485.70	249	303	31.59	6,096.00	101.60

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:49:20PM 7/26/2016

Calibration

Sample Name: CCV-9886;AV244-20160726
Description:
Detector: AV244

Analyst: 60040
Analysis Date: 7/26/2016 2:49:18PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82247-334
Prepared by: Analytics
Description:

Certification Date: 6/10/2010 12:00:00PM

Acquisition

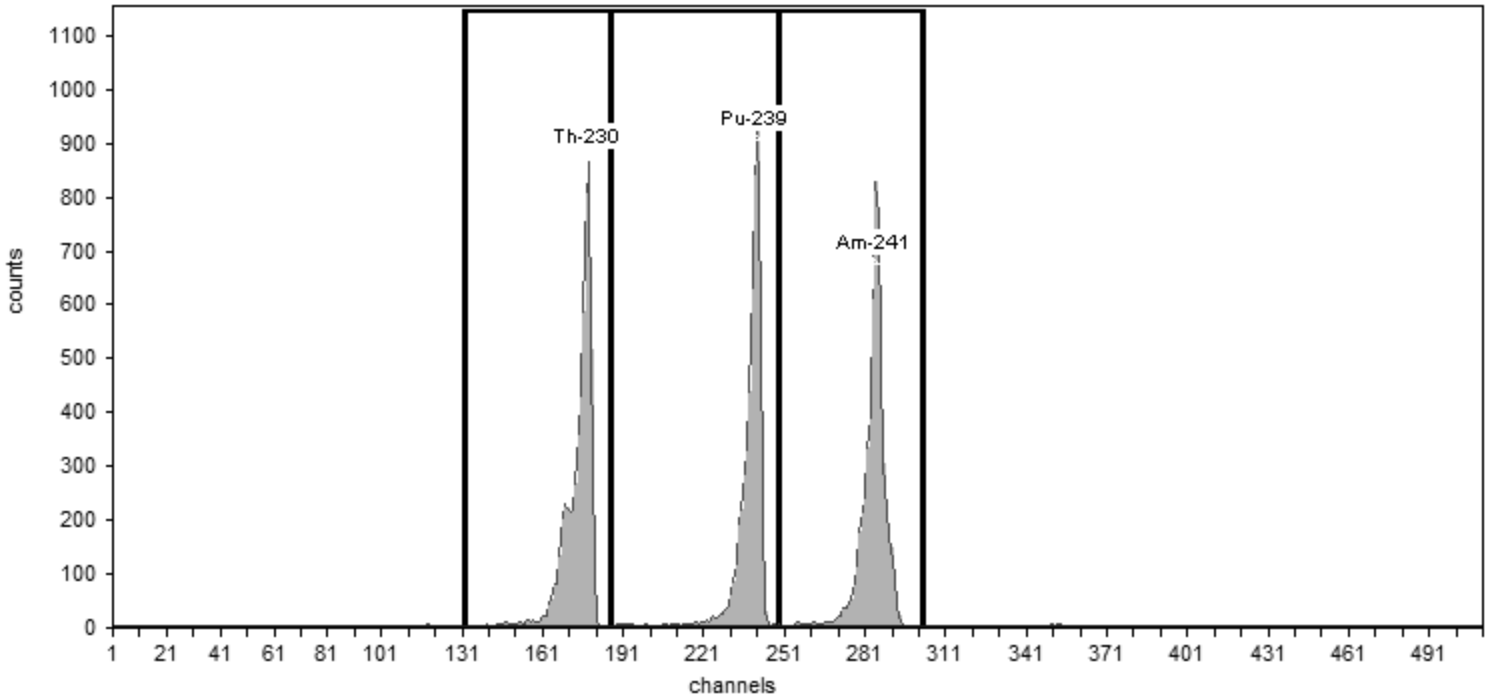
Detector: AV244 , SN: 51-005EE3
Acquisition Start Date: 7/26/2016 1:37:33PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9886;AV244-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.86% +/- 0.45% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	31.13	5,549.00	92.48
Pu-239	240	5,155.40	186	249	30.15	5,250.00	87.50
Am-241	284	5,485.70	249	303	32.43	5,527.00	92.12

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:49:47PM 7/26/2016

Calibration

Sample Name: CCV-7107;AV245-20160726a
Description:
Detector: AV245

Analyst: 60040
Analysis Date: 7/26/2016 2:49:45PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82232-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

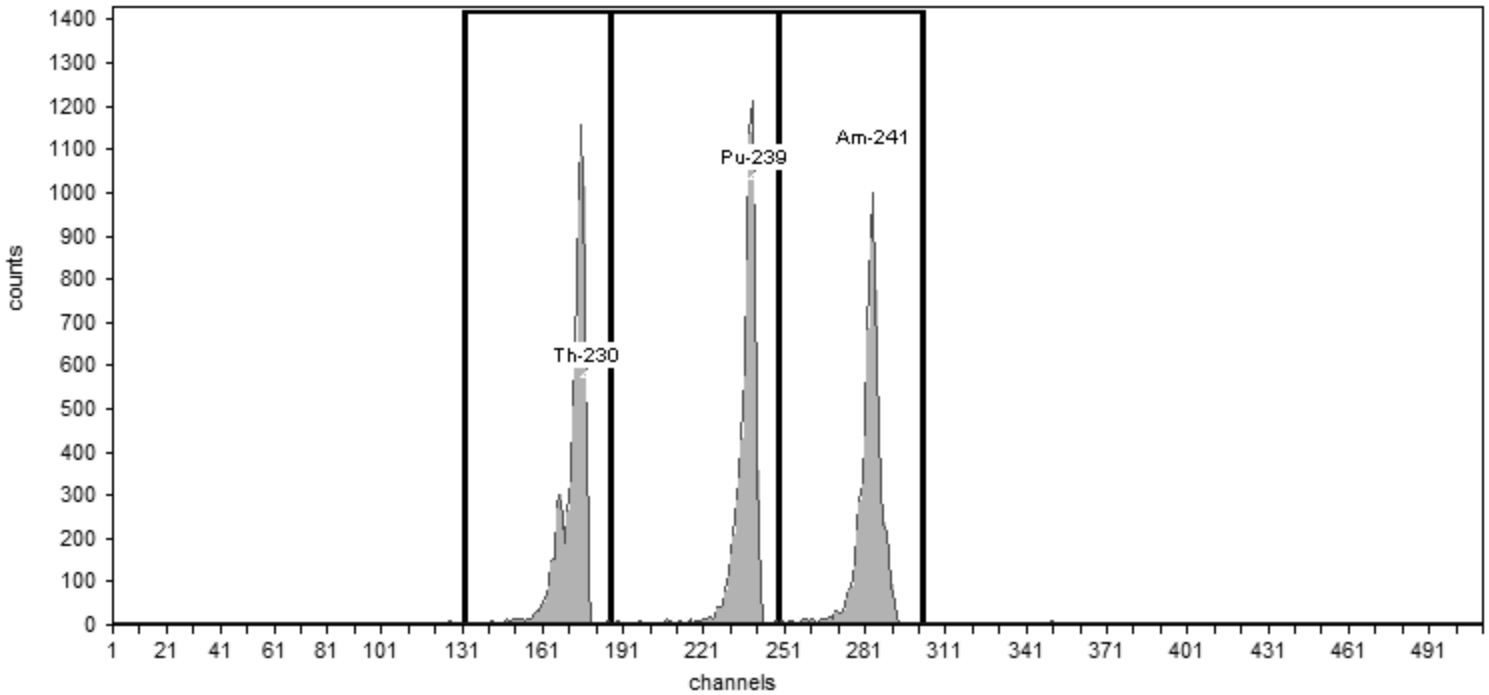
Detector: AV245 , SN: 51-005EE2
Acquisition Start Date: 7/26/2016 1:49:25PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-7107;AV245-201607

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.48% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	31.34	7,186.00	119.77
Pu-239	240	5,155.40	186	249	33.32	7,049.00	117.48
Am-241	284	5,485.70	249	303	34.11	6,741.00	112.35

Monthly Backgrounds

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:37AM 7/23/2016

Sample

Sample Name: ICB;AV149
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

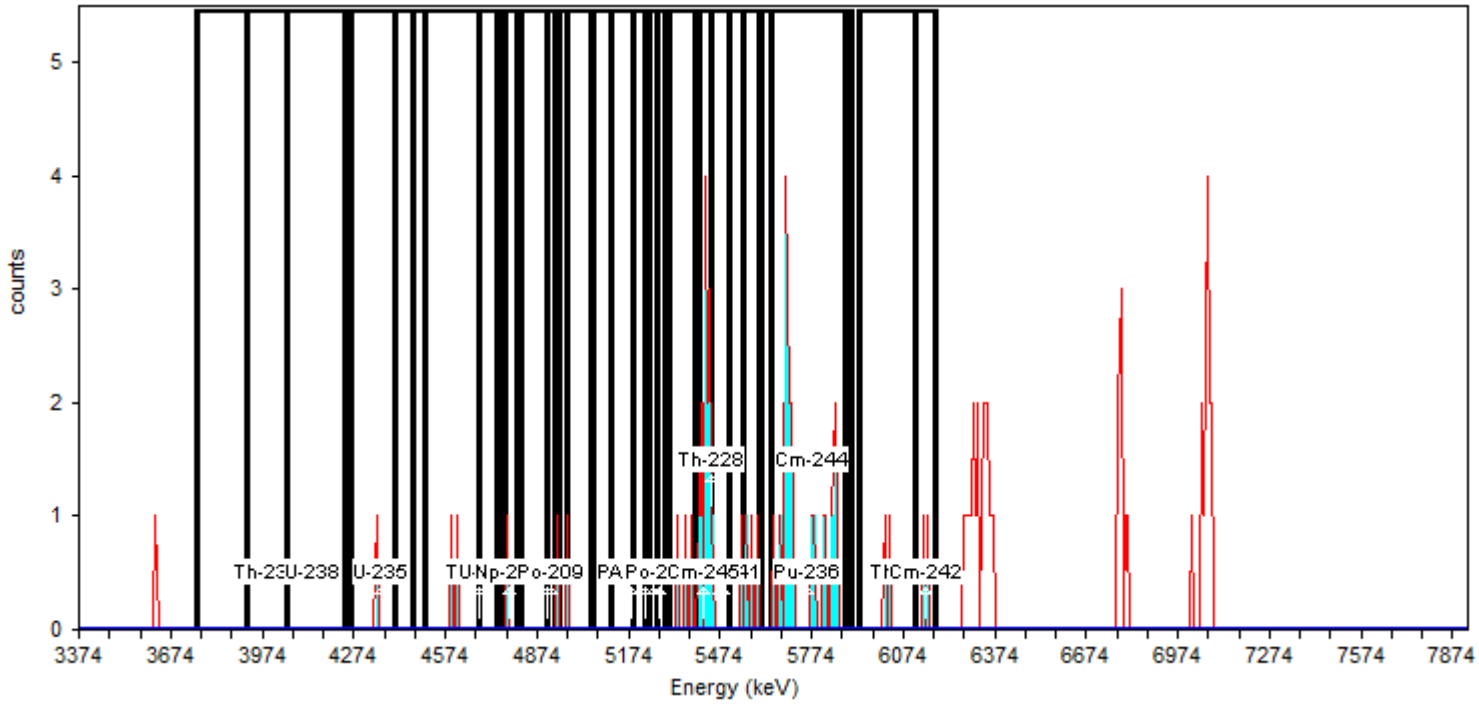
Batch Name: July2016
Description:

Acquisition

Detector: AV149 , SN: 50-05/R3
Acquisition Start Date: 7/22/2016 3:43:52PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-8875;AV149-20151016
Calibration Date: 10/16/2015 6:46:43PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 89.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	0.00	0.000E+000	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	0.00	0.000E+000	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	1.00	1.042E-003	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	2.00	2.083E-003	1.804E-003
U-234	4,709.31	4,507.96	4,821.17	3.00	3.125E-003	2.083E-003
Pu-242	4,903.21	4,679.48	4,947.95	2.00	2.083E-003	1.804E-003
Th-229	4,858.46	4,739.14	5,119.48	3.00	3.125E-003	2.083E-003
Np-237	4,783.89	4,768.97	4,806.26	1.00	1.042E-003	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	1.00	1.042E-003	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	0.00	0.000E+000	1.473E-003
U-232	5,253.71	5,059.82	5,402.86	4.00	4.167E-003	2.329E-003
Th-228	5,447.61	5,186.59	5,507.27	16.00	1.667E-002	4.295E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	17.00	1.771E-002	4.419E-003
Am-241	5,484.90	5,298.46	5,604.22	20.00	2.083E-002	4.774E-003
Cm-245	5,417.78	5,395.41	5,447.61	13.00	1.354E-002	3.898E-003
Pu-236	5,760.83	5,611.67	5,887.60	22.00	2.292E-002	4.996E-003
Cm-244	5,775.74	5,641.51	5,902.52	22.00	2.292E-002	4.996E-003
Th-227	6,074.04	5,932.35	6,178.45	4.00	4.167E-003	2.329E-003
Cm-242	6,148.62	6,118.79	6,178.45	2.00	2.083E-003	1.804E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:43AM 7/23/2016

Sample

Sample Name: ICB;AV150
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

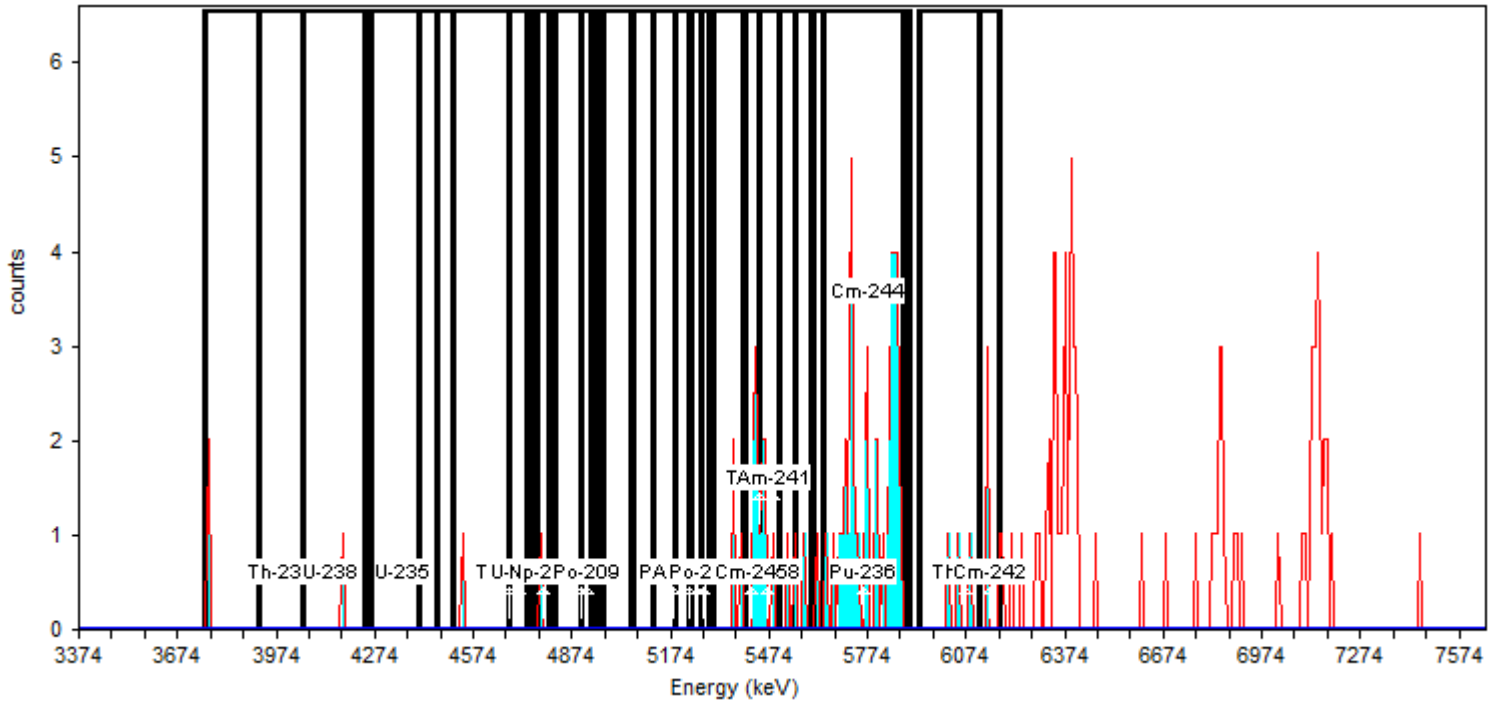
Batch Name: July2016
Description:

Acquisition

Detector: AV150 , SN: 50-05/R4
Acquisition Start Date: 7/22/2016 3:43:52PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-8876;AV150-20151016
Calibration Date: 10/16/2015 6:46:46PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 156.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	2.00	2.083E-003	1.804E-003
U-238	4,135.08	3,918.81	4,239.49	1.00	1.042E-003	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	1.00	1.042E-003	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	2.00	2.083E-003	1.804E-003
Pu-242	4,903.21	4,679.48	4,947.95	1.00	1.042E-003	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	1.00	1.042E-003	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	1.00	1.042E-003	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	0.00	0.000E+000	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	0.00	0.000E+000	1.473E-003
U-232	5,253.71	5,059.82	5,402.86	3.00	3.125E-003	2.083E-003
Th-228	5,447.61	5,186.59	5,507.27	16.00	1.667E-002	4.295E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	18.00	1.875E-002	4.541E-003
Am-241	5,484.90	5,298.46	5,604.22	19.00	1.979E-002	4.658E-003
Cm-245	5,417.78	5,395.41	5,447.61	8.00	8.333E-003	3.125E-003
Pu-236	5,760.83	5,611.67	5,887.60	46.00	4.792E-002	7.141E-003
Cm-244	5,775.74	5,641.51	5,902.52	45.00	4.688E-002	7.065E-003
Th-227	6,074.04	5,932.35	6,178.45	7.00	7.292E-003	2.946E-003
Cm-242	6,148.62	6,118.79	6,178.45	4.00	4.167E-003	2.329E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:40AM 7/23/2016

Sample

Sample Name: ICB;AV151
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

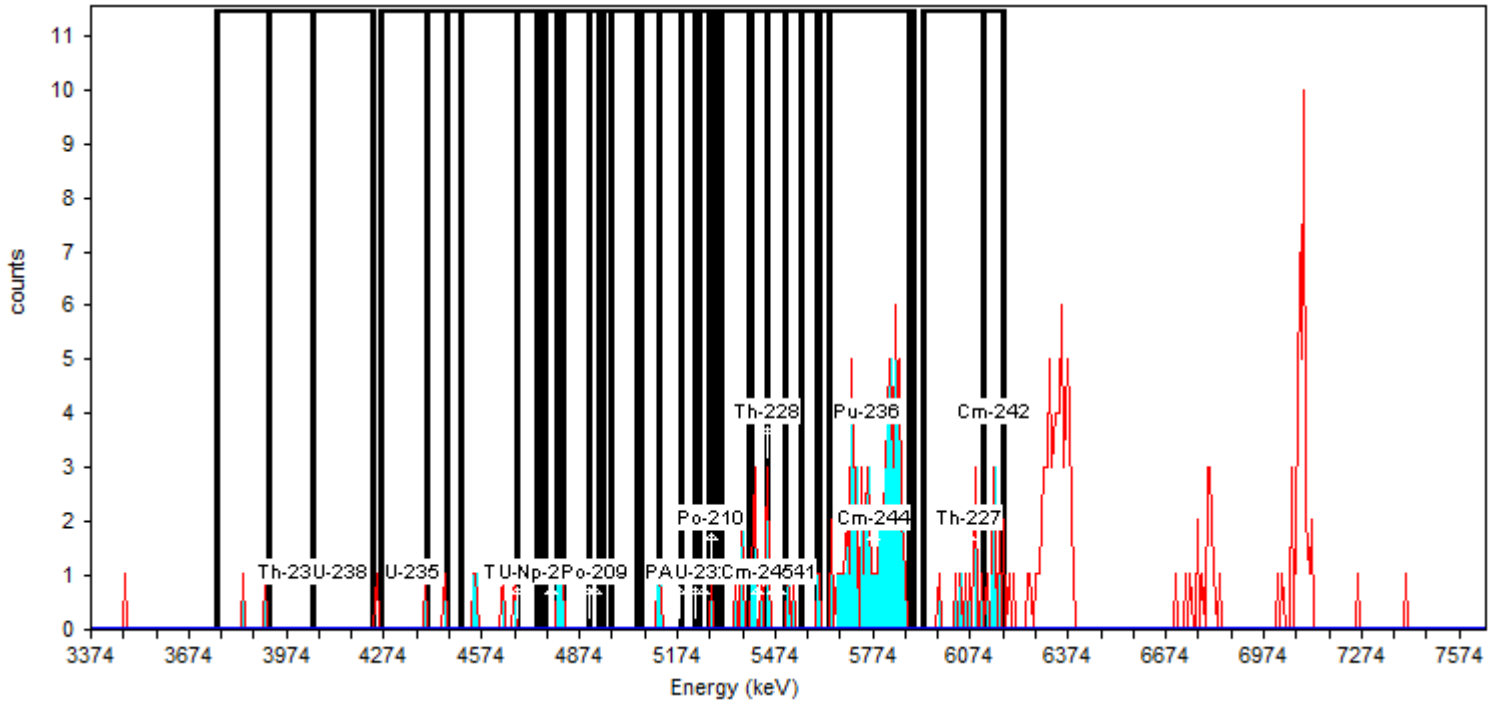
Batch Name: July2016
Description:

Acquisition

Detector: AV151 , SN: 50-05/R5
Acquisition Start Date: 7/22/2016 3:43:31PM
Live Time: 960.00 min.
Real Time: 960.02 min.
Calibration Name: IC-8877;AV151-20151016
Calibration Date: 10/16/2015 6:46:50PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 231.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	2.00	2.083E-003	1.804E-003
U-238	4,135.08	3,918.81	4,239.49	0.00	0.000E+000	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	2.00	2.083E-003	1.804E-003
Th-230	4,679.48	4,403.55	4,746.60	5.00	5.208E-003	2.552E-003
U-234	4,709.31	4,507.96	4,821.17	7.00	7.292E-003	2.946E-003
Pu-242	4,903.21	4,679.48	4,947.95	3.00	3.125E-003	2.083E-003
Th-229	4,858.46	4,739.14	5,119.48	5.00	5.208E-003	2.552E-003
Np-237	4,783.89	4,768.97	4,806.26	1.00	1.042E-003	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	3.00	3.125E-003	2.083E-003
U-232	5,253.71	5,059.82	5,402.86	7.00	7.292E-003	2.946E-003
Th-228	5,447.61	5,186.59	5,507.27	13.00	1.354E-002	3.898E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	15.00	1.563E-002	4.167E-003
Am-241	5,484.90	5,298.46	5,604.22	15.00	1.563E-002	4.167E-003
Cm-245	5,417.78	5,395.41	5,447.61	8.00	8.333E-003	3.125E-003
Pu-236	5,760.83	5,611.67	5,887.60	71.00	7.396E-002	8.839E-003
Cm-244	5,775.74	5,641.51	5,902.52	70.00	7.292E-002	8.777E-003
Th-227	6,074.04	5,932.35	6,178.45	18.00	1.875E-002	4.541E-003
Cm-242	6,148.62	6,118.79	6,178.45	9.00	9.375E-003	3.294E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:43:57AM 7/23/2016

Sample

Sample Name: ICB;AV152
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

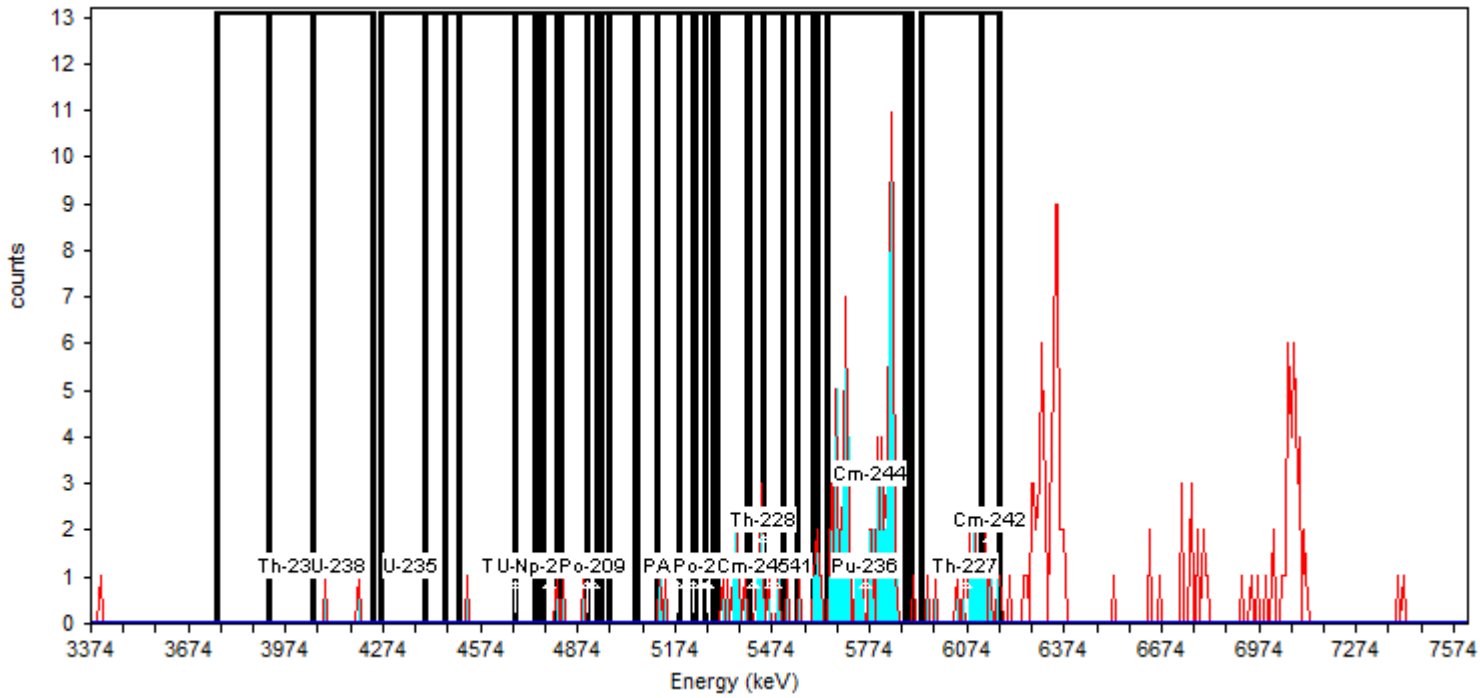
Batch Name: July2016
Description:

Acquisition

Detector: AV152 , SN: 50-05/R6
Acquisition Start Date: 7/22/2016 3:43:31PM
Live Time: 960.00 min.
Real Time: 960.01 min.
Calibration Name: IC-9520;AV152-20151016
Calibration Date: 10/16/2015 6:46:53PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 247.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	0.00	0.000E+000	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	2.00	2.083E-003	1.804E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	1.00	1.042E-003	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	2.00	2.083E-003	1.804E-003
Pu-242	4,903.21	4,679.48	4,947.95	3.00	3.125E-003	2.083E-003
Th-229	4,858.46	4,739.14	5,119.48	3.00	3.125E-003	2.083E-003
Np-237	4,783.89	4,768.97	4,806.26	1.00	1.042E-003	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	2.00	2.083E-003	1.804E-003
U-232	5,253.71	5,059.82	5,402.86	11.00	1.146E-002	3.608E-003
Th-228	5,447.61	5,186.59	5,507.27	17.00	1.771E-002	4.419E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	18.00	1.875E-002	4.541E-003
Am-241	5,484.90	5,298.46	5,604.22	20.00	2.083E-002	4.774E-003
Cm-245	5,417.78	5,395.41	5,447.61	6.00	6.250E-003	2.756E-003
Pu-236	5,760.83	5,611.67	5,887.60	82.00	8.542E-002	9.490E-003
Cm-244	5,775.74	5,641.51	5,902.52	78.00	8.125E-002	9.259E-003
Th-227	6,074.04	5,932.35	6,178.45	19.00	1.979E-002	4.658E-003
Cm-242	6,148.62	6,118.79	6,178.45	7.00	7.292E-003	2.946E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
5:14:48AM 7/26/2016

Sample

Sample Name: ICB;AV153
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

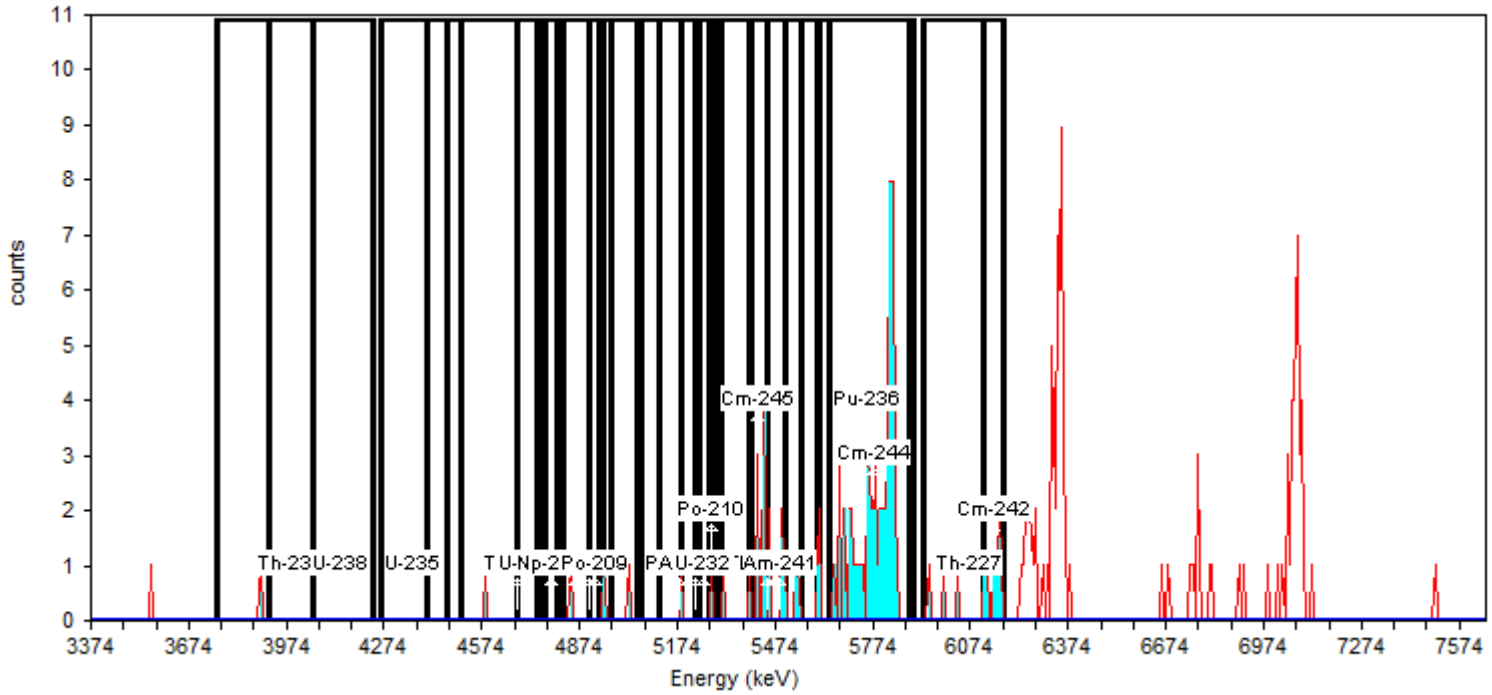
Batch Name: July2016a
Description:

Acquisition

Detector: AV153 , SN: 54-011 Y6
Acquisition Start Date: 7/25/2016 1:14:03PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9792;AV153-20151016
Calibration Date: 10/16/2015 6:46:57PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 182.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	1.00	1.042E-003	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	0.00	0.000E+000	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	1.00	1.042E-003	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	1.00	1.042E-003	1.473E-003
Pu-242	4,903.21	4,679.48	4,947.95	2.00	2.083E-003	1.804E-003
Th-229	4,858.46	4,739.14	5,119.48	3.00	3.125E-003	2.083E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	2.00	2.083E-003	1.804E-003
U-232	5,253.71	5,059.82	5,402.86	4.00	4.167E-003	2.329E-003
Th-228	5,447.61	5,186.59	5,507.27	17.00	1.771E-002	4.419E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	18.00	1.875E-002	4.541E-003
Am-241	5,484.90	5,298.46	5,604.22	18.00	1.875E-002	4.541E-003
Cm-245	5,417.78	5,395.41	5,447.61	8.00	8.333E-003	3.125E-003
Pu-236	5,760.83	5,611.67	5,887.60	56.00	5.833E-002	7.864E-003
Cm-244	5,775.74	5,641.51	5,902.52	54.00	5.625E-002	7.725E-003
Th-227	6,074.04	5,932.35	6,178.45	10.00	1.042E-002	3.455E-003
Cm-242	6,148.62	6,118.79	6,178.45	7.00	7.292E-003	2.946E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:44:40AM 7/23/2016

Sample

Sample Name: ICB;AV156
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

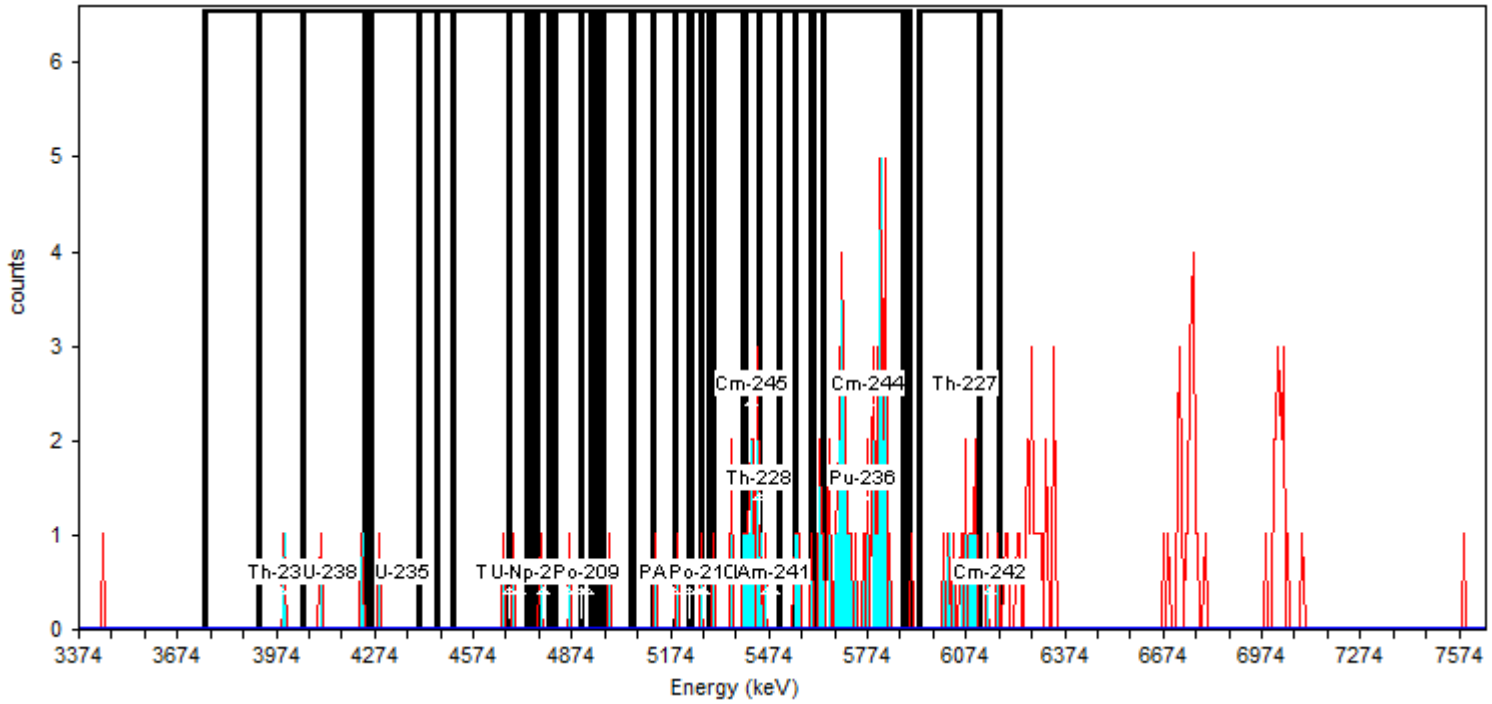
Batch Name: July2016
Description:

Acquisition

Detector: AV156 , SN: 49-155n4
Acquisition Start Date: 7/22/2016 3:43:31PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9795;AV156-20151016a
Calibration Date: 10/16/2015 6:47:28PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 142.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	1.00	1.042E-003	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	3.00	3.125E-003	2.083E-003
U-235	4,358.81	4,261.86	4,463.21	1.00	1.042E-003	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	2.00	2.083E-003	1.804E-003
U-234	4,709.31	4,507.96	4,821.17	3.00	3.125E-003	2.083E-003
Pu-242	4,903.21	4,679.48	4,947.95	3.00	3.125E-003	2.083E-003
Th-229	4,858.46	4,739.14	5,119.48	3.00	3.125E-003	2.083E-003
Np-237	4,783.89	4,768.97	4,806.26	1.00	1.042E-003	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	3.00	3.125E-003	2.083E-003
Am-243	5,231.34	5,052.36	5,305.92	4.00	4.167E-003	2.329E-003
U-232	5,253.71	5,059.82	5,402.86	8.00	8.333E-003	3.125E-003
Th-228	5,447.61	5,186.59	5,507.27	17.00	1.771E-002	4.419E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	17.00	1.771E-002	4.419E-003
Am-241	5,484.90	5,298.46	5,604.22	19.00	1.979E-002	4.658E-003
Cm-245	5,417.78	5,395.41	5,447.61	11.00	1.146E-002	3.608E-003
Pu-236	5,760.83	5,611.67	5,887.60	42.00	4.375E-002	6.831E-003
Cm-244	5,775.74	5,641.51	5,902.52	39.00	4.062E-002	6.588E-003
Th-227	6,074.04	5,932.35	6,178.45	12.00	1.250E-002	3.756E-003
Cm-242	6,148.62	6,118.79	6,178.45	2.00	2.083E-003	1.804E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:44:44AM 7/23/2016

Sample

Sample Name: ICB;AV157
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

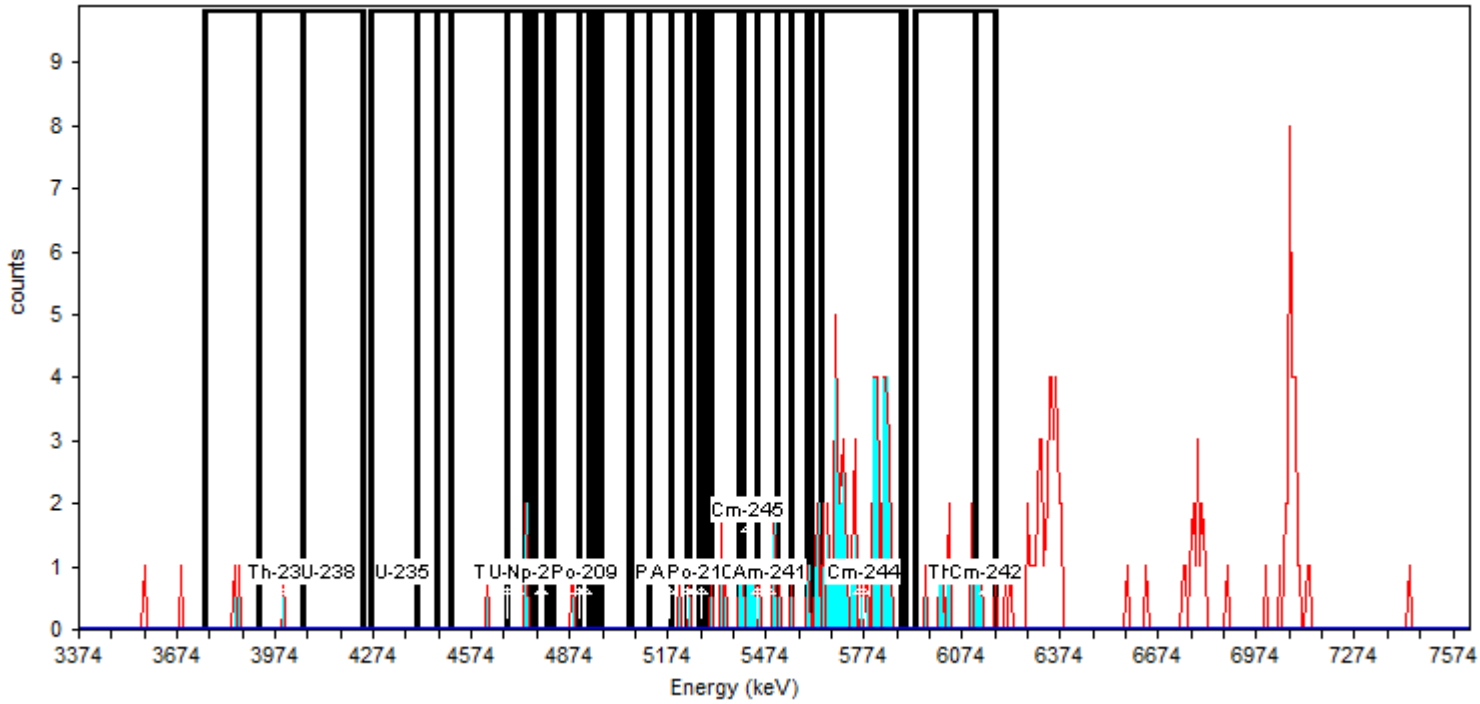
Batch Name: July2016
Description:

Acquisition

Detector: AV157 , SN: 50-05/II3
Acquisition Start Date: 7/22/2016 3:43:31PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9817;AV157-20151016
Calibration Date: 10/16/2015 6:47:07PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 172.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	3.00	3.125E-003	2.083E-003
U-238	4,135.08	3,918.81	4,239.49	1.00	1.042E-003	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	3.00	3.125E-003	2.083E-003
U-234	4,709.31	4,507.96	4,821.17	3.00	3.125E-003	2.083E-003
Pu-242	4,903.21	4,679.48	4,947.95	3.00	3.125E-003	2.083E-003
Th-229	4,858.46	4,739.14	5,119.48	3.00	3.125E-003	2.083E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	3.00	3.125E-003	2.083E-003
U-232	5,253.71	5,059.82	5,402.86	8.00	8.333E-003	3.125E-003
Th-228	5,447.61	5,186.59	5,507.27	15.00	1.563E-002	4.167E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	15.00	1.563E-002	4.167E-003
Am-241	5,484.90	5,298.46	5,604.22	16.00	1.667E-002	4.295E-003
Cm-245	5,417.78	5,395.41	5,447.61	6.00	6.250E-003	2.756E-003
Pu-236	5,760.83	5,611.67	5,887.60	53.00	5.521E-002	7.655E-003
Cm-244	5,775.74	5,641.51	5,902.52	50.00	5.208E-002	7.439E-003
Th-227	6,074.04	5,932.35	6,178.45	12.00	1.250E-002	3.756E-003
Cm-242	6,148.62	6,118.79	6,178.45	4.00	4.167E-003	2.329E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:45:00AM 7/23/2016

Sample

Sample Name: ICB;AV161
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

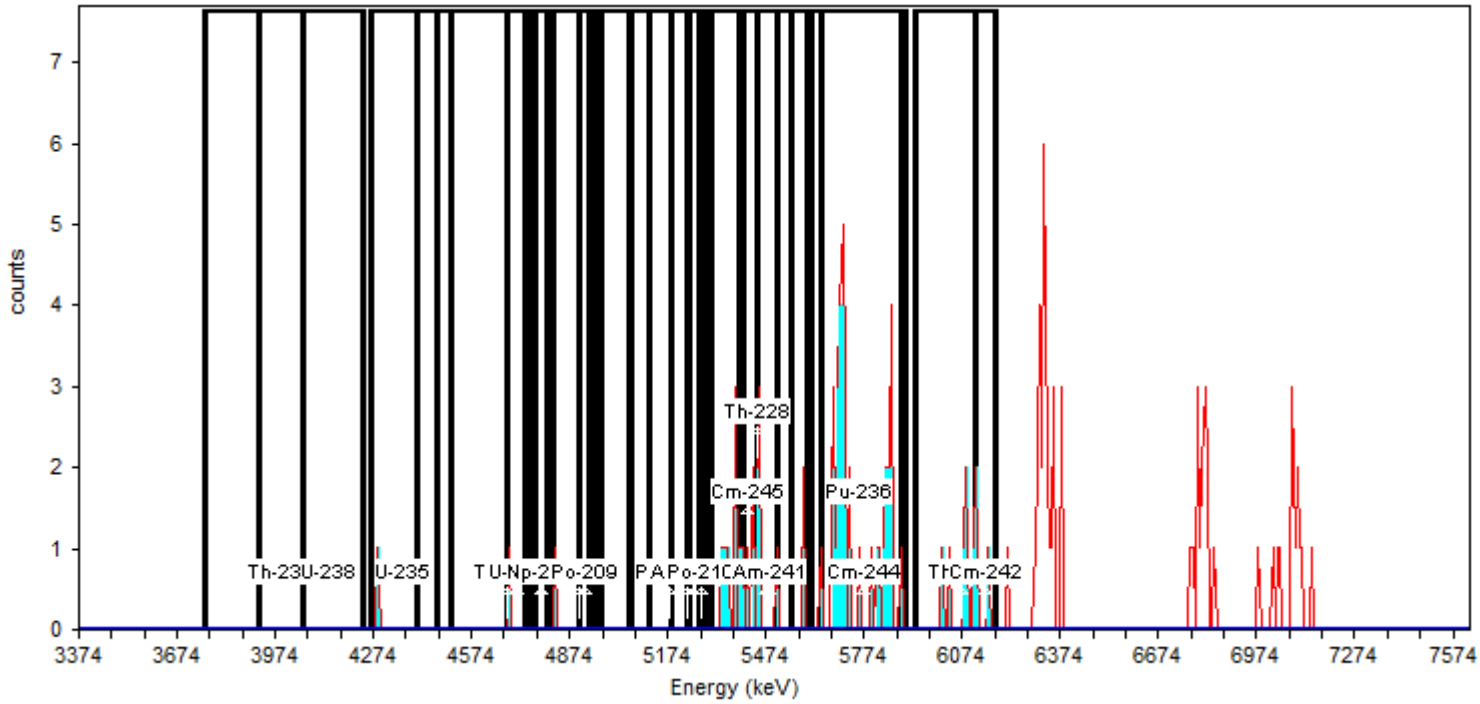
Batch Name: July2016
Description:

Acquisition

Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 7/22/2016 3:43:32PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-7107;AV161-20151016
Calibration Date: 10/17/2015 2:36:23PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 121.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	0.00	0.000E+000	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	0.00	0.000E+000	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	1.00	1.042E-003	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	1.00	1.042E-003	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	1.00	1.042E-003	1.473E-003
Pu-242	4,903.21	4,679.48	4,947.95	2.00	2.083E-003	1.804E-003
Th-229	4,858.46	4,739.14	5,119.48	1.00	1.042E-003	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	0.00	0.000E+000	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	0.00	0.000E+000	1.473E-003
U-232	5,253.71	5,059.82	5,402.86	9.00	9.375E-003	3.294E-003
Th-228	5,447.61	5,186.59	5,507.27	18.00	1.875E-002	4.541E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	18.00	1.875E-002	4.541E-003
Am-241	5,484.90	5,298.46	5,604.22	20.00	2.083E-002	4.774E-003
Cm-245	5,417.78	5,395.41	5,447.61	7.00	7.292E-003	2.946E-003
Pu-236	5,760.83	5,611.67	5,887.60	36.00	3.750E-002	6.336E-003
Cm-244	5,775.74	5,641.51	5,902.52	36.00	3.750E-002	6.336E-003
Th-227	6,074.04	5,932.35	6,178.45	9.00	9.375E-003	3.294E-003
Cm-242	6,148.62	6,118.79	6,178.45	3.00	3.125E-003	2.083E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:44AM 7/23/2016

Sample

Sample Name: ICB;AV176
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

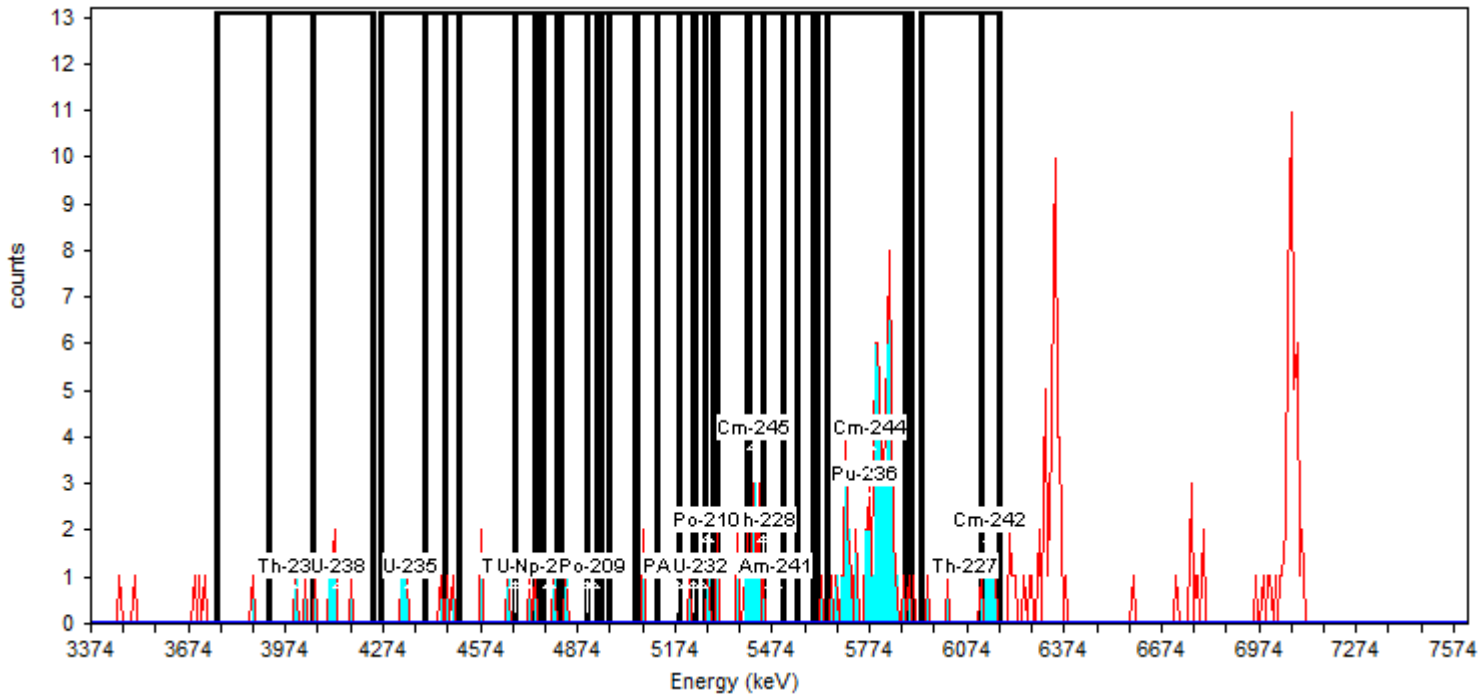
Batch Name: July2016
Description:

Acquisition

Detector: AV176 , SN: 50-117H2
Acquisition Start Date: 7/22/2016 3:43:35PM
Live Time: 960.00 min.
Real Time: 960.15 min.
Calibration Name: IC-8874;AV176-20151017
Calibration Date: 10/17/2015 6:01:52PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 237.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	3.00	3.125E-003	2.083E-003
U-238	4,135.08	3,918.81	4,239.49	8.00	8.333E-003	3.125E-003
U-235	4,358.81	4,261.86	4,463.21	4.00	4.167E-003	2.329E-003
Th-230	4,679.48	4,403.55	4,746.60	8.00	8.333E-003	3.125E-003
U-234	4,709.31	4,507.96	4,821.17	6.00	6.250E-003	2.756E-003
Pu-242	4,903.21	4,679.48	4,947.95	4.00	4.167E-003	2.329E-003
Th-229	4,858.46	4,739.14	5,119.48	5.00	5.208E-003	2.552E-003
Np-237	4,783.89	4,768.97	4,806.26	1.00	1.042E-003	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	3.00	3.125E-003	2.083E-003
Am-243	5,231.34	5,052.36	5,305.92	6.00	6.250E-003	2.756E-003
U-232	5,253.71	5,059.82	5,402.86	12.00	1.250E-002	3.756E-003
Th-228	5,447.61	5,186.59	5,507.27	19.00	1.979E-002	4.658E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	18.00	1.875E-002	4.541E-003
Am-241	5,484.90	5,298.46	5,604.22	17.00	1.771E-002	4.419E-003
Cm-245	5,417.78	5,395.41	5,447.61	12.00	1.250E-002	3.756E-003
Pu-236	5,760.83	5,611.67	5,887.60	70.00	7.292E-002	8.777E-003
Cm-244	5,775.74	5,641.51	5,902.52	70.00	7.292E-002	8.777E-003
Th-227	6,074.04	5,932.35	6,178.45	8.00	8.333E-003	3.125E-003
Cm-242	6,148.62	6,118.79	6,178.45	6.00	6.250E-003	2.756E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:45:54AM 7/23/2016

Sample

Sample Name: ICB;AV227
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

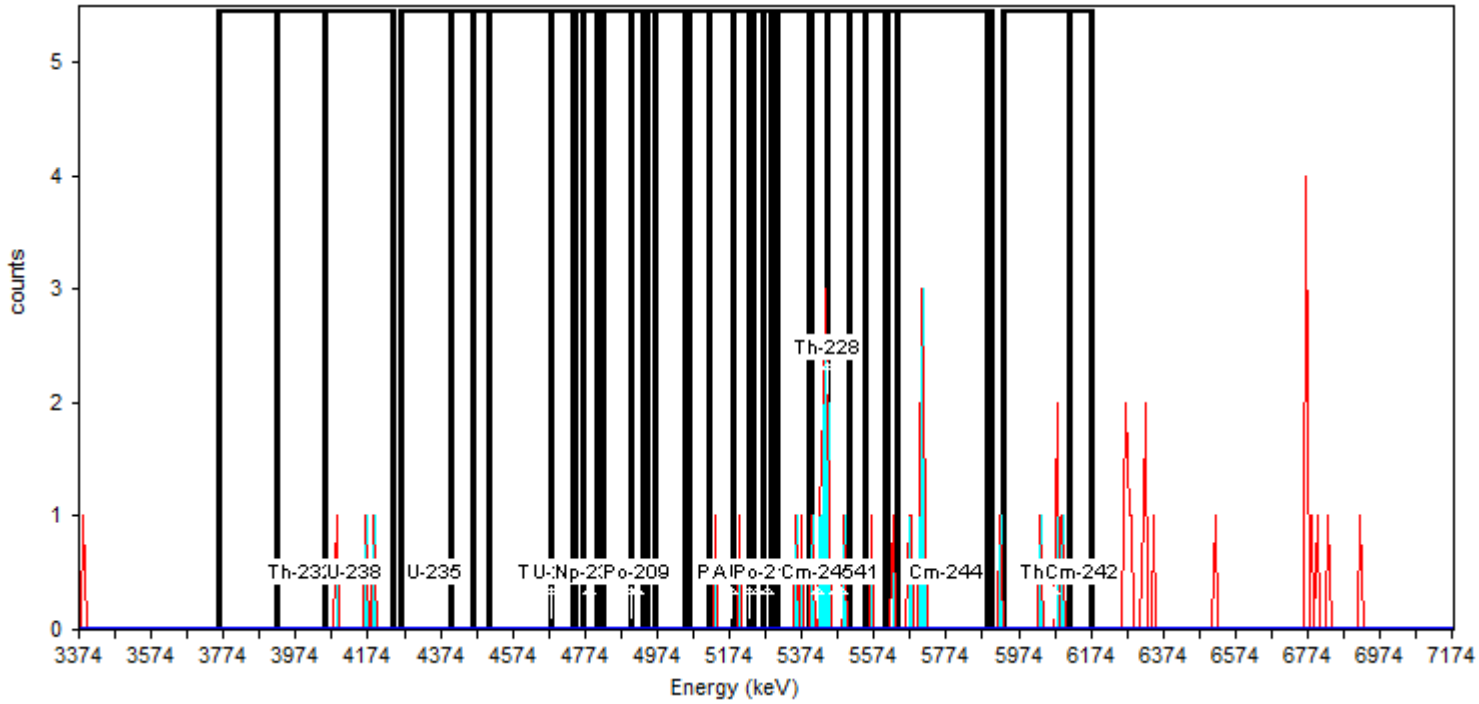
Batch Name: July2016
Description:

Acquisition

Detector: AV227 , SN: 50-120DD5
Acquisition Start Date: 7/22/2016 3:43:46PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9817;AV227-20151018
Calibration Date: 10/18/2015 9:20:24PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 50.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	0.00	0.000E+000	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	3.00	3.125E-003	2.083E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	0.00	0.000E+000	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	0.00	0.000E+000	1.473E-003
Pu-242	4,903.21	4,679.48	4,947.95	0.00	0.000E+000	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	0.00	0.000E+000	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	2.00	2.083E-003	1.804E-003
U-232	5,253.71	5,059.82	5,402.86	5.00	5.208E-003	2.552E-003
Th-228	5,447.61	5,186.59	5,507.27	13.00	1.354E-002	3.898E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	12.00	1.250E-002	3.756E-003
Am-241	5,484.90	5,298.46	5,604.22	13.00	1.354E-002	3.898E-003
Cm-245	5,417.78	5,395.41	5,447.61	9.00	9.375E-003	3.294E-003
Pu-236	5,760.83	5,611.67	5,887.60	8.00	8.333E-003	3.125E-003
Cm-244	5,775.74	5,641.51	5,902.52	7.00	7.292E-003	2.946E-003
Th-227	6,074.04	5,932.35	6,178.45	4.00	4.167E-003	2.329E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:45:52AM 7/23/2016

Sample

Sample Name: ICB;AV228
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

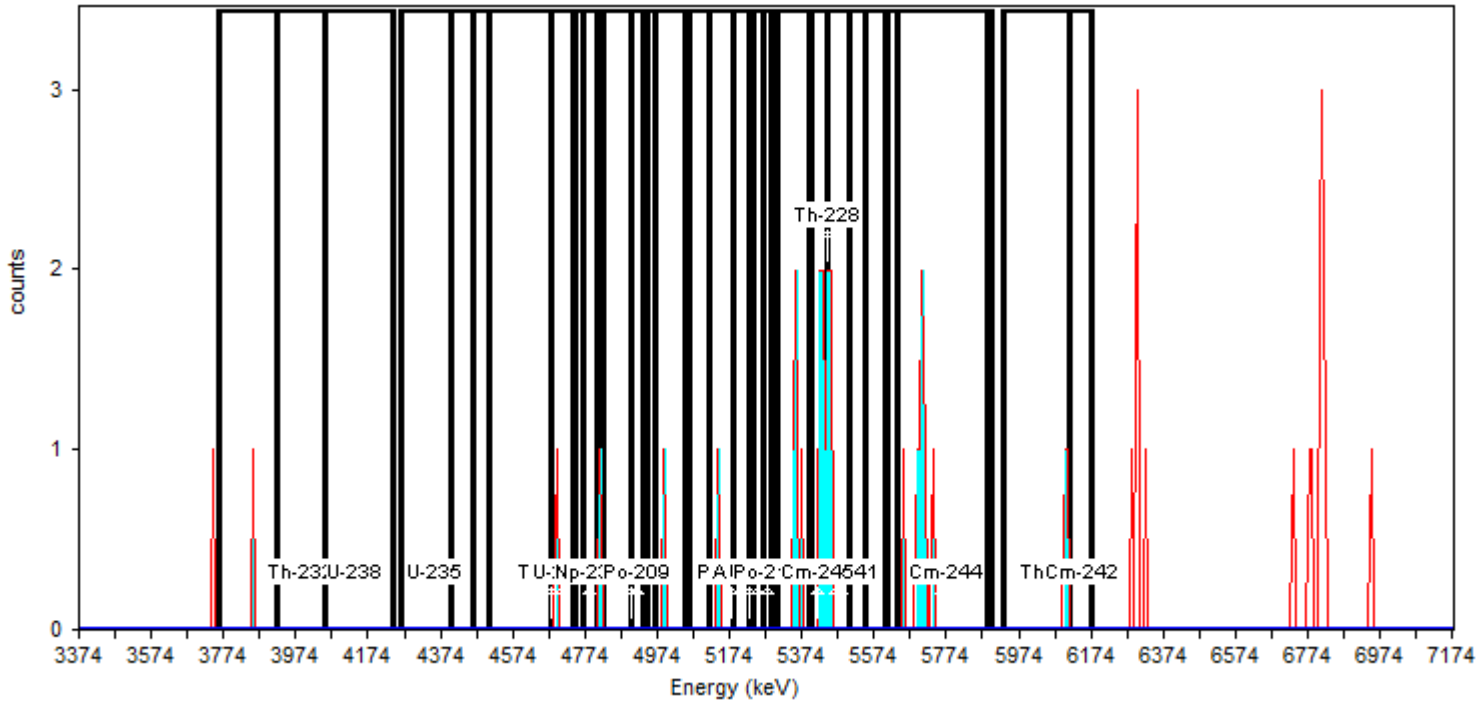
Batch Name: July2016
Description:

Acquisition

Detector: AV228 , SN: 51-005Q6
Acquisition Start Date: 7/22/2016 3:43:46PM
Live Time: 960.00 min.
Real Time: 960.05 min.
Calibration Name: IC-9884;AV228-20151018
Calibration Date: 10/18/2015 9:20:29PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 43.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	1.00	1.042E-003	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	0.00	0.000E+000	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	1.00	1.042E-003	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	2.00	2.083E-003	1.804E-003
Pu-242	4,903.21	4,679.48	4,947.95	2.00	2.083E-003	1.804E-003
Th-229	4,858.46	4,739.14	5,119.48	2.00	2.083E-003	1.804E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	1.00	1.042E-003	1.473E-003
U-232	5,253.71	5,059.82	5,402.86	5.00	5.208E-003	2.552E-003
Th-228	5,447.61	5,186.59	5,507.27	13.00	1.354E-002	3.898E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	13.00	1.354E-002	3.898E-003
Am-241	5,484.90	5,298.46	5,604.22	13.00	1.354E-002	3.898E-003
Cm-245	5,417.78	5,395.41	5,447.61	7.00	7.292E-003	2.946E-003
Pu-236	5,760.83	5,611.67	5,887.60	7.00	7.292E-003	2.946E-003
Cm-244	5,775.74	5,641.51	5,902.52	7.00	7.292E-003	2.946E-003
Th-227	6,074.04	5,932.35	6,178.45	2.00	2.083E-003	1.804E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:45:51AM 7/23/2016

Sample

Sample Name: ICB;AV230
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

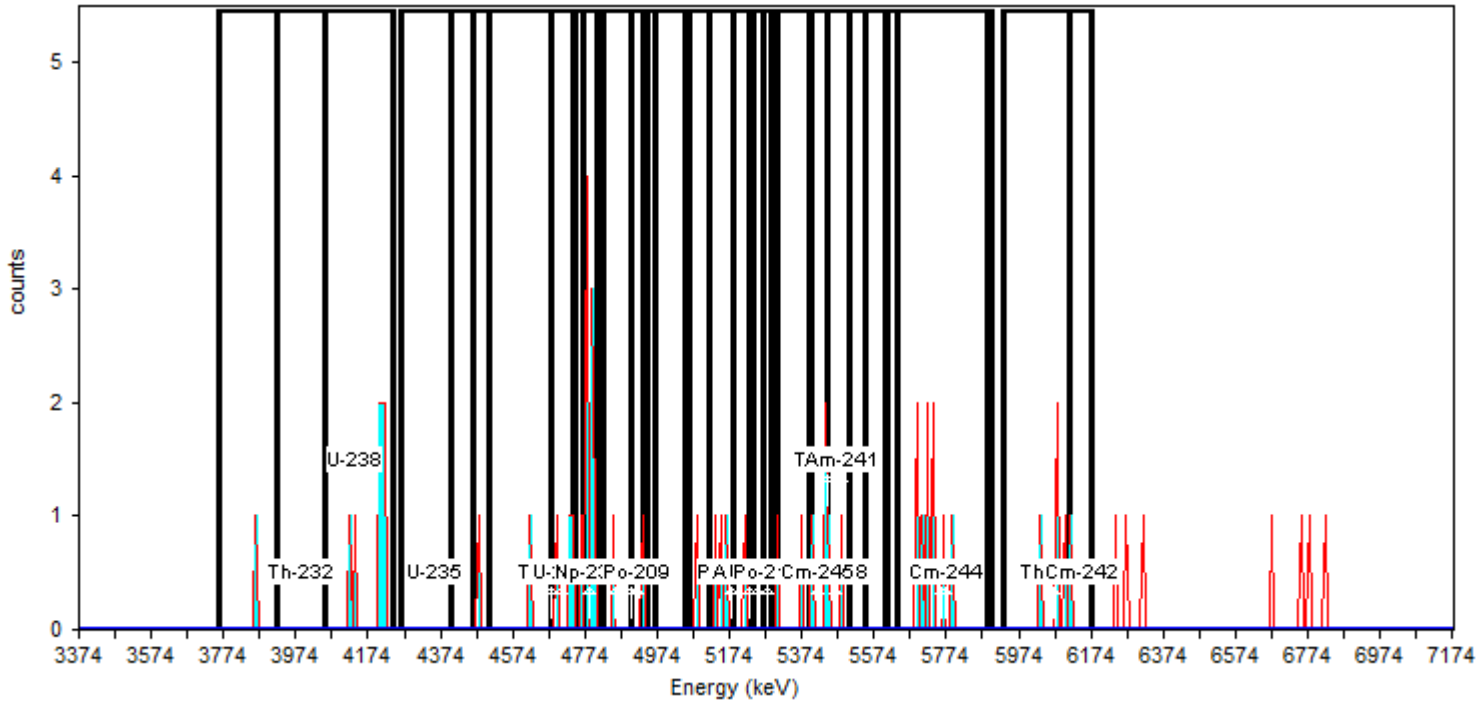
Batch Name: July2016
Description:

Acquisition

Detector: AV230 , SN: 49-045J5
Acquisition Start Date: 7/22/2016 3:43:47PM
Live Time: 960.00 min.
Real Time: 960.05 min.
Calibration Name: IC-9886;AV230-20151018
Calibration Date: 10/18/2015 9:20:40PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 58.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	1.00	1.042E-003	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	8.00	8.333E-003	3.125E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	5.00	5.208E-003	2.552E-003
U-234	4,709.31	4,507.96	4,821.17	13.00	1.354E-002	3.898E-003
Pu-242	4,903.21	4,679.48	4,947.95	14.00	1.458E-002	4.034E-003
Th-229	4,858.46	4,739.14	5,119.48	13.00	1.354E-002	3.898E-003
Np-237	4,783.89	4,768.97	4,806.26	8.00	8.333E-003	3.125E-003
Po-209	4,918.12	4,903.21	4,933.04	1.00	1.042E-003	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	5.00	5.208E-003	2.552E-003
Am-243	5,231.34	5,052.36	5,305.92	6.00	6.250E-003	2.756E-003
U-232	5,253.71	5,059.82	5,402.86	8.00	8.333E-003	3.125E-003
Th-228	5,447.61	5,186.59	5,507.27	8.00	8.333E-003	3.125E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	7.00	7.292E-003	2.946E-003
Am-241	5,484.90	5,298.46	5,604.22	7.00	7.292E-003	2.946E-003
Cm-245	5,417.78	5,395.41	5,447.61	4.00	4.167E-003	2.329E-003
Pu-236	5,760.83	5,611.67	5,887.60	9.00	9.375E-003	3.294E-003
Cm-244	5,775.74	5,641.51	5,902.52	9.00	9.375E-003	3.294E-003
Th-227	6,074.04	5,932.35	6,178.45	5.00	5.208E-003	2.552E-003
Cm-242	6,148.62	6,118.79	6,178.45	1.00	1.042E-003	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:03AM 7/23/2016

Sample

Sample Name: ICB;AV235
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

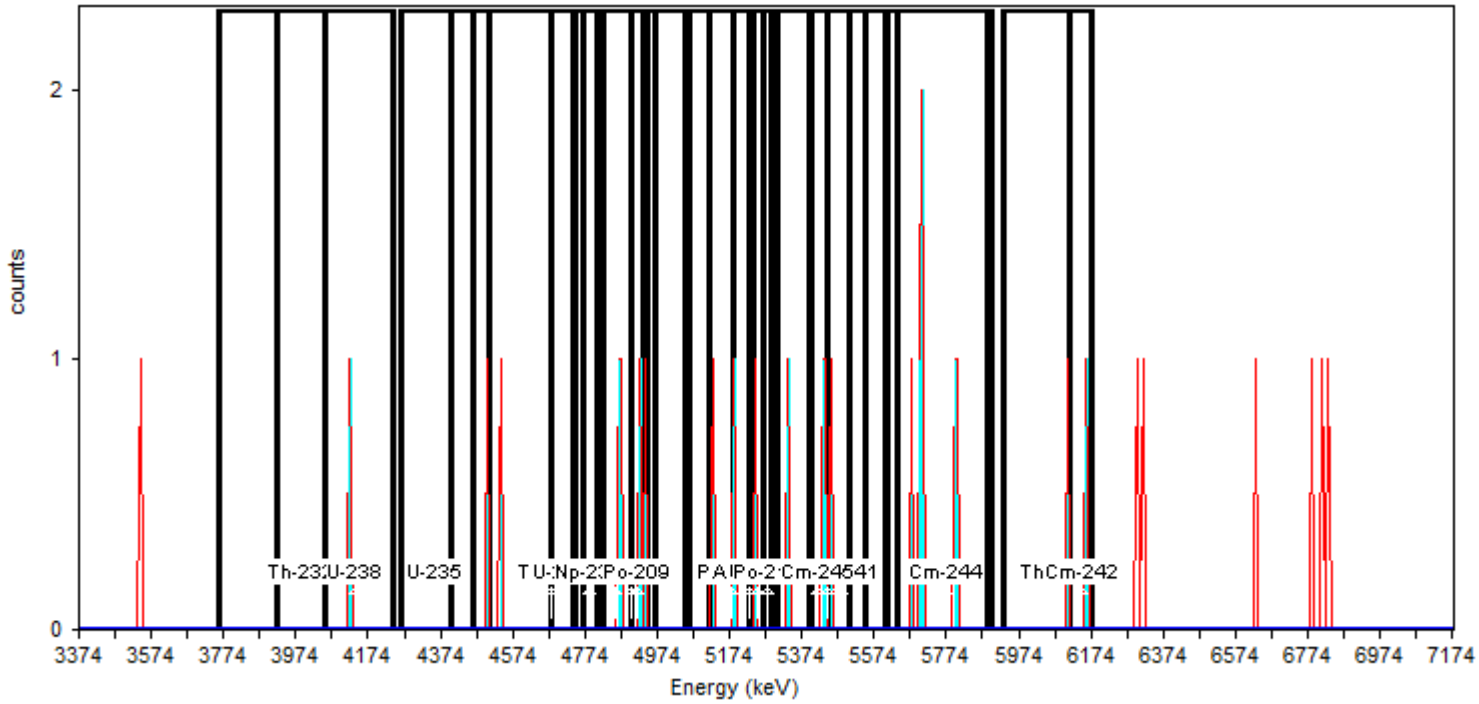
Batch Name: July2016
Description:

Acquisition

Detector: AV235 , SN: 51-005Q5
Acquisition Start Date: 7/22/2016 3:43:48PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-8877;AV235-20151018
Calibration Date: 10/19/2015 4:11:39PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 29.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	0.00	0.000E+000	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	1.00	1.042E-003	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	2.00	2.083E-003	1.804E-003
U-234	4,709.31	4,507.96	4,821.17	1.00	1.042E-003	1.473E-003
Pu-242	4,903.21	4,679.48	4,947.95	4.00	4.167E-003	2.329E-003
Th-229	4,858.46	4,739.14	5,119.48	4.00	4.167E-003	2.329E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	1.00	1.042E-003	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	3.00	3.125E-003	2.083E-003
U-232	5,253.71	5,059.82	5,402.86	4.00	4.167E-003	2.329E-003
Th-228	5,447.61	5,186.59	5,507.27	6.00	6.250E-003	2.756E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	4.00	4.167E-003	2.329E-003
Am-241	5,484.90	5,298.46	5,604.22	4.00	4.167E-003	2.329E-003
Cm-245	5,417.78	5,395.41	5,447.61	2.00	2.083E-003	1.804E-003
Pu-236	5,760.83	5,611.67	5,887.60	6.00	6.250E-003	2.756E-003
Cm-244	5,775.74	5,641.51	5,902.52	6.00	6.250E-003	2.756E-003
Th-227	6,074.04	5,932.35	6,178.45	2.00	2.083E-003	1.804E-003
Cm-242	6,148.62	6,118.79	6,178.45	1.00	1.042E-003	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:48AM 7/23/2016

Sample

Sample Name: ICB;AV236
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

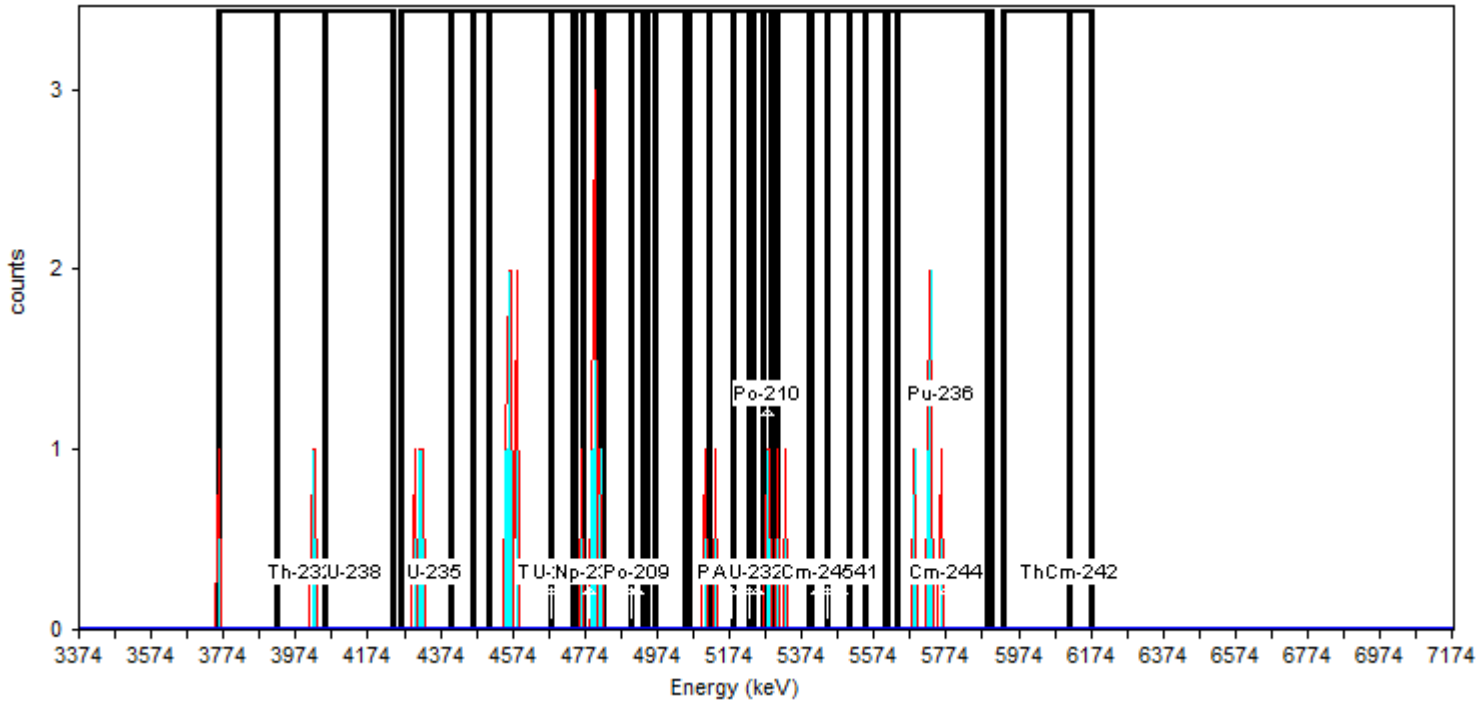
Batch Name: July2016
Description:

Acquisition

Detector: AV236 , SN: 51-005P3
Acquisition Start Date: 7/22/2016 3:43:48PM
Live Time: 960.00 min.
Real Time: 960.34 min.
Calibration Name: IC-9520;AV236-20151018
Calibration Date: 10/19/2015 4:11:44PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 30.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	3.00	3.125E-003	2.083E-003
U-238	4,135.08	3,918.81	4,239.49	2.00	2.083E-003	1.804E-003
U-235	4,358.81	4,261.86	4,463.21	3.00	3.125E-003	2.083E-003
Th-230	4,679.48	4,403.55	4,746.60	7.00	7.292E-003	2.946E-003
U-234	4,709.31	4,507.96	4,821.17	13.00	1.354E-002	3.898E-003
Pu-242	4,903.21	4,679.48	4,947.95	6.00	6.250E-003	2.756E-003
Th-229	4,858.46	4,739.14	5,119.48	7.00	7.292E-003	2.946E-003
Np-237	4,783.89	4,768.97	4,806.26	4.00	4.167E-003	2.329E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	5.00	5.208E-003	2.552E-003
U-232	5,253.71	5,059.82	5,402.86	6.00	6.250E-003	2.756E-003
Th-228	5,447.61	5,186.59	5,507.27	4.00	4.167E-003	2.329E-003
Po-210	5,276.09	5,231.34	5,291.00	2.00	2.083E-003	1.804E-003
Pu-238	5,469.98	5,268.63	5,552.01	4.00	4.167E-003	2.329E-003
Am-241	5,484.90	5,298.46	5,604.22	2.00	2.083E-003	1.804E-003
Cm-245	5,417.78	5,395.41	5,447.61	0.00	0.000E+000	1.473E-003
Pu-236	5,760.83	5,611.67	5,887.60	5.00	5.208E-003	2.552E-003
Cm-244	5,775.74	5,641.51	5,902.52	5.00	5.208E-003	2.552E-003
Th-227	6,074.04	5,932.35	6,178.45	0.00	0.000E+000	1.473E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:15AM 7/23/2016

Sample

Sample Name: ICB;AV237
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

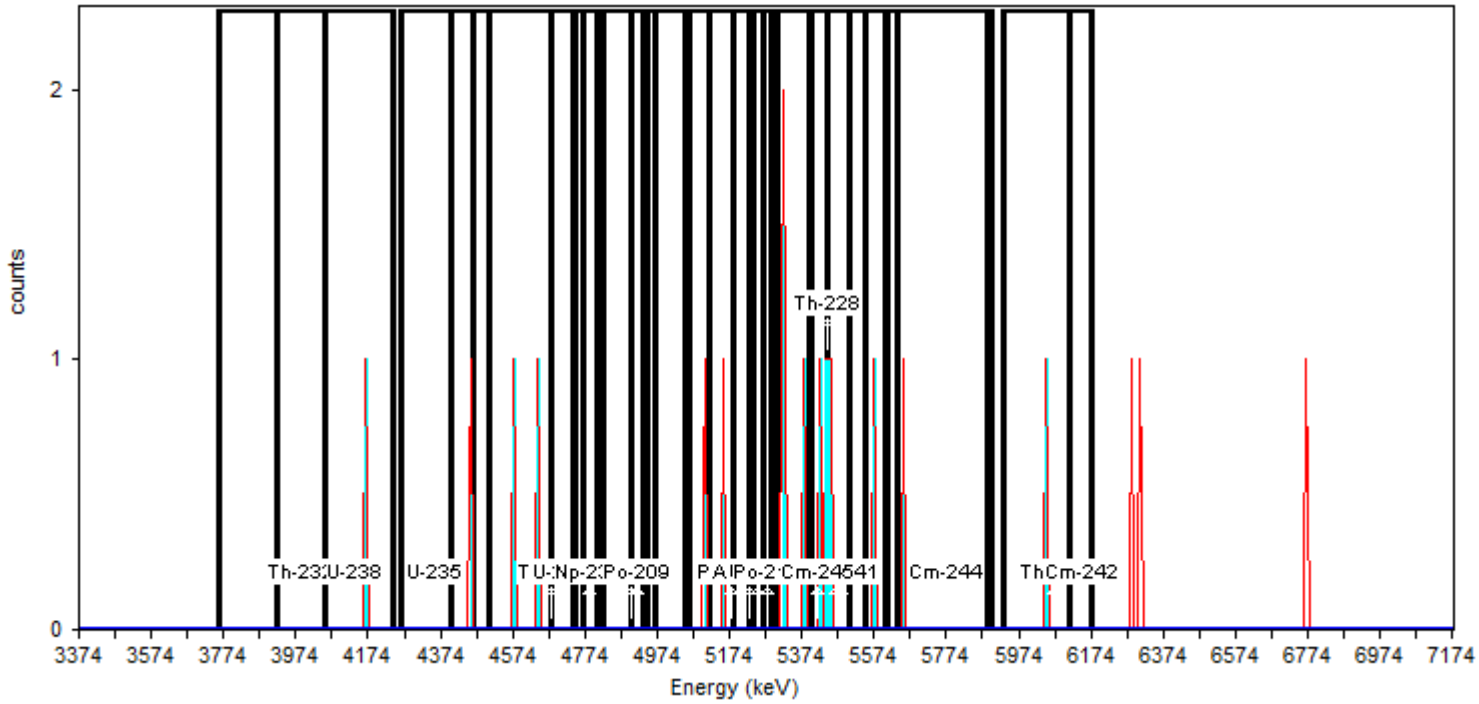
Batch Name: July2016
Description:

Acquisition

Detector: AV237 , SN: 50-120DD7
Acquisition Start Date: 7/22/2016 3:43:48PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9792;AV237-20151018
Calibration Date: 10/19/2015 4:11:48PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 20.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	0.00	0.000E+000	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	1.00	1.042E-003	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	1.00	1.042E-003	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	3.00	3.125E-003	2.083E-003
U-234	4,709.31	4,507.96	4,821.17	2.00	2.083E-003	1.804E-003
Pu-242	4,903.21	4,679.48	4,947.95	0.00	0.000E+000	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	1.00	1.042E-003	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	2.00	2.083E-003	1.804E-003
U-232	5,253.71	5,059.82	5,402.86	6.00	6.250E-003	2.756E-003
Th-228	5,447.61	5,186.59	5,507.27	8.00	8.333E-003	3.125E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	8.00	8.333E-003	3.125E-003
Am-241	5,484.90	5,298.46	5,604.22	9.00	9.375E-003	3.294E-003
Cm-245	5,417.78	5,395.41	5,447.61	3.00	3.125E-003	2.083E-003
Pu-236	5,760.83	5,611.67	5,887.60	1.00	1.042E-003	1.473E-003
Cm-244	5,775.74	5,641.51	5,902.52	1.00	1.042E-003	1.473E-003
Th-227	6,074.04	5,932.35	6,178.45	1.00	1.042E-003	1.473E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:13AM 7/23/2016

Sample

Sample Name: ICB;AV238
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

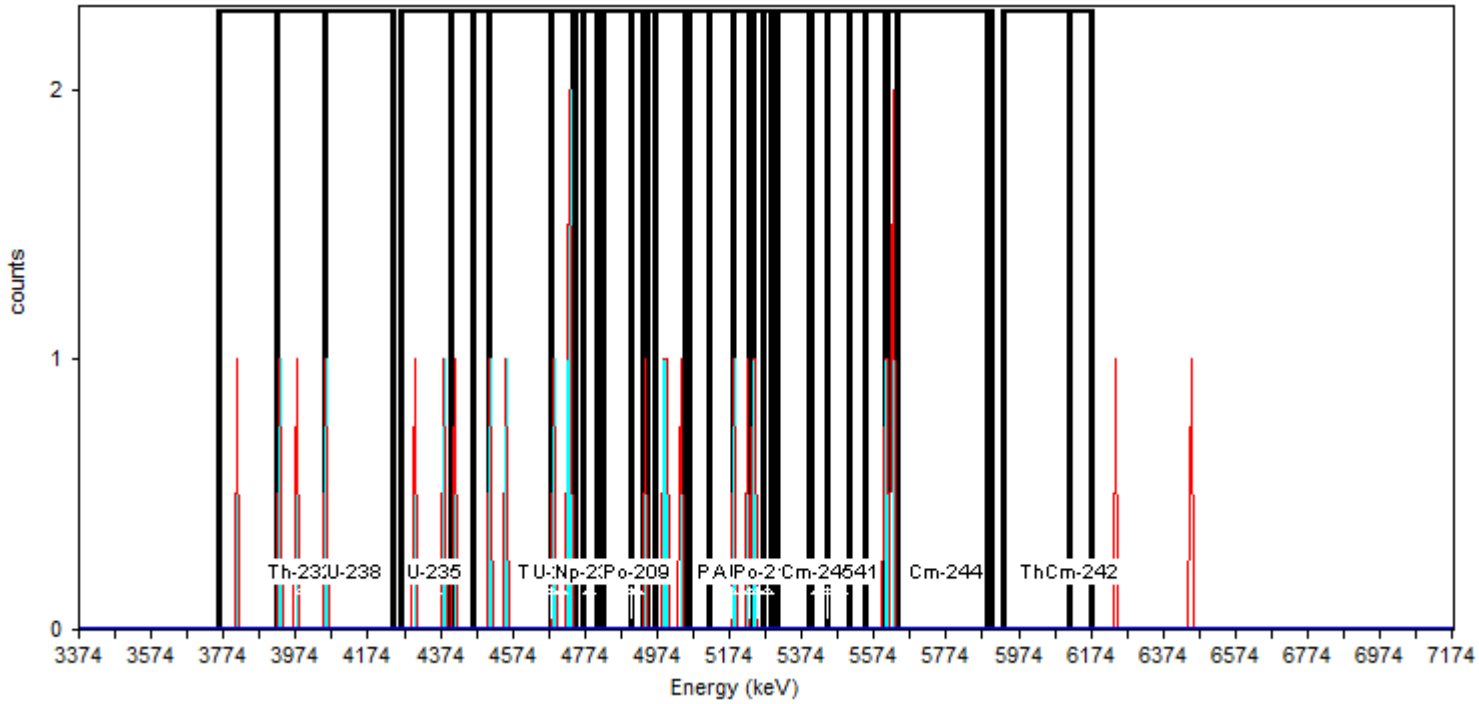
Batch Name: July2016
Description:

Acquisition

Detector: AV238 , SN: 51-005P7
Acquisition Start Date: 7/22/2016 3:43:48PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9793;AV238-20151018
Calibration Date: 10/19/2015 4:11:53PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 27.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	4.00	4.167E-003	2.329E-003
U-238	4,135.08	3,918.81	4,239.49	3.00	3.125E-003	2.083E-003
U-235	4,358.81	4,261.86	4,463.21	3.00	3.125E-003	2.083E-003
Th-230	4,679.48	4,403.55	4,746.60	7.00	7.292E-003	2.946E-003
U-234	4,709.31	4,507.96	4,821.17	6.00	6.250E-003	2.756E-003
Pu-242	4,903.21	4,679.48	4,947.95	5.00	5.208E-003	2.552E-003
Th-229	4,858.46	4,739.14	5,119.48	4.00	4.167E-003	2.329E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	6.00	6.250E-003	2.756E-003
Am-243	5,231.34	5,052.36	5,305.92	4.00	4.167E-003	2.329E-003
U-232	5,253.71	5,059.82	5,402.86	4.00	4.167E-003	2.329E-003
Th-228	5,447.61	5,186.59	5,507.27	4.00	4.167E-003	2.329E-003
Po-210	5,276.09	5,231.34	5,291.00	2.00	2.083E-003	1.804E-003
Pu-238	5,469.98	5,268.63	5,552.01	0.00	0.000E+000	1.473E-003
Am-241	5,484.90	5,298.46	5,604.22	1.00	1.042E-003	1.473E-003
Cm-245	5,417.78	5,395.41	5,447.61	0.00	0.000E+000	1.473E-003
Pu-236	5,760.83	5,611.67	5,887.60	3.00	3.125E-003	2.083E-003
Cm-244	5,775.74	5,641.51	5,902.52	0.00	0.000E+000	1.473E-003
Th-227	6,074.04	5,932.35	6,178.45	0.00	0.000E+000	1.473E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:20AM 7/23/2016

Sample

Sample Name: ICB;AV240
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

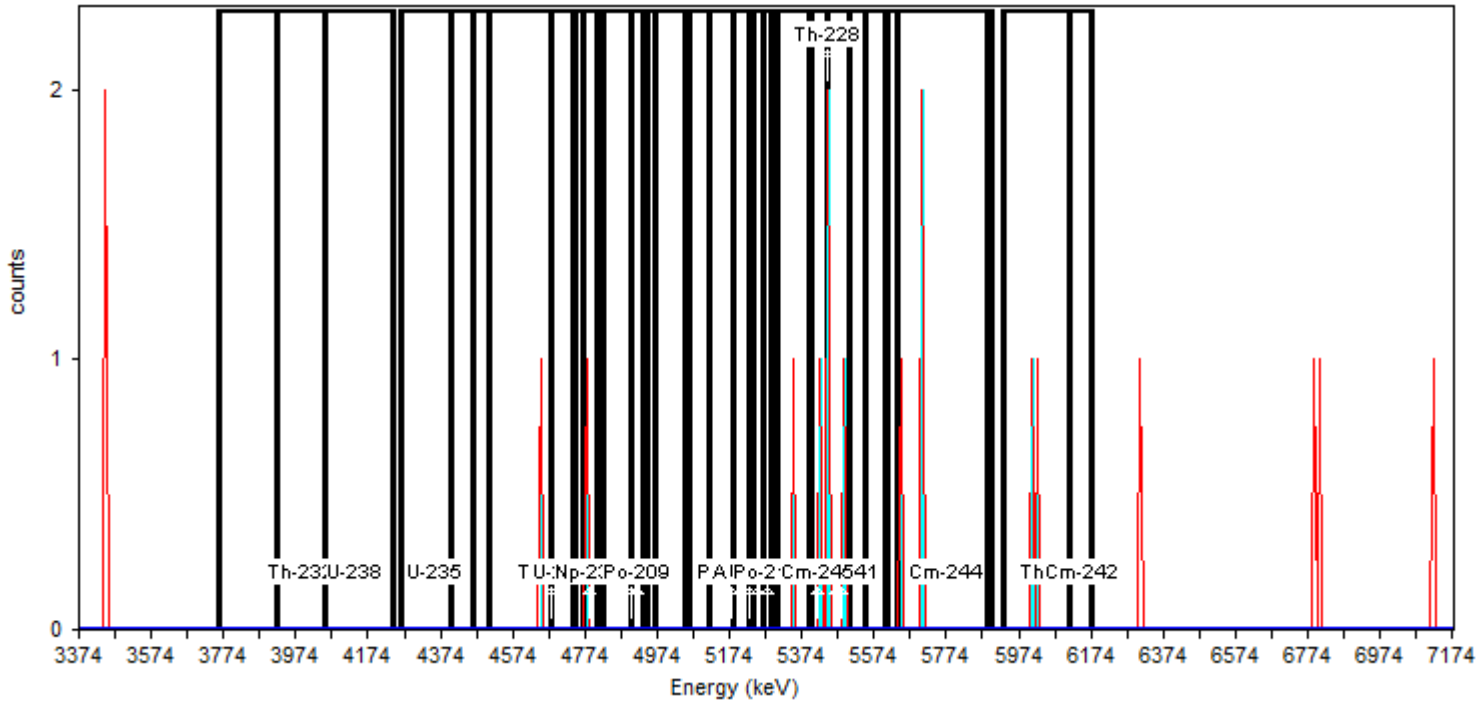
Batch Name: July2016
Description:

Acquisition

Detector: AV240 , SN: 51-005Q1
Acquisition Start Date: 7/22/2016 3:43:49PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9795;AV240-20151018
Calibration Date: 10/19/2015 4:12:02PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 18.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	0.00	0.000E+000	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	0.00	0.000E+000	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	1.00	1.042E-003	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	2.00	2.083E-003	1.804E-003
Pu-242	4,903.21	4,679.48	4,947.95	1.00	1.042E-003	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	1.00	1.042E-003	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	1.00	1.042E-003	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	0.00	0.000E+000	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	0.00	0.000E+000	1.473E-003
U-232	5,253.71	5,059.82	5,402.86	1.00	1.042E-003	1.473E-003
Th-228	5,447.61	5,186.59	5,507.27	5.00	5.208E-003	2.552E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	5.00	5.208E-003	2.552E-003
Am-241	5,484.90	5,298.46	5,604.22	5.00	5.208E-003	2.552E-003
Cm-245	5,417.78	5,395.41	5,447.61	3.00	3.125E-003	2.083E-003
Pu-236	5,760.83	5,611.67	5,887.60	3.00	3.125E-003	2.083E-003
Cm-244	5,775.74	5,641.51	5,902.52	3.00	3.125E-003	2.083E-003
Th-227	6,074.04	5,932.35	6,178.45	2.00	2.083E-003	1.804E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:24AM 7/23/2016

Sample

Sample Name: ICB;AV244
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

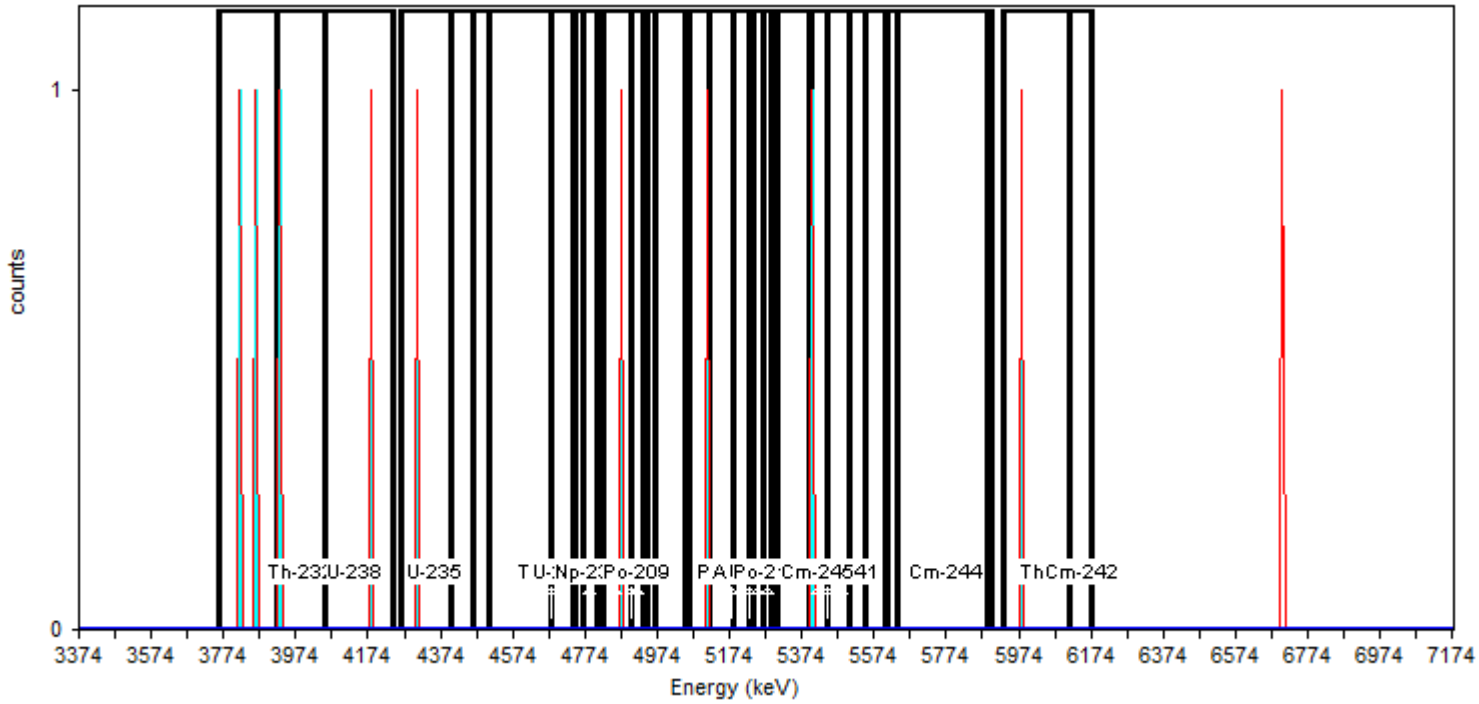
Batch Name: July2016
Description:

Acquisition

Detector: AV244 , SN: 51-005EE3
Acquisition Start Date: 7/22/2016 3:43:50PM
Live Time: 960.00 min.
Real Time: 960.12 min.
Calibration Name: IC-9886;AV244-20151018
Calibration Date: 10/19/2015 4:12:20PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 10.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	3.00	3.125E-003	2.083E-003
U-238	4,135.08	3,918.81	4,239.49	2.00	2.083E-003	1.804E-003
U-235	4,358.81	4,261.86	4,463.21	1.00	1.042E-003	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	0.00	0.000E+000	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	0.00	0.000E+000	1.473E-003
Pu-242	4,903.21	4,679.48	4,947.95	1.00	1.042E-003	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	2.00	2.083E-003	1.804E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	1.00	1.042E-003	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	1.00	1.042E-003	1.473E-003
U-232	5,253.71	5,059.82	5,402.86	2.00	2.083E-003	1.804E-003
Th-228	5,447.61	5,186.59	5,507.27	1.00	1.042E-003	1.473E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	1.00	1.042E-003	1.473E-003
Am-241	5,484.90	5,298.46	5,604.22	1.00	1.042E-003	1.473E-003
Cm-245	5,417.78	5,395.41	5,447.61	1.00	1.042E-003	1.473E-003
Pu-236	5,760.83	5,611.67	5,887.60	0.00	0.000E+000	1.473E-003
Cm-244	5,775.74	5,641.51	5,902.52	0.00	0.000E+000	1.473E-003
Th-227	6,074.04	5,932.35	6,178.45	1.00	1.042E-003	1.473E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:46:51AM 7/23/2016

Sample

Sample Name: ICB;AV245
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

Batch

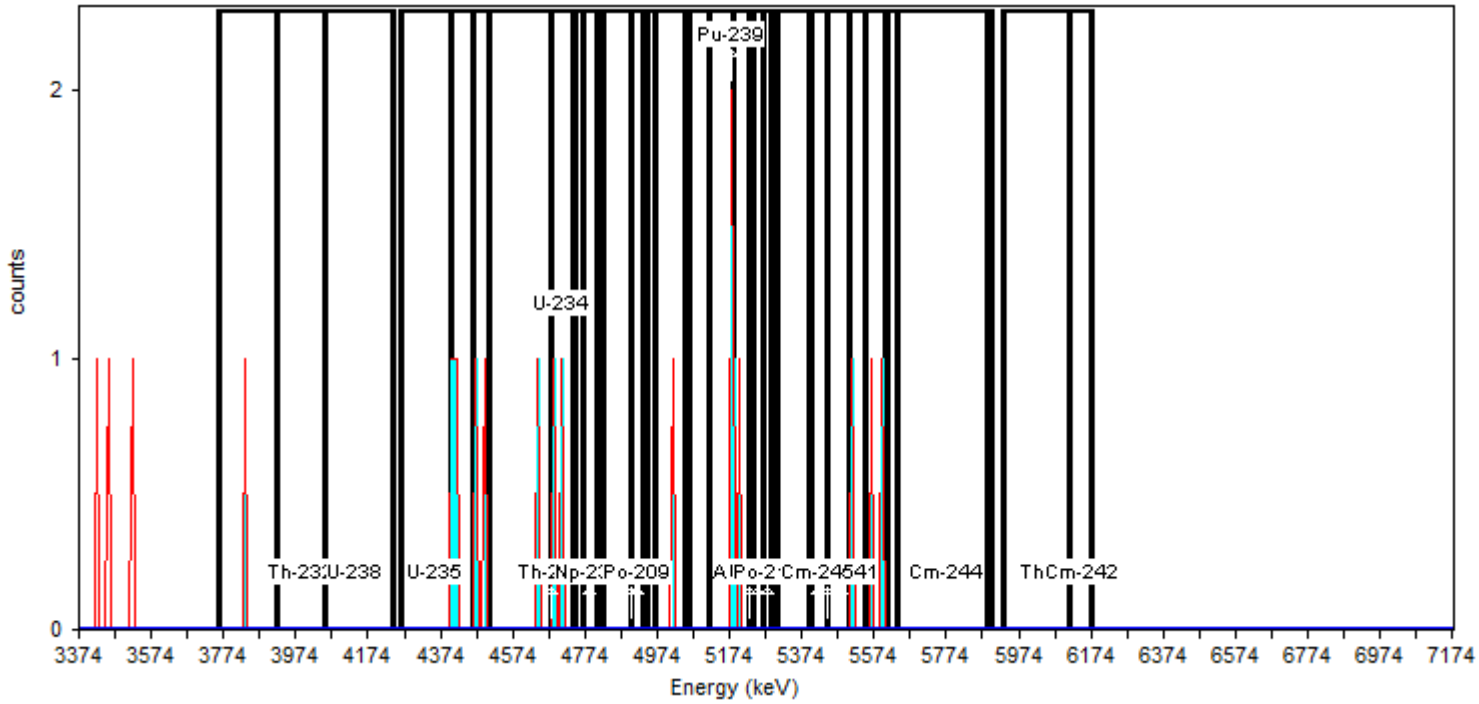
Batch Name: July2016
Description:

Acquisition

Detector: AV245 , SN: 51-005EE2
Acquisition Start Date: 7/22/2016 3:43:50PM
Live Time: 960.00 min.
Real Time: 960.36 min.
Calibration Name: IC-7107;AV245-20151019
Calibration Date: 10/19/2015 10:52:31PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 20.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	1.00	1.042E-003	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	0.00	0.000E+000	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	3.00	3.125E-003	2.083E-003
Th-230	4,679.48	4,403.55	4,746.60	8.00	8.333E-003	3.125E-003
U-234	4,709.31	4,507.96	4,821.17	3.00	3.125E-003	2.083E-003
Pu-242	4,903.21	4,679.48	4,947.95	2.00	2.083E-003	1.804E-003
Th-229	4,858.46	4,739.14	5,119.48	1.00	1.042E-003	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	5.00	5.208E-003	2.552E-003
Am-243	5,231.34	5,052.36	5,305.92	4.00	4.167E-003	2.329E-003
U-232	5,253.71	5,059.82	5,402.86	4.00	4.167E-003	2.329E-003
Th-228	5,447.61	5,186.59	5,507.27	2.00	2.083E-003	1.804E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	1.00	1.042E-003	1.473E-003
Am-241	5,484.90	5,298.46	5,604.22	3.00	3.125E-003	2.083E-003
Cm-245	5,417.78	5,395.41	5,447.61	0.00	0.000E+000	1.473E-003
Pu-236	5,760.83	5,611.67	5,887.60	0.00	0.000E+000	1.473E-003
Cm-244	5,775.74	5,641.51	5,902.52	0.00	0.000E+000	1.473E-003
Th-227	6,074.04	5,932.35	6,178.45	0.00	0.000E+000	1.473E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

Run Logs

Alpha Spectroscopy Run Log

Detector: AV149

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 15:51	140	IC 160-223446/1		223446			PS
10/26/15 19:10	60	ICV 160-223564/1		223564			PS
07/22/16 15:43	960	ICB 160-261903/1		261903			PS
07/27/16 07:26	60	CCV 160-262220/1		262220			PS
08/15/16 14:39	1	PULSER 160-264961/1		264961			RTM
08/15/16 17:21	960	160-18504-F-1-L DU		264961	264058	A-01-R	RTM

Detector: AV150

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 15:51	140	IC 160-223447/1		223447			PS
10/26/15 19:10	60	ICV 160-223565/1		223565			PS
07/22/16 15:43	960	ICB 160-261904/1		261904			PS
07/26/16 09:13	60	CCV 160-262322/1		262322			PS
08/12/16 09:20	1	PULSER 160-264793/1		264793			RTM
08/12/16 16:24	240	MB 160-264058/1-A		264793	264058	A-01-R	RTM

Detector: AV151

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 15:51	140	IC 160-223448/1		223448			PS
10/26/15 19:11	60	ICV 160-223566/1		223566			PS
07/22/16 15:43	960	ICB 160-261905/1		261905			PS
07/26/16 09:35	60	CCV 160-262323/1		262323			PS
08/12/16 09:20	1	PULSER 160-264794/1		264794			RTM
08/12/16 16:24	240	LCS 160-264058/2-A		264794	264058	A-01-R	RTM

Detector: AV152

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 15:52	140	IC 160-223449/1		223449			PS
10/26/15 19:11	60	ICV 160-223567/1		223567			PS
07/22/16 15:43	960	ICB 160-261906/1		261906			PS
07/26/16 09:35	60	CCV 160-262324/1		262324			PS
08/18/16 12:27	1	PULSER 160-265586/1		265586			RTM
08/18/16 17:10	400	MB 160-265068/1-A		265586	265068	A-01-R	RTM

Detector: AV153

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 15:52	140	IC 160-223450/1		223450			PS
10/26/15 19:11	60	ICV 160-223568/1		223568			PS
07/25/16 13:14	960	ICB 160-261999/1		261999			PS
07/26/16 09:14	60	CCV 160-262325/1		262325			PS
08/18/16 12:27	1	PULSER 160-265587/1		265587			RTM
08/18/16 17:10	400	LCS 160-265068/2-A		265587	265068	A-01-R	RTM

Detector: AV156

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 16:27	140	IC 160-223453/1		223453			PS
10/26/15 19:12	60	ICV 160-223571/1		223571			PS

Alpha Spectroscopy Run Log

Detector: AV156 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
07/22/16 15:43	960	ICB 160-261910/1		261910			PS
07/26/16 09:14	60	CCV 160-262326/1		262326			PS
08/18/16 12:27	1	PULSER 160-265588/1		265588			RTM
08/18/16 17:10	400	160-18521-1	YMTFA74SE001	265588	265068	A-01-R	RTM

Detector: AV157

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 15:53	140	IC 160-223454/1		223454			PS
10/26/15 19:12	60	ICV 160-223572/1		223572			PS
07/22/16 15:43	960	ICB 160-261911/1		261911			PS
07/26/16 09:15	60	CCV 160-262327/1		262327			PS
08/18/16 12:27	1	PULSER 160-265589/1		265589			RTM
08/18/16 17:10	400	160-18521-1 DU	YMTFA74SE001 DU	265589	265068	A-01-R	RTM

Detector: AV161

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 18:57	140	IC 160-223458/1		223458			PS
10/26/15 20:26	60	ICV 160-223576/1		223576			PS
07/22/16 15:43	960	ICB 160-261915/1		261915			PS
07/26/16 09:12	60	CCV 160-262331/1		262331			PS
08/12/16 09:20	1	PULSER 160-264802/1		264802			RTM
08/12/16 16:24	240	160-18521-2	YMTFA75SE001	264802	264058	A-01-R	RTM

Detector: AV176

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/17/15 14:48	140	IC 160-223473/1		223473			PS
10/31/15 14:14	60	ICV 160-223591/1		223591			PS
07/22/16 15:43	960	ICB 160-261930/1		261930			PS
07/26/16 12:11	60	CCV 160-262168/1		262168			PS
08/16/16 12:32	1	PULSER 160-265201/1		265201			RTM
08/16/16 16:13	960	160-18521-1	YMTFA74SE001	265201	264056	A-01-R	RTM

Detector: AV227

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 18:59	140	IC 160-223523/1		223523			PS
11/01/15 19:19	60	ICV 160-223642/1		223642			PS
07/22/16 15:43	960	ICB 160-261971/1		261971			PS
07/26/16 13:39	60	CCV 160-262196/1		262196			PS
08/12/16 09:12	1	PULSER 160-264839/1		264839			RTM
08/12/16 16:27	240	MB 160-264055/1-A		264839	264055	A-01-R	RTM
08/16/16 12:33	1	PULSER 160-265256/1		265256			RTM
08/16/16 16:19	400	MB 160-264041/1-A		265256	264041	A-01-R	RTM

Detector: AV228

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 18:59	140	IC 160-223524/1		223524			PS
11/01/15 19:19	60	ICV 160-223643/1		223643			PS

Alpha Spectroscopy Run Log

Detector: AV228 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
07/22/16 15:43	960	ICB 160-261972/1		261972			PS
07/26/16 15:00	60	CCV 160-262197/1		262197			PS
08/12/16 09:12	1	PULSER 160-264840/1		264840			RTM
08/12/16 16:27	240	LCS 160-264055/2-A		264840	264055	A-01-R	RTM
08/16/16 12:33	1	PULSER 160-265229/1		265229			RTM
08/16/16 16:19	400	LCS 160-264041/2-A		265229	264041	A-01-R	RTM

Detector: AV230

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 19:00	140	IC 160-223526/1		223526			PS
11/01/15 19:19	60	ICV 160-223645/1		223645			PS
07/22/16 15:43	960	ICB 160-261974/1		261974			PS
07/26/16 15:01	60	CCV 160-262199/1		262199			
07/26/16 19:07	60	CCV 160-262199/2		262199			PS
08/12/16 09:12	1	PULSER 160-264842/1		264842			RTM
08/12/16 16:27	240	160-18504-F-1-H DU		264842	264055	A-01-R	RTM
08/16/16 12:33	1	PULSER 160-265231/1		265231			RTM
08/16/16 16:19	400	160-18504-F-1-F DU		265231	264041	A-01-R	RTM

Detector: AV235

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 21:32	140	IC 160-223531/1		223531			PS
11/01/15 20:30	60	ICV 160-223650/1		223650			PS
07/22/16 15:43	960	ICB 160-261979/1		261979			PS
07/26/16 15:02	60	CCV 160-262204/1		262204			PS
08/12/16 09:12	1	PULSER 160-264846/1		264846			RTM
08/12/16 16:27	240	160-18521-1	YMTFA74SE001	264846	264055	A-01-R	RTM
08/16/16 12:33	1	PULSER 160-265235/1		265235			RTM
08/16/16 16:19	400	160-18521-1	YMTFA74SE001	265235	264041	A-01-R	RTM

Detector: AV236

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 21:32	140	IC 160-223532/1		223532			PS
11/05/15 16:56	60	ICV 160-223666/1		223666			
11/05/15 18:22	60	ICV 160-223666/2		223666			PS
07/22/16 15:43	960	ICB 160-261980/1		261980			PS
07/26/16 15:02	60	CCV 160-262205/1		262205			PS
08/12/16 09:12	1	PULSER 160-264847/1		264847			RTM
08/12/16 16:27	240	160-18521-2	YMTFA75SE001	264847	264055	A-01-R	RTM
08/16/16 12:33	1	PULSER 160-265236/1		265236			RTM
08/16/16 16:19	400	160-18521-2	YMTFA75SE001	265236	264041	A-01-R	RTM

Detector: AV237

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 21:32	140	IC 160-223533/1		223533			PS
11/01/15 20:31	60	ICV 160-223652/1		223652			PS
07/22/16 15:43	960	ICB 160-261981/1		261981			PS
07/26/16 15:03	60	CCV 160-262206/1		262206			PS
08/12/16 09:12	1	PULSER 160-264848/1		264848			RTM

Alpha Spectroscopy Run Log

Detector: AV237 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
08/12/16 16:30	240	MB 160-264040/1-A		264848	264040	A-01-R	RTM
08/15/16 14:39	1	PULSER 160-265017/1		265017			RTM
08/15/16 17:30	240	MB 160-264056/1-A		265017	264056	A-01-R	RTM

Detector: AV238

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 21:32	140	IC 160-223534/1		223534			PS
11/01/15 20:31	60	ICV 160-223653/1		223653			PS
07/22/16 15:43	960	ICB 160-261982/1		261982			PS
07/26/16 12:23	60	CCV 160-262207/1		262207			PS
08/12/16 09:12	1	PULSER 160-264849/1		264849			RTM
08/12/16 16:30	240	LCS 160-264040/2-A		264849	264040	A-01-R	RTM
08/15/16 14:39	1	PULSER 160-265018/1		265018			RTM
08/15/16 17:30	240	LCS 160-264056/2-A		265018	264056	A-01-R	RTM

Detector: AV240

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 21:33	140	IC 160-223536/1		223536			PS
11/01/15 20:31	60	ICV 160-223655/1		223655			PS
07/22/16 15:43	960	ICB 160-261984/1		261984			PS
07/26/16 12:23	60	CCV 160-262209/1		262209			PS
08/12/16 09:12	1	PULSER 160-264851/1		264851			RTM
08/12/16 16:30	240	160-18504-F-1-D DU		264851	264040	A-01-R	RTM
08/15/16 14:39	1	PULSER 160-265020/1		265020			RTM
08/15/16 17:30	240	160-18504-F-1-J DU		265020	264056	A-01-R	RTM

Detector: AV244

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 21:34	140	IC 160-223540/1		223540			PS
11/01/15 20:34	60	ICV 160-223659/1		223659			PS
07/22/16 15:43	960	ICB 160-261990/1		261990			PS
07/26/16 13:37	60	CCV 160-262213/1		262213			PS
08/12/16 09:12	1	PULSER 160-264855/1		264855			RTM
08/12/16 16:30	240	160-18521-1	YMTFA74SE001	264855	264040	A-01-R	RTM

Detector: AV245

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/19/15 17:11	140	IC 160-223541/1		223541			PS
11/01/15 23:26	60	ICV 160-223660/1		223660			PS
07/22/16 15:43	960	ICB 160-261991/1		261991			PS
07/26/16 13:49	60	CCV 160-262214/1		262214			PS
08/12/16 09:12	1	PULSER 160-264856/1		264856			RTM
08/12/16 16:30	240	160-18521-2	YMTFA75SE001	264856	264040	A-01-R	RTM
08/15/16 14:40	1	PULSER 160-265025/1		265025			RTM
08/15/16 17:30	240	160-18521-2	YMTFA75SE001	265025	264056	A-01-R	RTM

GAMMA SPECTROSCOPY

Method TC-02-RC Tracers

Technetium-99 Tracers

Prep Batch: 264677

Technetium-99 Tracers Prep

Test America St. Louis Spectrum ID: 5_Gamma_20161477

Sample Description: 264677_Gamma_MB 160-264677~1-A
Detector: Detector # 5
Batch ID: 264677
Work Order Number: Gamma
Lot Number: MB 160-264677~1-A

Decay to Time: 8/12/2016 12:00 Live Time: 600 sec
Acquisition Time: 8/12/2016 16:40:32 Real Time: 602 sec
Analysis Time: 8/12/2016 16:51 Dead Time: 0.33 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 5_Soil_TunaCan.Clb
Efficiency Cal Desc: 5_Soil_TunaCan_90099_032612
Efficiency Cal Date: 3/27/2012 17:20
Energy Cal Date: 2/28/2012 19:35
Library: Client_Tc-99m.lib
Bkgd Correction File: 5_2016-07-31_1355.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.123E+02	5.4	4.930E+01	6.774E+01	3.183E+01
Total	9.123E+02				

Analyst: Mike Aldridge

(Page 1 of 5)

Sample description
264677_Gamma_MB 160-264677~1-A

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20161477.An1

Acquisition information
Start time: 8/12/2016 4:40:32 PM
Live time: 600
Real time: 602
Dead time: 0.33 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: 5_Soil_TunaCan.Clb
5_Soil_TunaCan_90099_032612

Energy Calibration
Created: 2/28/2012 7:35:48 PM
Zero offset: 0.158 keV
Gain: 0.250 keV/channel
Quadratic: 3.911E-08 keV/channel^2

Efficiency Calibration
Created: 3/27/2012 5:20:37 PM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.466115E-01 + (-7.830454E-01*Log(E)) + (-4.117504E-03*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.43 %
Log(Eff): -2.462251E+01 + (9.075211E+00*Log(E)) + (-9.664422E-01*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.62keV)
Stop channel: 8000 (2000.81keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       8/12/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       5_2016-07-31_1355.PBC
                                                7/31/2016 1:55:22 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0301

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.54      356.   5.40   1.01  3.411E-02   140.51  89.060  9.123E+02 TC99M
No unknown peaks passed sensitivity test.

-------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K   S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.88   140.51         4.       356.     0.593     5.40   1.013D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.1227E+02				2.51E-01	Energy duplication
			140.51	9.123E+02	(	3.183E+01 5.40E+00 8.91E+01 G K	

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

(Page 4 of 5)

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	5.3248E+02	9.1227E+02	5.404E+00%	3.18E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.8 keV) 5.325E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 9.1227155E+02 pCi/Sample

The library has energies which are not separable.

(Page 5 of 5)

264677_Gamma_MB 160-264677~1-A. 5_Gamma_20161477.spc.

Test America St. Louis Spectrum ID: 7_Gamma_20161942

Sample Description: 264677_Gamma_LCS 160-264677~2-A
Detector: Detector # 7
Batch ID: 264677
Work Order Number: Gamma
Lot Number: LCS 160-264677~2-A

Decay to Time: 8/12/2016 12:00 Live Time: 600 sec
Acquisition Time: 8/12/2016 16:41:33 Real Time: 612 sec
Analysis Time: 8/12/2016 16:52 Dead Time: 2.01 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 7_Soil_TunaCan.Clb
Efficiency Cal Desc: 7_TunaCan_90099_032712
Efficiency Cal Date: 3/16/2012 11:45
Energy Cal Date: 2/23/2012 08:40
Library: Client_Tc-99m.lib
Bkgd Correction File: 7_2016-07-31_1448.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.276E+02	4.4	4.053E+01	6.224E+01	3.153E+01
Total	9.276E+02				

Analyst: Mike Aldridge

(Page 1 of 5)

Sample description
264677_Gamma_LCS 160-264677~2-A

Spectrum Filename: C:\User\SPC\Det7\7_Gamma_20161942.An1

Acquisition information
Start time: 8/12/2016 4:41:33 PM
Live time: 600
Real time: 612
Dead time: 2.01 %
Detector ID: 7

Detector system
Ge 7 SN/154

Calibration
Filename: 7_Soil_TunaCan.Clb
7_TunaCan_90099_032712

Energy Calibration
Created: 2/23/2012 8:40:56 AM
Zero offset: 0.117 keV
Gain: 0.250 keV/channel
Quadratic: 3.508E-09 keV/channel^2

Efficiency Calibration
Created: 3/16/2012 11:45:14 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.716580E-01 + (-6.166540E-01*Log(E)) + (-2.065917E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.48 %
Log(Eff): -2.689695E+01 + (1.019544E+01*Log(E)) + (-1.081671E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.61keV)
Stop channel: 8000 (2000.13keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       8/12/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       7_2016-07-31_1448.PBC
                                                7/31/2016 2:48:35 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0208

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.49      564.   4.37   1.06  5.336E-02   140.51  89.060  9.276E+02 TC99M
No unknown peaks passed sensitivity test.

-------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K   S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.63   140.51        12.       564.     0.941     4.37   1.056D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

```
 *****   S U M M A R Y   O F   L I B R A R Y   P E A K   U S A G E   *****
- Nuclide -  Average     ------------- Peak --------------
Name   Code  Activity     Energy   Activity Code MDA Value
             pCi/Sample    keV     pCi/Sample    pCi/Sample     COMMENTS
_____________________________________________________________________________

TC-99M   I   9.2758E+02                                        2.51E-01
                                                             Energy duplication
                           140.51 9.276E+02  (  3.153E+01 4.37E+00 8.91E+01 G K
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
       failed one or more qualification tests.
   + - Peak activity higher than counting uncertainty range.
   - - Peak activity lower than counting uncertainty range.
   = - Peak outside analysis energy range.
   & - Calculated peak centroid is not close enough to the
       library energy centroid for positive identification.
   P - Peakbackground subtraction
   } - Peak is too close to another for the activity
       to be found directly.

   Nuclide Codes:                      Peak Codes:
   T - Thermal Neutron Activation      G - Gamma Ray
   F - Fast Neutron Activation         X - X-Ray
   I - Fission Product                 P - Positron Decay
   N - Naturally Occurring Isotope     S - Single-Escape
   P - Photon Reaction                 D - Double-Escape
   C - Charged Particle Reaction       K - Key Line
   M - No MDA Calculation              A - Not in Average
   R - Coincidence Corrected           C - Coincidence Peak
   H - Halflife limit exceeded

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


 *************** D I S C A R D E D   I S O T O P E   P E A K S ***************
 Nuclide Centroid  Background  Net Area   Intensity   Uncert   Activity
            Energy   Counts     Counts     Cts/Sec  1 Sigma %
_____________________________________________________________________________
   P - Peakbackground subtraction
```

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	5.4036E+02	9.2758E+02	4.369E+00%	3.15E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.1 keV) 5.404E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.1 keV) 9.2758118E+02 pCi/Sample

The library has energies which are not separable.

(Page 5 of 5)

264677_Gamma_LCS 160-264677~2-A. 7_Gamma_20161942.spc.

Test America St. Louis Spectrum ID: 8_Gamma_20161217

Sample Description: 264677_Gamma_160-18504-C-3-G DU
Detector: Detector # 8
Batch ID: 264677
Work Order Number: Gamma
Lot Number: 160-18504-C-3-G DU

Decay to Time: 8/12/2016 12:00 Live Time: 600 sec
Acquisition Time: 8/12/2016 17:04:14 Real Time: 616 sec
Analysis Time: 8/12/2016 17:15 Dead Time: 2.62 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 8_Soil_TunaCan.Clb
Efficiency Cal Desc: 8_Soil_TunaCan_90099_032712
Efficiency Cal Date: 3/28/2012 10:35
Energy Cal Date: 2/28/2012 10:34
Library: Client_Tc-99m.lib
Bkgd Correction File: 8_2016-08-08_1838.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.875E+02	5.2	4.630E+01	6.471E+01	2.966E+01
Total	8.875E+02				

Analyst: Mike Aldridge

(Page 1 of 5)

Sample description
264677_Gamma_160-18504-C-3-G DU

Spectrum Filename: C:\User\SPC\Det8\8_Gamma_20161217.An1

Acquisition information

Start time:	8/12/2016 5:04:14 PM
Live time:	600
Real time:	616
Dead time:	2.62 %
Detector ID:	8

Detector system
Ge 8 SN/174

Calibration

Filename:	8_Soil_TunaCan.Clb

8_Soil_TunaCan_90099_032712

Energy Calibration

Created:	2/28/2012 10:34:41 AM
Zero offset:	0.052 keV
Gain:	0.250 keV/channel
Quadratic:	5.282E-10 keV/channel^2

Efficiency Calibration

Created:	3/28/2012 10:35:20 AM
Knee Energy:	165.85 keV
Above the Knee:	Quadratic Uncertainty = 1.39 %
Log(Eff):	-1.098764E-01 + (-4.958544E-01*Log(E)) + (-2.572270E-02*Log(E)^2)
Below the Knee:	Quadratic Uncertainty = 1.71 %
Log(Eff):	-2.525301E+01 + (9.398253E+00*Log(E)) + (-1.000034E+00*Log(E)^2)

Library Files

Main analysis library:	Client_Tc-99m.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G800W064
Start channel:	150 (37.55keV)
Stop channel:	8000 (1999.97keV)
Peak rejection level:	1000.000%
Peak search sensitivity:	3
Sample Size:	1.0000E+00 +/- 0.000E+00%
Activity scaling factor:	1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method:	Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                           Status          Comments
       Decay correct to date:          YES       8/12/2016 12:00:00 PM
       Decay during acquisition:       YES
       Decay during collection:        NO
       True coincidence correction:    NO
       Peaked background correction:   YES       8_2016-08-08_1838.PBC
                                                 8/8/2016 6:38:16 PM

       Absorption (Internal):          NO
       Geometry correction:            NO
       Random summing:                 NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0051

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.50      382.   5.22   0.80  3.945E-02   140.51  89.060  8.875E+02 TC99M
No unknown peaks passed sensitivity test.

-------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K   S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.86   140.51         5.       382.     0.637     5.22   0.795D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

```
 *****   S U M M A R Y   O F   L I B R A R Y   P E A K   U S A G E   *****
- Nuclide -  Average     ------------- Peak --------------
Name   Code  Activity     Energy   Activity Code MDA Value
             pCi/Sample    keV     pCi/Sample    pCi/Sample     COMMENTS
_____________________________________________________________________________

TC-99M   I   8.8751E+02                                        2.51E-01
                                                             Energy duplication
                            140.51 8.875E+02  (  2.966E+01 5.22E+00 8.91E+01 G K
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
       failed one or more qualification tests.
   + - Peak activity higher than counting uncertainty range.
   - - Peak activity lower than counting uncertainty range.
   = - Peak outside analysis energy range.
   & - Calculated peak centroid is not close enough to the
       library energy centroid for positive identification.
   P - Peakbackground subtraction
   } - Peak is too close to another for the activity
       to be found directly.

   Nuclide Codes:                      Peak Codes:
   T - Thermal Neutron Activation      G - Gamma Ray
   F - Fast Neutron Activation         X - X-Ray
   I - Fission Product                 P - Positron Decay
   N - Naturally Occurring Isotope     S - Single-Escape
   P - Photon Reaction                 D - Double-Escape
   C - Charged Particle Reaction       K - Key Line
   M - No MDA Calculation              A - Not in Average
   R - Coincidence Corrected           C - Coincidence Peak
   H - Halflife limit exceeded

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


 *************** D I S C A R D E D   I S O T O P E   P E A K S ***************
 Nuclide Centroid  Background  Net Area   Intensity   Uncert   Activity
           Energy   Counts     Counts     Cts/Sec  1 Sigma %
_____________________________________________________________________________
   P - Peakbackground subtraction
```

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	4.9499E+02	8.8751E+02	5.217E+00%	2.97E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

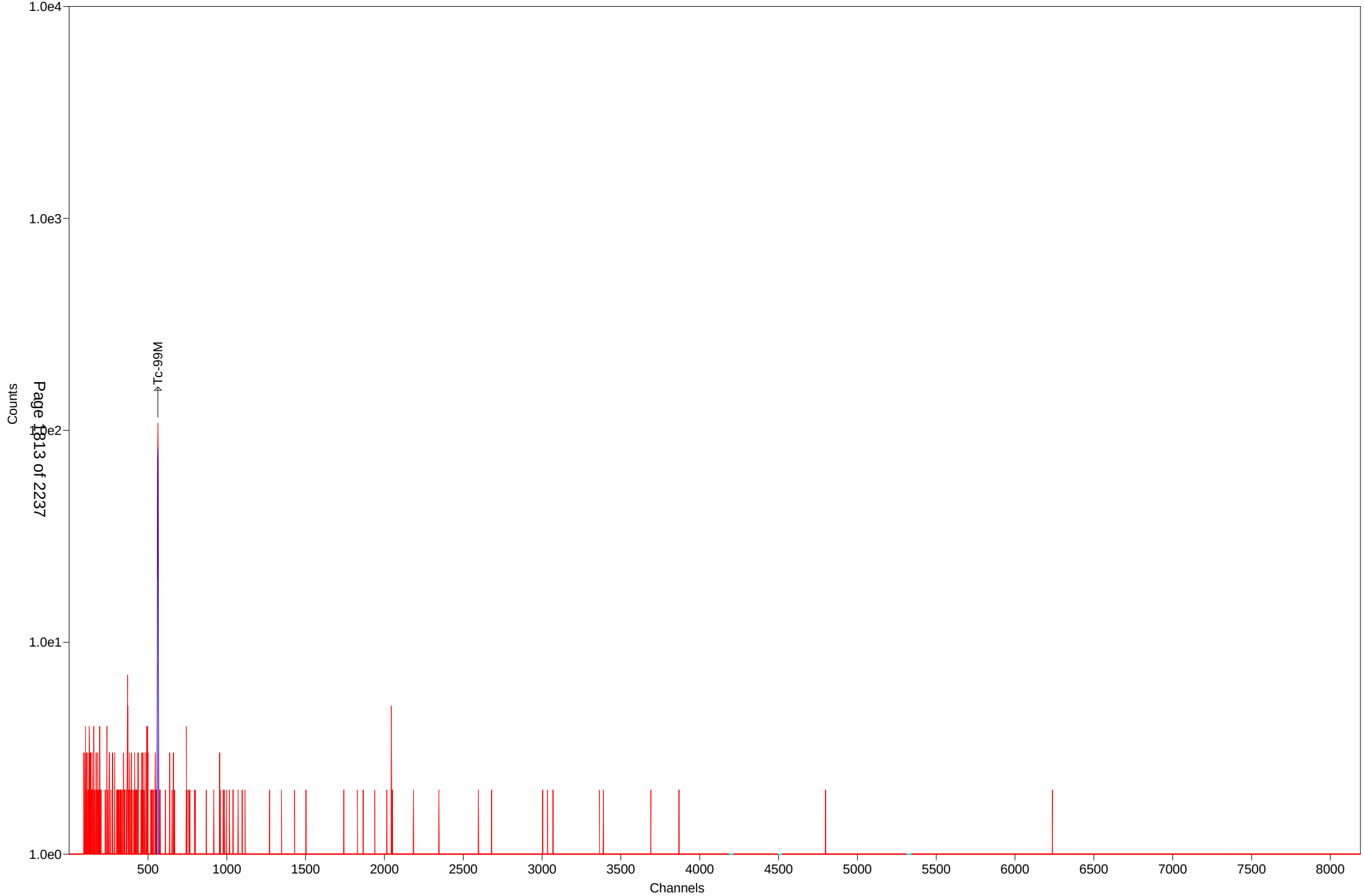
---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 4.950E+02 pCi/Sample
Total Decayed Activity (37.5 to 2000.0 keV) 8.8751093E+02 pCi/Sample

The library has energies which are not separable.

(Page 5 of 5)

264677_Gamma_160-18504-C-3-G DU. 8_Gamma_20161217.spc.



Test America St. Louis Spectrum ID: 7_Gamma_20161944

Sample Description: 264677_Gamma_160-18521-D-1-B
Detector: Detector # 7
Batch ID: 264677
Work Order Number: Gamma
Lot Number: 160-18521-D-1-B

Decay to Time: 8/12/2016 12:00 Live Time: 600 sec
Acquisition Time: 8/12/2016 17:43:56 Real Time: 612 sec
Analysis Time: 8/12/2016 17:54 Dead Time: 2.00 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 7_Soil_TunaCan.Clb
Efficiency Cal Desc: 7_TunaCan_90099_032712
Efficiency Cal Date: 3/16/2012 11:45
Energy Cal Date: 2/23/2012 08:40
Library: Client_Tc-99m.lib
Bkgd Correction File: 7_2016-07-31_1448.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.304E+02	4.6	4.269E+01	6.378E+01	2.730E+01
Total	9.304E+02				

Analyst: Mike Aldridge

(Page 1 of 5)

Sample description
264677_Gamma_160-18521-D-1-B

Spectrum Filename: C:\User\SPC\Det7\7_Gamma_20161944.An1

Acquisition information

Start time:	8/12/2016 5:43:56 PM
Live time:	600
Real time:	612
Dead time:	2.00 %
Detector ID:	7

Detector system
Ge 7 SN/154

Calibration

Filename:	7_Soil_TunaCan.Clb

7_TunaCan_90099_032712

Energy Calibration

Created:	2/23/2012 8:40:56 AM
Zero offset:	0.117 keV
Gain:	0.250 keV/channel
Quadratic:	3.508E-09 keV/channel^2

Efficiency Calibration

Created:	3/16/2012 11:45:14 AM
Knee Energy:	165.85 keV
Above the Knee:	Quadratic Uncertainty = 0.87 %
Log(Eff):	6.716580E-01 + (-6.166540E-01*Log(E)) + (-2.065917E-02*Log(E)^2)
Below the Knee:	Quadratic Uncertainty = 1.48 %
Log(Eff):	-2.689695E+01 + (1.019544E+01*Log(E)) + (-1.081671E+00*Log(E)^2)

Library Files

Main analysis library:	Client_Tc-99m.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G800W064
Start channel:	150 (37.61keV)
Stop channel:	8000 (2000.13keV)
Peak rejection level:	1000.000%
Peak search sensitivity:	3
Sample Size:	1.0000E+00 +/- 0.000E+00%
Activity scaling factor:	1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method:	Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       8/12/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       7_2016-07-31_1448.PBC
                                                7/31/2016 2:48:35 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0026

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
 ------------------------------------------------------------------------------
  140.51      502.   4.59   0.83  5.336E-02   140.51  89.060  9.304E+02 TC99M
No unknown peaks passed sensitivity test.

-------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K   S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
 ------------------------------------------------------------------------------
TC-99M    561.63   140.51         7.       502.     0.837     4.59   0.833D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

```
 *****   S U M M A R Y   O F   L I B R A R Y   P E A K   U S A G E   *****
- Nuclide -  Average     ------------- Peak --------------
Name   Code  Activity     Energy   Activity Code MDA Value
             pCi/Sample    keV     pCi/Sample    pCi/Sample     COMMENTS
_____________________________________________________________________________

TC-99M   I   9.3041E+02                                        2.51E-01
                                                             Energy duplication
                           140.51 9.304E+02  (  2.730E+01 4.59E+00 8.91E+01 G K
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
       failed one or more qualification tests.
   + - Peak activity higher than counting uncertainty range.
   - - Peak activity lower than counting uncertainty range.
   = - Peak outside analysis energy range.
   & - Calculated peak centroid is not close enough to the
       library energy centroid for positive identification.
   P - Peakbackground subtraction
   } - Peak is too close to another for the activity
       to be found directly.

   Nuclide Codes:                      Peak Codes:
   T - Thermal Neutron Activation      G - Gamma Ray
   F - Fast Neutron Activation         X - X-Ray
   I - Fission Product                 P - Positron Decay
   N - Naturally Occurring Isotope     S - Single-Escape
   P - Photon Reaction                 D - Double-Escape
   C - Charged Particle Reaction       K - Key Line
   M - No MDA Calculation              A - Not in Average
   R - Coincidence Corrected           C - Coincidence Peak
   H - Halflife limit exceeded

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


 *************** D I S C A R D E D  I S O T O P E  P E A K S ***************
 Nuclide Centroid  Background  Net Area   Intensity   Uncert   Activity
           Energy   Counts     Counts     Cts/Sec  1 Sigma %
_____________________________________________________________________________
   P - Peakbackground subtraction
```

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	4.8085E+02	9.3041E+02	4.588E+00%	2.73E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.1 keV) 4.808E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.1 keV) 9.3041272E+02 pCi/Sample

The library has energies which are not separable.

(Page 5 of 5)

264677_Gamma_160-18521-D-1-B. 7_Gamma_20161944.spc.

Test America St. Louis Spectrum ID: 8_Gamma_20161218

Sample Description: 264677_Gamma_160-18521-B-2-B
Detector: Detector # 8
Batch ID: 264677
Work Order Number: Gamma
Lot Number: 160-18521-B-2-B

Decay to Time: 8/12/2016 12:00 Live Time: 600 sec
Acquisition Time: 8/12/2016 17:45:41 Real Time: 616 sec
Analysis Time: 8/12/2016 17:56 Dead Time: 2.61 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 8_Soil_TunaCan.Clb
Efficiency Cal Desc: 8_Soil_TunaCan_90099_032712
Efficiency Cal Date: 3/28/2012 10:35
Energy Cal Date: 2/28/2012 10:34
Library: Client_Tc-99m.lib
Bkgd Correction File: 8_2016-08-08_1838.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.538E+02	5.6	4.809E+01	6.483E+01	3.629E+01
Total	8.538E+02				

Analyst: Mike Aldridge

(Page 1 of 5)

Sample description
264677_Gamma_160-18521-B-2-B

Spectrum Filename: C:\User\SPC\Det8\8_Gamma_20161218.An1

Acquisition information
Start time: 8/12/2016 5:45:41 PM
Live time: 600
Real time: 616
Dead time: 2.61 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 3/28/2012 10:35:20 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.39 %
Log(Eff): -1.098764E-01 + (-4.958544E-01*Log(E)) + (-2.572270E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.71 %
Log(Eff): -2.525301E+01 + (9.398253E+00*Log(E)) + (-1.000034E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                           Status          Comments
       Decay correct to date:          YES       8/12/2016 12:00:00 PM
       Decay during acquisition:       YES
       Decay during collection:        NO
       True coincidence correction:    NO
       Peaked background correction:   YES       8_2016-08-08_1838.PBC
                                                 8/8/2016 6:38:16 PM

       Absorption (Internal):          NO
       Geometry correction:            NO
       Random summing:                 NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0130

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.50      340.   5.63   0.66  3.946E-02   140.51  89.060  8.538E+02 TC99M
No unknown peaks passed sensitivity test.

-------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K   S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.86   140.51         6.       340.     0.566     5.63   0.657D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

```
 *****   S U M M A R Y   O F   L I B R A R Y   P E A K   U S A G E   *****
- Nuclide -  Average     ------------- Peak --------------
Name   Code  Activity     Energy   Activity Code MDA Value
             pCi/Sample    keV     pCi/Sample    pCi/Sample     COMMENTS
_____________________________________________________________________________

TC-99M   I   8.5375E+02                                        2.51E-01
                                                             Energy duplication
                            140.51 8.538E+02  (  3.629E+01 5.63E+00 8.91E+01 G K
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
       failed one or more qualification tests.
   + - Peak activity higher than counting uncertainty range.
   - - Peak activity lower than counting uncertainty range.
   = - Peak outside analysis energy range.
   & - Calculated peak centroid is not close enough to the
       library energy centroid for positive identification.
   P - Peakbackground subtraction
   } - Peak is too close to another for the activity
       to be found directly.

   Nuclide Codes:                      Peak Codes:
   T - Thermal Neutron Activation      G - Gamma Ray
   F - Fast Neutron Activation         X - X-Ray
   I - Fission Product                 P - Positron Decay
   N - Naturally Occurring Isotope     S - Single-Escape
   P - Photon Reaction                 D - Double-Escape
   C - Charged Particle Reaction       K - Key Line
   M - No MDA Calculation              A - Not in Average
   R - Coincidence Corrected           C - Coincidence Peak
   H - Halflife limit exceeded

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


 *************** D I S C A R D E D  I S O T O P E  P E A K S ***************
 Nuclide Centroid  Background  Net Area   Intensity   Uncert   Activity
           Energy   Counts     Counts     Cts/Sec  1 Sigma %
_____________________________________________________________________________
   P - Peakbackground subtraction
```

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	4.3975E+02	8.5375E+02	5.633E+00%	3.63E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 4.398E+02 pCi/Sample
Total Decayed Activity (37.5 to 2000.0 keV) 8.5375366E+02 pCi/Sample

The library has energies which are not separable.

(Page 5 of 5)

264677_Gamma_160-18521-B-2-B. 8_Gamma_20161218.spc.

Daily Checks

Test America
St. Louis
Background Check

Spectrum: 5_20160812001_BG
Description: Background Contamination Check
Acquired: 8/12/2016 12:45:15 AM
Detector: Detector # 5
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.45	1.30	1.35	1.43	1.55	1.60	PASS

Analyst: Aaron Schroder Reviewer: Aaron Schroder

(Page 1 of 1)

Test America
St. Louis
Quality Control Check

Spectrum: 5_20160812002_QCAsLeft
Description: Quality control Check (QC Source 'A') Post Stabilization
Acquired: 8/12/2016 3:23:38 AM
Detector: Detector # 5
Quality Control Evaluation Criteria:
1) Notify Supervisor if 'AS FOUND' parameters exceed Tolerance or Control Limits.
2) Place out of service if 'AS LEFT' parameters exceed Tolerance or Control Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
QA-60							
Channel	238.00	236.00	237.00	238.10	239.00	240.00	PASS
Energy	59.54	59.04	59.29	59.63	59.79	60.04	PASS
FWHM	0.74	0.00	0.00	0.74	1.84	1.94	PASS
ActivityDiff	636.60	-5.00	-4.00	-1.34	4.00	5.00	PASS
QA-662							
FWHM	1.36	0.00	0.00	1.36	3.06	3.16	PASS
ActivityDiff	596.80	-5.00	-4.00	-2.19	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5331.20	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.84	1333.01	1333.26	PASS
FWHM	1.90	0.00	0.00	1.90	4.10	4.20	PASS
ActivityDiff	1164.20	-5.00	-4.00	-3.24	4.00	5.00	PASS

Analyst: Aaron Schroder Reviewer: Aaron Schroder

(Page 1 of 1)

Test America
St. Louis
Background Check

Spectrum: 7_20160812001_BG
Description: Background Contamination Check
Acquired: 8/12/2016 12:56:50 AM
Detector: Detector # 7
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.30	1.16	1.21	1.27	1.40	1.45	PASS

Analyst: Aaron Schroder Reviewer: Aaron Schroder

Test America
St. Louis
Quality Control Check

Spectrum: 7_20160812002_QCAsLeft
Description: Quality control Check (QC Source 'C') Post Stabilization
Acquired: 8/12/2016 3:33:56 AM
Detector: Detector # 7
Quality Control Evaluation Criteria:
1) Notify Supervisor if 'AS FOUND' parameters exceed Tolerance or Control Limits.
2) Place out of service if 'AS LEFT' parameters exceed Tolerance or Control Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
QA-60							
Channel	238.00	236.00	237.00	238.00	239.00	240.00	PASS
Energy	59.58	59.04	59.29	59.63	59.79	60.04	PASS
FWHM	0.84	0.00	0.00	0.91	1.94	2.04	PASS
ActivityDiff	647.00	-5.00	-4.00	0.60	4.00	5.00	PASS
QA-662							
FWHM	1.45	0.00	0.00	1.48	3.15	3.25	PASS
ActivityDiff	606.50	-5.00	-4.00	0.42	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5330.60	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.73	1333.01	1333.26	PASS
FWHM	1.98	0.00	0.00	2.00	4.18	4.28	PASS
ActivityDiff	1183.00	-5.00	-4.00	-1.25	4.00	5.00	PASS

Analyst: Aaron Schroder Reviewer: Aaron Schroder

Test America
St. Louis
Background Check

Spectrum: 8_20160812001_BG
Description: Background Contamination Check
Acquired: 8/12/2016 12:58:35 AM
Detector: Detector # 8
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.56	1.39	1.45	1.57	1.68	1.74	PASS

Analyst: Aaron Schroder Reviewer: Aaron Schroder

Test America
St. Louis
Quality Control Check

Spectrum: 8_20160812002_QCAsLeft
Description: Quality control Check (QC Source 'D') Post Stabilization
Acquired: 8/12/2016 3:35:12 AM
Detector: Detector # 8
Quality Control Evaluation Criteria:
1) Notify Supervisor if 'AS FOUND' parameters exceed Tolerance or Control Limits.
2) Place out of service if 'AS LEFT' parameters exceed Tolerance or Control Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
QA-60							
Channel	238.00	236.00	237.00	237.90	239.00	240.00	PASS
Energy	59.54	59.04	59.29	59.53	59.79	60.04	PASS
FWHM	1.10	0.00	0.00	0.83	2.20	2.30	PASS
ActivityDiff	650.60	-5.00	-4.00	-1.46	4.00	5.00	PASS
QA-662							
FWHM	1.53	0.00	0.00	1.39	3.23	3.33	PASS
ActivityDiff	609.90	-5.00	-4.00	-1.15	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5330.20	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.55	1333.01	1333.26	PASS
FWHM	1.90	0.00	0.00	1.77	4.10	4.20	PASS
ActivityDiff	1189.70	-5.00	-4.00	-0.83	4.00	5.00	PASS

Analyst: Aaron Schroder Reviewer: Aaron Schroder

Initial Calibrations

Gamma Verification per Geometry

Detector: Ge5

Geometry: Tunacan

Reference date 1/1/2012

Calibration Standard: 90099

Standard volume g / vial 1550

Standard volume transferred in g / geometry 317.8

lab ID# of cal standard Rad12-0007

Isotope	Certified Activity gammas/sec	Geometry Activity gammas/sec	γ abundance	Bq/sample	Count Results	%recovery
Pb-210	3094	634	0.0425	14926	14353	96.2
Am-241	2037	418	0.3590	1163	1230.2	105.7
Cd-109	2881	591	0.0361	16363	16101	98.4
Co-57	1511	310	0.8560	362	347.72	96.1
Ce-139	2139	439	0.7990	549	538.4	98.1
Hg-203	4651	954	0.8146	1171	1208.4	103.2
Sn-113	3015	618	0.6400	966	972.07	100.6
Cs-137	1938	397	0.8510	467	462.35	99.0
Y-88	7264	1489	0.9370	1589	1559.3	98.1
Co-60	3580	734	0.9997	734	722.51	98.4
Co-60	3581	734	0.9999	734	739.67	100.7
Y-88	7690	1577	0.9920	1589	1613.8	101.5

Reviewed By: Jody Watson

Date: 3/27/2012

Calibration Data from file: 5_Soil_TunaCan.Clb
Energy Calibration Date: 3/27/2012 Time: 5:20:02 PM
Efficiency Calibration Date: 3/27/2012 Time: 5:20:37 PM

Calibration Description:
5_Soil_TunaCan_90099_032612

Energy Calibration Fit
Energy = 0.1351 +0.249831*Channel +2.72022e-008*Channel**2
FWHM (ch) = 2.8138 +0.001050*Channel -2.57606e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
186.01	46.54	46.61	-0.15%	0.74	0.75	-1.17%
237.86	59.54	59.56	-0.04%	0.74	0.77	-4.07%
351.46	88.03	87.95	0.10%	0.80	0.79	1.28%
487.52	122.06	121.94	0.10%	0.85	0.83	2.66%
663.26	165.85	165.85	0.00%	0.88	0.87	0.98%
1116.90	279.17	279.20	-0.01%	0.97	0.99	-2.35%
1567.36	391.69	391.78	-0.02%	1.12	1.10	1.78%
2647.45	661.66	661.74	-0.01%	1.38	1.35	1.91%
3592.51	898.02	898.01	0.00%	1.55	1.56	-1.11%
4692.96	1173.24	1173.18	0.00%	1.77	1.79	-1.18%
5329.72	1332.50	1332.44	0.00%	1.93	1.92	0.31%
7342.77	1836.01	1836.05	-0.00%	2.29	2.29	0.24%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.8682 %
Ln(Eff) = 0.6466 -0.783045*Ln(Eng) -0.0041175*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.4296 %
Ln(Eff) = -24.6225 +9.075211*Ln(Eng) -0.966442*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	1.7205E-002	1.7882E-002	-3.93%
59.54	2.6619E-002	2.5335E-002	4.82%
88.03	3.4045E-002	3.4617E-002	-1.68%
122.06	3.4394E-002	3.5819E-002	-4.15%
165.85	========== Knee ==========		
165.85	3.0704E-002	3.1331E-002	-2.04%
279.17	2.1030E-002	2.0365E-002	3.17%
391.69	1.5475E-002	1.5370E-002	0.68%
661.66	9.8486E-003	9.9244E-003	-0.77%
898.02	7.5404E-003	7.6837E-003	-1.90%
1173.24	6.0360E-003	6.1381E-003	-1.69%
1332.50	5.5560E-003	5.5144E-003	0.75%
1836.01	4.2722E-003	4.2078E-003	1.51%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Pb-210	46.54	4.25	8.15E+003	14918.00	634.00	4.10%	1/1/2012 11:00:00 AM
Am-241	59.54	35.70	1.58E+005	1170.90	418.00	3.50%	1/1/2012 11:00:00 AM
Cd-109	88.03	3.61	4.63E+002	16371.00	591.00	4.70%	1/1/2012 11:00:00 AM
Co-57	122.06	85.60	2.72E+002	362.15	310.00	4.10%	1/1/2012 11:00:00 AM
Ce-139	165.85	79.90	1.38E+002	549.44	439.00	3.90%	1/1/2012 11:00:00 AM
Hg-203	279.17	81.50	4.66E+001	1170.60	954.00	3.80%	1/1/2012 11:00:00 AM
Sn-113	391.69	64.00	1.15E+002	965.63	618.00	3.90%	1/1/2012 11:00:00 AM
Cs-137	661.66	85.21	1.10E+004	465.91	397.00	4.00%	1/1/2012 11:00:00 AM
Y-88	898.02	93.70	1.07E+002	1589.10	1489.00	3.90%	1/1/2012 11:00:00 AM
Co-60	1173.24	99.90	1.93E+003	734.73	734.00	4.00%	1/1/2012 11:00:00 AM
Co-60	1332.50	99.98	1.93E+003	734.15	734.00	4.00%	1/1/2012 11:00:00 AM
Y-88	1836.01	99.20	1.07E+002	1589.70	1577.00	4.00%	1/1/2012 11:00:00 AM

```
     ORTEC g v - i (1087) Env32  G53W4.25  3/27/2012 5:22:03 PM
TestAmerica                      Spectrum name: 5_TunaCan_20120810.An1

Sample description
     5_TunaCan_90099_032612


Spectrum Filename: C:\User\SPC\Det5\5_TunaCan_20120810.An1

Acquisition information
       Start time:                 3/26/2012 3:05:42 PM
       Live time:               3600
       Real time:               3652
       Dead time:                  1.44 %
       Detector ID:                   5

Detector system
     Ge 5 SN/157


Calibration
       Filename:                   5_Soil_TunaCan.Clb
     5_Soil_TunaCan_90099_032612


       Energy Calibration
            Created:               3/27/2012 5:20:02 PM
            Zero offset:           0.135 keV
            Gain:                  0.250 keV/channel
            Quadratic:             2.720E-08 keV/channel^2

       Efficiency Calibration
            Created:               3/27/2012 5:20:37 PM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   0.87 %
            Log(Eff):              6.466115E-01 + (-7.830454E-01*Log(E) ) +
                                   ( -4.117504E-03*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.43 %
            Log(Eff):             -2.462251E+01 + ( 9.075211E+00*Log(E) ) +
                                   ( -9.664422E-01*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.61keV )
       Stop channel:            8000 (  2000.53keV )
       Peak rejection level:      10.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method
```

ORTEC g v - i (1087) Env32 G53W4.25 3/27/2012 5:22:03 PM
TestAmerica Spectrum name: 5_TunaCan_20120810.An1

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2012 11:00:00 AM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0527

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq	Nuc
46.61	38986.	0.74	0.74	1.793E-02	46.54	4.250	1.435E+04	Pb210
59.56	40041.	0.74	0.74	2.535E-02	59.54	35.700	1.230E+03	AM241
70.85	1493.	9.22	0.78	3.019E-02				
72.87	2354.	5.96	0.78	3.089E-02				
87.95	63754.	0.53	0.80	3.460E-02	88.03	3.610	1.610E+04	CD109
121.94	30888.	0.76	0.85	3.583E-02	122.06	85.600	3.477E+02	CO57
136.41	3768.	3.80	0.89	3.457E-02				
165.85	31597.	0.74	0.88	3.066E-02	165.85	79.900	5.384E+02	Ce139
279.20	20358.	0.87	0.97	2.036E-02	279.17	81.500	1.208E+03	Hg203
391.78	20611.	0.93	1.12	1.537E-02	391.69	64.000	9.721E+02	SN113
661.74	14000.	1.10	1.38	9.923E-03	661.66	85.210	4.623E+02	CS137
898.01	23228.	0.82	1.55	7.684E-03	898.02	93.700	1.559E+03	Y898
1173.18	15468.	0.93	1.77	6.138E-03	1173.24	99.900	7.225E+02	Co1173
1332.44	14238.	0.98	1.93	5.515E-03	1332.50	99.982	7.397E+02	Co1332
1836.04	13938.	0.87	2.30	4.208E-03	1836.01	99.200	1.614E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide
291.16	72.88	8722.	2253.	7.295E+04	7.09	0.801	-
545.44	136.41	5274.	3768.	1.090E+05	3.80	0.888	-

ORTEC g v - i (1087) Env32 G53W4.25 3/27/2012 5:22:03 PM
TestAmerica Spectrum name: 5_TunaCan_20120810.An1

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	186.01	46.61	12895.	38986.	10.829	0.74	0.743
AM-241	237.86	59.56	13293.	40041.	11.122	0.74	0.735
CD-109	351.46	87.95	12894.	63754.	17.710	0.53	0.805
CO-57	487.52	121.94	6935.	30888.	8.580	0.76	0.852
Ce-139	663.26	165.85	5616.	31597.	8.777	0.74	0.883
Hg-203	1116.90	279.20	2848.	20358.	5.655	0.87	0.966
SN-113	1567.36	391.78	3046.	20611.	5.725	0.93	1.119
CS-137	2647.45	661.74	1982.	14000.	3.889	1.10	1.380
Y-898	3592.51	898.01	1944.	23228.	6.452	0.82	1.547
Co-1173	4692.96	1173.18	847.	15468.	4.297	0.93	1.774
Co-1332	5329.75	1332.44	693.	14238.	3.955	0.98	1.927
Y-1836	7342.72	1836.04	102.	13938.	3.872	0.87	2.295

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq	Peak Energy keV	Peak Activity Bq	Code	MDA Value Bq			COMMENTS
Pb-210	N	1.4353E+04						8.15E+03	
			46.54	1.435E+04	(	1.958E+02	7.44E-01	4.25E+00	G
AM-241		1.2302E+03						1.58E+05	
			59.54	1.230E+03	(	1.659E+01	7.44E-01	3.57E+01	G
CD-109		1.6101E+04						4.63E+02	
			88.03	1.610E+04	(	1.343E+02	5.28E-01	3.61E+00	G
CO-57		3.4772E+02						2.72E+02	
			122.06	3.477E+02	(	4.399E+00	7.60E-01	8.56E+01	G

ORTEC g v - i (1087) Env32 G53W4.25 3/27/2012 5:22:03 PM
TestAmerica Spectrum name: 5_TunaCan_20120810.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ce-139	5.3840E+02					1.38E+02	
		165.85	5.384E+02	(	5.997E+00	7.36E-01	7.99E+01 G
Hg-203	1.2084E+03					4.66E+01	
		279.17	1.208E+03	(	1.492E+01	8.69E-01	8.15E+01 G
SN-113	9.7207E+02					1.15E+02	
		391.69	9.721E+02	(	1.226E+01	9.31E-01	6.40E+01 G
CS-137	4.6235E+02					1.10E+04	
		661.66	4.623E+02	(	6.941E+00	1.10E+00	8.52E+01 G
Y-898	1.5593E+03					1.07E+02	
		898.02	1.559E+03	(	1.397E+01	8.19E-01	9.37E+01 G
Co-1173	7.2251E+02					1.93E+03	
		1173.24	7.225E+02	(	6.463E+00	9.30E-01	9.99E+01 G
Co-1332	7.3967E+02					1.93E+03	
		1332.50	7.397E+02	(	6.515E+00	9.82E-01	1.00E+02 G
Y-1836	1.6138E+03					1.07E+02	
		1836.01	1.614E+03	(	5.776E+00	8.71E-01	9.92E+01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape

ORTEC g v - i (1087) Env32 G53W4.25 3/27/2012 5:22:03 PM
TestAmerica Spectrum name: 5_TunaCan_20120810.An1

P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq	Time Corrected Activity Bq	Uncertainty 1 Sigma Counting	MDA
Pb-210	1.4250E+04	1.4353E+04	7.439E-01%	1.96E+02
AM-241	1.2297E+03	1.2302E+03	7.442E-01%	1.66E+01
CD-109	1.4172E+04	1.6101E+04	5.277E-01%	1.34E+02
CO-57	2.7983E+02	3.4772E+02	7.604E-01%	4.40E+00
Ce-139	3.5061E+02	5.3840E+02	7.359E-01%	6.00E+00
Hg-203	3.4071E+02	1.2084E+03	8.687E-01%	1.49E+01
SN-113	5.8200E+02	9.7207E+02	9.315E-01%	1.23E+01
CS-137	4.5987E+02	4.6235E+02	1.097E+00%	6.94E+00
Y-898	8.9620E+02	1.5593E+03	8.189E-01%	1.40E+01
Co-1173	7.0069E+02	7.2251E+02	9.300E-01%	6.46E+00
Co-1332	7.1733E+02	7.3967E+02	9.821E-01%	6.52E+00
Y-1836	9.2756E+02	1.6138E+03	8.711E-01%	5.78E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.5 keV) 3.491E+04 Bq
Total Decayed Activity (37.6 to 2000.5 keV) 3.9848164E+04 Bq

Analyzed by: _____
Admin

Reviewed by: _____
Supervisor

Laboratory: TestAmerica

Gamma Verification per Geometry

Detector: Ge7

Geometry: Tunacan

Reference date 1/1/2012

Calibration Standard: 90099

Standard volume g / vial 1550

Standard volume transferred in g / geometry 317.8

lab ID# of cal standard 6699

Isotope	Certified Activity gammas/sec	Geometry Activity gammas/sec	γ abundance	Bq/sample	Count Results	%recovery
Pb-210	3094	634	0.0425	14926	14726	98.7
Am-241	2037	418	0.3590	1163	1241.6	106.7
Cd-109	2881	591	0.0361	16363	15976	97.6
Co-57	1511	310	0.8560	362	346.77	95.8
Ce-139	2139	439	0.7990	549	539.48	98.3
Hg-203	4651	954	0.8146	1171	1199.2	102.4
Sn-113	3015	618	0.6400	966	976.76	101.1
Cs-137	1938	397	0.8510	467	467.66	100.2
Y-88	7264	1489	0.9370	1589	1567.3	98.6
Co-60	3580	734	0.9997	734	726.23	98.9
Co-60	3581	734	0.9999	734	719.64	98.0
Y-88	7690	1577	0.9920	1589	1635.7	102.9

Reviewed By: Jody Watson

Date: 3/16/2012

Calibration Data from file: 7_Soil_TunaCan.Clb
Energy Calibration Date: 3/16/2012 Time: 11:44:50 AM
Efficiency Calibration Date: 3/16/2012 Time: 11:45:14 AM

Calibration Description:
7_TunaCan_90099_030512

Energy Calibration Fit
Energy = 0.1533 +0.249954*Channel +6.71576e-009*Channel**2
FWHM (ch) = 3.2969 +0.001030*Channel -2.25091e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
185.73	46.54	46.58	-0.08%	0.86	0.87	-1.80%
237.72	59.54	59.57	-0.06%	0.86	0.88	-3.29%
351.56	88.03	88.03	0.00%	0.91	0.91	-0.17%
487.42	122.06	121.99	0.06%	0.97	0.95	2.36%
662.55	165.85	165.76	0.05%	1.00	0.99	1.26%
1116.52	279.17	279.24	-0.03%	1.13	1.10	1.85%
1566.54	391.69	391.73	-0.01%	1.21	1.21	-0.23%
2646.25	661.66	661.64	0.00%	1.47	1.47	0.54%
3591.85	898.02	898.04	-0.00%	1.66	1.68	-1.15%
4692.53	1173.24	1173.22	0.00%	1.92	1.91	0.69%
5329.58	1332.50	1332.49	0.00%	2.02	2.04	-0.87%
7343.37	1836.01	1836.02	-0.00%	2.42	2.41	0.28%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.8690 %
Ln(Eff) = 0.6717 -0.616654*Ln(Eng) -0.0206592*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.4845 %
Ln(Eff) = -26.8969 +10.195443*Ln(Eng) -1.08167*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	2.3732E-002	2.4829E-002	-4.62%
59.54	3.9252E-002	3.7016E-002	5.70%
88.03	5.1999E-002	5.3285E-002	-2.47%
122.06	5.3679E-002	5.6057E-002	-4.43%
165.85	==========	Knee	==========
165.85	4.7932E-002	4.8811E-002	-1.83%
279.17	3.2322E-002	3.1541E-002	2.42%
391.69	2.3837E-002	2.3601E-002	0.99%
661.66	1.4947E-002	1.4924E-002	0.15%
898.02	1.1205E-002	1.1367E-002	-1.45%
1173.24	8.8255E-003	8.9287E-003	-1.17%
1332.50	7.7833E-003	7.9508E-003	-2.15%
1836.01	6.0876E-003	5.9192E-003	2.77%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Pb-210	46.54	4.25	8.15E+003	14941.00	635.00	4.10%	1/1/2012 11:00:00 AM
Am-241	59.54	35.70	1.58E+005	1170.90	418.00	3.50%	1/1/2012 11:00:00 AM
Cd-109	88.03	3.61	4.63E+002	16371.00	591.00	4.70%	1/1/2012 11:00:00 AM
Co-57	122.06	85.60	2.72E+002	362.15	310.00	4.10%	1/1/2012 11:00:00 AM
Ce-139	165.85	79.90	1.38E+002	549.44	439.00	3.90%	1/1/2012 11:00:00 AM
Hg-203	279.17	81.50	4.66E+001	1170.60	954.00	3.80%	1/1/2012 11:00:00 AM
Sn-113	391.69	64.00	1.15E+002	967.19	619.00	3.90%	1/1/2012 11:00:00 AM
Cs-137	661.66	85.21	1.10E+004	467.08	398.00	4.00%	1/1/2012 11:00:00 AM
Y-88	898.02	93.70	1.07E+002	1590.20	1490.00	3.90%	1/1/2012 11:00:00 AM
Co-60	1173.24	99.90	1.93E+003	734.73	734.00	4.00%	1/1/2012 11:00:00 AM
Co-60	1332.50	99.98	1.93E+003	735.15	735.00	4.00%	1/1/2012 11:00:00 AM
Y-88	1836.01	99.20	1.07E+002	1590.70	1578.00	4.00%	1/1/2012 11:00:00 AM

```
     ORTEC g v - i (1087) Env32  G53W4.25  2/28/2014 11:43:43 AM
TestAmerica                      Spectrum name: 7_TunaCan_20120388.An1

Sample description
     7_TunaCan_90099_030512


Spectrum Filename: C:\User\SPC\Det7\7_TunaCan_20120388.An1

Acquisition information
       Start time:                 3/5/2012 2:07:36 PM
       Live time:               3600
       Real time:               3721
       Dead time:                  3.25 %
       Detector ID:                    7

Detector system
     Ge 7 SN/154


Calibration
       Filename:                   7_Soil_TunaCan.Clb
     7_TunaCan_90099_032712


       Energy Calibration
            Created:               3/16/2012 11:44:50 AM
            Zero offset:           0.153 keV
            Gain:                  0.250 keV/channel
            Quadratic:             6.716E-09 keV/channel^2

       Efficiency Calibration
            Created:               3/16/2012 11:45:14 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   0.87 %
            Log(Eff):              6.716580E-01 + (-6.166540E-01*Log(E) ) +
                                   ( -2.065917E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.48 %
            Log(Eff):             -2.689695E+01 + ( 1.019544E+01*Log(E) ) +
                                   ( -1.081671E+00*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.65keV )
       Stop channel:            8000 (  2000.21keV )
       Peak rejection level:      10.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method
```

ORTEC g v - i (1087) Env32 G53W4.25 2/28/2014 11:43:43 AM
TestAmerica Spectrum name: 7_TunaCan_20120388.An1

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2012 11:00:00 AM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0324

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq	Nuc
46.63	53946.	0.53	0.87	2.487E-02	46.54	4.250	1.428E+04	Pb210
59.57	59050.	0.65	0.86	3.704E-02	59.54	35.700	1.242E+03	AM241
70.74	2770.	6.58	0.90	4.527E-02				
72.95	4536.	4.27	0.90	4.661E-02				
88.03	100494.	0.43	0.91	5.328E-02	88.03	3.610	1.598E+04	CD109
121.99	50865.	0.71	0.97	5.606E-02	122.06	85.600	3.468E+02	CO57
136.41	6524.	3.77	0.93	5.411E-02				
165.76	54838.	0.57	1.00	4.767E-02	165.85	79.900	5.395E+02	Ce139
255.13	1772.	7.37	1.21	3.404E-02				
279.24	42776.	0.59	1.13	3.153E-02	279.17	81.500	1.199E+03	Hg203
391.73	36096.	0.66	1.21	2.360E-02	391.69	64.000	9.768E+02	SN113
661.68	21323.	0.77	1.47	1.492E-02	661.66	85.210	4.677E+02	CS137
898.03	39603.	0.63	1.66	1.137E-02	898.02	93.700	1.567E+03	Y898
1173.21	22788.	0.85	1.92	8.929E-03	1173.24	99.900	7.262E+02	Co1173
1332.49	20124.	0.85	2.02	7.951E-03	1332.50	99.982	7.196E+02	Co1332
1836.00	22787.	0.70	2.43	5.919E-03	1836.01	99.200	1.636E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
282.41	70.73	15146.	2828.	6.248E+04	6.43	0.896	-	D
291.25	72.94	16305.	4682.	1.005E+05	4.12	0.899	-	D
545.11	136.41	12980.	6524.	1.206E+05	3.77	0.932	-	
1020.07	255.13	4580.	1772.	5.204E+04	7.37	1.209	-	

ORTEC g v - i (1087) Env32 G53W4.25 2/28/2014 11:43:43 AM
TestAmerica Spectrum name: 7_TunaCan_20120388.An1

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	185.73	46.58	19825.	55636.	15.454	0.65	0.856
AM-241	237.72	59.57	21942.	59050.	16.403	0.65	0.857
CD-109	351.56	88.03	21396.	100494.	27.915	0.43	0.912
CO-57	487.42	121.99	16859.	50865.	14.129	0.71	0.971
Ce-139	662.55	165.76	9893.	54838.	15.233	0.57	1.005
Hg-203	1116.52	279.24	5111.	42776.	11.882	0.59	1.126
SN-113	1566.54	391.73	4106.	36096.	10.027	0.66	1.211
CS-137	2646.33	661.66	2922.	21323.	5.923	0.77	1.466D
Y-898	3591.84	898.03	3210.	39603.	11.001	0.63	1.659
Co-1173	4692.50	1173.21	1804.	22788.	6.330	0.85	1.924
Co-1332	5329.58	1332.49	1286.	20124.	5.590	0.85	2.020
Y-1836	7343.30	1836.00	283.	22787.	6.330	0.70	2.426

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq	Peak Energy keV	Peak Activity Bq	Code	MDA Value Bq	COMMENTS
Pb-210	N	1.4726E+04					8.15E+03
			46.54	1.473E+04	(	1.744E+02	6.52E-01 4.25E+00 G
AM-241		1.2416E+03					1.58E+05
			59.54	1.242E+03	(	1.457E+01	6.49E-01 3.57E+01 G
CD-109		1.5976E+04					4.63E+02
			88.03	1.598E+04	(	1.088E+02	4.29E-01 3.61E+00 G
CO-57		3.4677E+02					2.72E+02
			122.06	3.468E+02	(	4.144E+00	7.08E-01 8.56E+01 G

ORTEC g v - i (1087) Env32 G53W4.25 2/28/2014 11:43:43 AM
TestAmerica Spectrum name: 7_TunaCan_20120388.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ce-139	5.3948E+02					1.38E+02	
		165.85	5.395E+02	(	4.586E+00	5.65E-01	7.99E+01 G
Hg-203	1.1992E+03					4.66E+01	
		279.17	1.199E+03	(	9.415E+00	5.92E-01	8.15E+01 G
SN-113	9.7676E+02					1.15E+02	
		391.69	9.768E+02	(	8.153E+00	6.55E-01	6.40E+01 G
CS-137	4.6766E+02					1.10E+04	
		661.66	4.677E+02	(	5.584E+00	7.73E-01	8.52E+01 G
Y-898	1.5673E+03					1.07E+02	
		898.02	1.567E+03	(	1.056E+01	6.29E-01	9.37E+01 G
Co-1173	7.2623E+02					1.93E+03	
		1173.24	7.262E+02	(	6.394E+00	8.53E-01	9.99E+01 G
Co-1332	7.1964E+02					1.93E+03	
		1332.50	7.196E+02	(	6.072E+00	8.54E-01	1.00E+02 G
Y-1836	1.6357E+03					1.07E+02	
		1836.01	1.636E+03	(	5.819E+00	7.02E-01	9.92E+01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape

ORTEC g v - i (1087) Env32 G53W4.25 2/28/2014 11:43:43 AM
TestAmerica Spectrum name: 7_TunaCan_20120388.An1

P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded

D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq	Time Corrected Activity Bq	Uncertainty Counting 1 Sigma	MDA
Pb-210	1.4646E+04	1.4726E+04	6.521E-01%	1.74E+02
AM-241	1.2413E+03	1.2416E+03	6.489E-01%	1.46E+01
CD-109	1.4512E+04	1.5976E+04	4.292E-01%	1.09E+02
CO-57	2.9445E+02	3.4677E+02	7.076E-01%	4.14E+00
Ce-139	3.9059E+02	5.3948E+02	5.652E-01%	4.59E+00
Hg-203	4.6224E+02	1.1992E+03	5.917E-01%	9.42E+00
SN-113	6.6381E+02	9.7676E+02	6.552E-01%	8.15E+00
CS-137	4.6577E+02	4.6766E+02	7.730E-01%	5.58E+00
Y-898	1.0329E+03	1.5673E+03	6.291E-01%	1.06E+01
Co-1173	7.0966E+02	7.2623E+02	8.534E-01%	6.39E+00
Co-1332	7.0321E+02	7.1964E+02	8.542E-01%	6.07E+00
Y-1836	1.0780E+03	1.6357E+03	7.017E-01%	5.82E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (701.8 to 2000.2 keV) 3.620E+04 Bq
Total Decayed Activity (701.8 to 2000.2 keV) 4.0121711E+04 Bq

Analyzed by: _____
Admin

Reviewed by: _____
Supervisor

Laboratory: TestAmerica

Gamma Verification per Geometry

Detector:	Ge8
Geometry:	Tunacan
Reference date	1/1/2012
Calibration Standard:	90099
Standard volume g / vial	1550
Standard volume transferred in g / geometry	317.8
lab ID# of cal standard	6699

Isotope	Certified Activity gammas/sec	Geometry Activity gammas/sec	γ abundance	Bq/sample	Count Results	%recovery
Pb-210	3094	634	0.0425	14926	14960	100.2
Am-241	2037	418	0.3590	1163	1240.5	106.6
Cd-109	2881	591	0.0361	16363	16066	98.2
Co-57	1511	310	0.8560	362	345.12	95.4
Ce-139	2139	439	0.7990	549	536.34	97.7
Hg-203	4651	954	0.8146	1171	1218.2	104.1
Sn-113	3015	618	0.6400	966	967.15	100.1
Cs-137	1938	397	0.8510	467	465.86	99.8
Y-88	7264	1489	0.9370	1589	1552.1	97.6
Co-60	3580	734	0.9997	734	724.48	98.7
Co-60	3581	734	0.9999	734	729.98	99.4
Y-88	7690	1577	0.9920	1589	1627.2	102.4

Reviewed By: Jody Watson

Date: 3/28/2012

Calibration Data from file: 8_Soil_TunaCan.Clb
Energy Calibration Date: 3/28/2012 Time: 10:35:07 AM
Efficiency Calibration Date: 3/28/2012 Time: 10:35:20 AM

Calibration Description:
8_Soil_TunaCan_90099_032712

Energy Calibration Fit
Energy = 0.0505 +0.250025*Channel +8.06699e-010*Channel**2
FWHM (ch) = 3.6351 +0.000832*Channel -2.49195e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
185.74	46.54	46.49	0.11%	0.94	0.95	-0.61%
237.86	59.54	59.52	0.03%	0.95	0.96	-1.36%
351.89	88.03	88.03	-0.00%	0.97	0.98	-1.63%
488.04	122.06	122.07	-0.01%	1.01	1.01	0.12%
663.26	165.85	165.88	-0.02%	1.07	1.04	2.17%
1116.59	279.17	279.23	-0.02%	1.15	1.13	1.73%
1566.40	391.69	391.69	-0.00%	1.22	1.22	0.24%
2645.92	661.66	661.60	0.01%	1.39	1.42	-1.95%
3591.62	898.02	898.05	-0.00%	1.61	1.58	2.16%
4692.17	1173.24	1173.23	0.00%	1.74	1.75	-0.61%
5329.14	1332.50	1332.49	0.00%	1.82	1.84	-1.05%
7342.97	1836.01	1836.02	-0.00%	2.11	2.10	0.42%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.3942 %
Ln(Eff) = -0.1099 -0.495854*Ln(Eng) -0.0257227*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.7131 %
Ln(Eff) = -25.2530 +9.398253*Ln(Eng) -1.00003*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	1.9170E-002	2.0055E-002	-4.62%
59.54	3.0526E-002	2.8813E-002	5.61%
88.03	3.9175E-002	3.9918E-002	-1.90%
122.06	3.9509E-002	4.1457E-002	-4.93%
165.85	========== Knee ==========		
165.85	3.5429E-002	3.6291E-002	-2.43%
279.17	2.5270E-002	2.4275E-002	3.94%
391.69	1.8582E-002	1.8550E-002	0.17%
661.66	1.2089E-002	1.2090E-002	-0.01%
898.02	9.1435E-003	9.3604E-003	-2.37%
1173.24	7.3487E-003	7.4527E-003	-1.42%
1332.50	6.6398E-003	6.6776E-003	-0.57%
1836.01	5.1654E-003	5.0457E-003	2.32%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Pb-210	46.54	4.25	8.15E+003	14918.00	634.00	4.10%	1/1/2012 11:00:00 AM
Am-241	59.54	35.70	1.58E+005	1170.90	418.00	3.50%	1/1/2012 11:00:00 AM
Cd-109	88.03	3.61	4.63E+002	16371.00	591.00	4.70%	1/1/2012 11:00:00 AM
Co-57	122.06	85.60	2.72E+002	362.15	310.00	4.10%	1/1/2012 11:00:00 AM
Ce-139	165.85	79.90	1.38E+002	549.44	439.00	3.90%	1/1/2012 11:00:00 AM
Hg-203	279.17	81.50	4.66E+001	1170.60	954.00	3.80%	1/1/2012 11:00:00 AM
Sn-113	391.69	64.00	1.15E+002	965.63	618.00	3.90%	1/1/2012 11:00:00 AM
Cs-137	661.66	85.21	1.10E+004	465.91	397.00	4.00%	1/1/2012 11:00:00 AM
Y-88	898.02	93.70	1.07E+002	1589.10	1489.00	3.90%	1/1/2012 11:00:00 AM
Co-60	1173.24	99.90	1.93E+003	734.73	734.00	4.00%	1/1/2012 11:00:00 AM
Co-60	1332.50	99.98	1.93E+003	734.15	734.00	4.00%	1/1/2012 11:00:00 AM
Y-88	1836.01	99.20	1.07E+002	1589.70	1577.00	4.00%	1/1/2012 11:00:00 AM

```
     ORTEC g v - i (1087) Env32  G53W4.25  3/28/2012 10:36:01 AM
TestAmerica                      Spectrum name: 8_TunaCan_20120676.An1

Sample description
     8_TunaCan_90099_032712


Spectrum Filename: C:\User\SPC\Det8\8_TunaCan_20120676.An1

Acquisition information
       Start time:                 3/27/2012 10:58:29 AM
       Live time:               3600
       Real time:               3655
       Dead time:                  1.49 %
       Detector ID:                   8

Detector system
     Ge 8 SN/174


Calibration
       Filename:                   8_Soil_TunaCan.Clb
     8_Soil_TunaCan_90099_032712


       Energy Calibration
            Created:               3/28/2012 10:35:07 AM
            Zero offset:           0.050 keV
            Gain:                  0.250 keV/channel
            Quadratic:             8.067E-10 keV/channel^2

       Efficiency Calibration
            Created:               3/28/2012 10:35:20 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.39 %
            Log(Eff):             -1.098764E-01 + (-4.958544E-01*Log(E) ) +
                                   ( -2.572270E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.71 %
            Log(Eff):             -2.525301E+01 + ( 9.398253E+00*Log(E) ) +
                                   ( -1.000034E+00*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.55keV )
       Stop channel:            8000 (  2000.30keV )
       Peak rejection level:      10.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method
```

ORTEC g v - i (1087) Env32 G53W4.25 3/28/2012 10:36:01 AM
TestAmerica Spectrum name: 8_TunaCan_20120676.An1

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2012 11:00:00 AM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0205

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq	Nuc
46.54	43426.	0.60	0.95	2.002E-02	46.54	4.250	1.426E+04	Pb210
59.52	45918.	0.77	0.95	2.880E-02	59.54	35.700	1.240E+03	AM241
72.86	2434.	6.68	0.97	3.542E-02				
88.03	73269.	0.53	0.97	3.992E-02	88.03	3.610	1.607E+04	CD109
122.07	35407.	0.77	1.01	4.146E-02	122.06	85.600	3.451E+02	CO57
136.51	4312.	4.44	1.06	3.999E-02				
165.88	36308.	0.76	1.07	3.629E-02	165.85	79.900	5.363E+02	Ce139
279.23	24162.	0.88	1.15	2.427E-02	279.17	81.500	1.218E+03	Hg203
391.69	24625.	0.77	1.22	1.855E-02	391.69	64.000	9.671E+02	SN113
661.60	17184.	1.10	1.39	1.209E-02	661.66	85.210	4.659E+02	CS137
898.05	28015.	0.71	1.61	9.360E-03	898.02	93.700	1.552E+03	Y898
1173.23	18826.	0.79	1.74	7.453E-03	1173.24	99.900	7.245E+02	Co1173
1332.49	17010.	0.84	1.82	6.678E-03	1332.50	99.982	7.300E+02	Co1332
1836.02	16762.	0.79	2.11	5.046E-03	1836.01	99.200	1.627E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
291.19	72.85	12003.	2434.	6.872E+04	6.68	0.969	-	D
545.78	136.51	8432.	4312.	1.078E+05	4.44	1.059	-	

ORTEC g v - i (1087) Env32 G53W4.25 3/28/2012 10:36:01 AM
TestAmerica Spectrum name: 8_TunaCan_20120676.An1

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	185.74	46.49	17505.	45568.	12.658	0.76	0.942
AM-241	237.86	59.52	18397.	45918.	12.755	0.77	0.945
CD-109	351.89	88.03	17370.	73269.	20.353	0.53	0.966
CO-57	488.04	122.07	9639.	35407.	9.835	0.77	1.010
Ce-139	663.26	165.88	8356.	36308.	10.085	0.76	1.067
Hg-203	1116.59	279.23	4382.	24162.	6.712	0.88	1.153
SN-113	1566.40	391.69	2677.	24625.	6.840	0.77	1.223
CS-137	2645.92	661.60	3145.	17184.	4.773	1.10	1.389
Y-898	3591.62	898.05	1881.	28015.	7.782	0.71	1.611
Co-1173	4692.17	1173.23	650.	18826.	5.229	0.79	1.738
Co-1332	5329.14	1332.49	576.	17010.	4.725	0.84	1.822
Y-1836	7342.97	1836.02	111.	16762.	4.656	0.79	2.110

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq	Peak Energy keV	Peak Activity Bq	Code	MDA Value Bq			COMMENTS
Pb-210	N	1.4960E+04					8.15E+03		
			46.54	1.496E+04	(	2.033E+02	7.55E-01	4.25E+00	G
AM-241		1.2405E+03					1.58E+05		
			59.54	1.240E+03	(	1.715E+01	7.72E-01	3.57E+01	G
CD-109		1.6066E+04					4.63E+02		
			88.03	1.607E+04	(	1.353E+02	5.26E-01	3.61E+00	G
CO-57		3.4512E+02					2.72E+02		
			122.06	3.451E+02	(	4.486E+00	7.68E-01	8.56E+01	G

ORTEC g v - i (1087) Env32 G53W4.25 3/28/2012 10:36:01 AM
TestAmerica Spectrum name: 8_TunaCan_20120676.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ce-139	5.3634E+02					1.38E+02	
		165.85	5.363E+02	(	6.333E+00	7.56E-01	7.99E+01 G
Hg-203	1.2182E+03					4.66E+01	
		279.17	1.218E+03	(	1.569E+01	8.81E-01	8.15E+01 G
SN-113	9.6715E+02					1.15E+02	
		391.69	9.671E+02	(	9.575E+00	7.73E-01	6.40E+01 G
CS-137	4.6586E+02					1.10E+04	
		661.66	4.659E+02	(	7.158E+00	1.10E+00	8.52E+01 G
Y-898	1.5521E+03					1.07E+02	
		898.02	1.552E+03	(	1.135E+01	7.10E-01	9.37E+01 G
Co-1173	7.2448E+02					1.93E+03	
		1173.24	7.245E+02	(	4.676E+00	7.93E-01	9.99E+01 G
Co-1332	7.2998E+02					1.93E+03	
		1332.50	7.300E+02	(	4.916E+00	8.45E-01	1.00E+02 G
Y-1836	1.6272E+03					1.07E+02	
		1836.01	1.627E+03	(	5.029E+00	7.91E-01	9.92E+01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape

ORTEC g v - i (1087) Env32 G53W4.25 3/28/2012 10:36:01 AM
TestAmerica Spectrum name: 8_TunaCan_20120676.An1

P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq	Time Corrected Activity Bq	Uncertainty 1 Sigma Counting	MDA
Pb-210	1.4851E+04	1.4960E+04	7.555E-01%	2.03E+02
AM-241	1.2400E+03	1.2405E+03	7.719E-01%	1.71E+01
CD-109	1.4124E+04	1.6066E+04	5.260E-01%	1.35E+02
CO-57	2.7715E+02	3.4512E+02	7.681E-01%	4.49E+00
Ce-139	3.4782E+02	5.3634E+02	7.558E-01%	6.33E+00
Hg-203	3.3925E+02	1.2182E+03	8.812E-01%	1.57E+01
SN-113	5.7617E+02	9.6715E+02	7.729E-01%	9.58E+00
CS-137	4.6334E+02	4.6586E+02	1.105E+00%	7.16E+00
Y-898	8.8728E+02	1.5521E+03	7.104E-01%	1.13E+01
Co-1173	7.0239E+02	7.2448E+02	7.931E-01%	4.68E+00
Co-1332	7.0772E+02	7.2998E+02	8.450E-01%	4.92E+00
Y-1836	9.3024E+02	1.6272E+03	7.905E-01%	5.03E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (82.3 to 2000.3 keV) 3.545E+04 Bq
Total Decayed Activity (82.3 to 2000.3 keV) 4.0432598E+04 Bq

Analyzed by: _____
Admin

Reviewed by: _____
Supervisor

Laboratory: TestAmerica

Initial Calibration Verifications

2nd Source Verification

Detector:	Ge5
Geometry:	Tunacan
Reference date	1/1/2010
Source:	81427-334
Standard volume g / vial	1550
Standard volume transferred in g / geometry	318.5
lab ID# of cal standard	6665

Isotope	Certified Activity gammas/sec	Geometry Activity	γ abundance	Bq/sample	Count Results	%recovery
Am-241	2034	418	0.359	1164	1160.9	99.7
Cs-137	1926	396	0.851	465	442.36	95.1
Co-60	3611	742	0.99974	742	700.21	94.3
Co-60	3612	742	0.999856	742	701.86	94.6

Reviewed By: Jody Watson

Date: 3/27/2012

```
     ORTEC g v - i (3263) Env32  G53W4.25  3/28/2012 7:35:49 AM    Page  1
TestAmerica                     Spectrum name: 5_TunaCan2nd_20120813.An1

Sample description
     5_TunaCan2nd_Rad10_032712


Spectrum Filename: C:\User\SPC\Det5\5_TunaCan2nd_20120813.An1

Acquisition information
       Start time:                 3/27/2012 10:12:05 AM
       Live time:               7200
       Real time:               7250
       Dead time:                  0.69 %
       Detector ID:                    5

Detector system
     Ge 5 SN/157


Calibration
       Filename:                   5_Soil_TunaCan.Clb
     5_Soil_TunaCan_90099_032612


       Energy Calibration
            Created:               3/27/2012 5:20:02 PM
            Zero offset:           0.135 keV
            Gain:                  0.250 keV/channel
            Quadratic:             2.720E-08 keV/channel^2

       Efficiency Calibration
            Created:               3/27/2012 5:20:37 PM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   0.87 %
            Log(Eff):              6.466115E-01 + (-7.830454E-01*Log(E) ) +
                                   ( -4.117504E-03*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.43 %
            Log(Eff):             -2.462251E+01 + ( 9.075211E+00*Log(E) ) +
                                   ( -9.664422E-01*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.61keV )
       Stop channel:            8000 (  2000.53keV )
       Peak rejection level:    1000.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method

     ORTEC g v - i (3263) Env32  G53W4.25  3/28/2012 7:35:49 AM    Page  2
TestAmerica                     Spectrum name: 5_TunaCan2nd_20120813.An1
                                      Page 1
```

Random error: 4.0000000E+00
Systematic error: 4.0000000E+00
Fraction Limit: 0.000%
Background width: average of three points.

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2010 11:00:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	5_2012-02-26_0305.PBC 2/26/2012 3:05:30 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 33.1557

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/Sampl	Nuc
36.81	1005.	12.08	0.62	1.151E-02				
46.61	72616.	0.49	0.73	1.792E-02	46.54	4.250	1.421E+04	Pb210
49.73	1326.	15.18	0.68	1.987E-02				
59.57	75329.	0.49	0.74	2.535E-02	59.54	35.700	1.161E+03	AM241
87.94	40851.	0.68	0.80	3.460E-02	88.03	3.610	1.542E+04	CD109
96.44	148.	47.31	0.80	3.568E-02				
99.01	160.	48.52	0.81	3.589E-02				
105.59	109.	69.79	0.52	3.619E-02				
121.94	9225.	1.66	0.84	3.583E-02	122.06	85.600	3.348E+02	CO57
129.89	126.	62.97	0.30	3.522E-02				
136.43	1263.	7.42	0.90	3.457E-02				
165.86	1574.	6.14	0.84	3.133E-02	165.85	79.900	5.319E+02	Ce139
238.72	327.	27.04	0.86	2.319E-02				
247.25	57.	84.47	0.31	2.252E-02				
259.02	93.	60.17	0.97	2.167E-02				
260.46	98.	58.62	0.97	2.157E-02				
322.65	45.	91.14	0.46	1.806E-02				
351.63	256.	27.79	1.06	1.681E-02				
391.95	494.	16.33	1.15	1.536E-02	391.69	64.000	9.501E+02	SN113
407.02	43.	90.43	0.56	1.489E-02				
412.80	202.	35.90	0.77	1.471E-02				
420.83	123.	52.91	0.72	1.448E-02				
510.72	188.	44.32	0.50	1.232E-02				
542.81	148.	28.69	0.36	1.171E-02				
583.30	161.	33.50	0.69	1.103E-02				
661.70	25605.	0.71	1.39	9.924E-03	661.66	85.210	4.424E+02	CS137
762.61	129.	36.06	0.79	8.812E-03				
796.90	151.	38.71	0.30	8.493E-03				
886.67	129.	46.77	0.30	7.766E-03				
897.77	428.	19.21	1.38	7.686E-03	898.02	93.700	1.665E+03	Y898
932.49	230.	35.52	0.82	7.445E-03				

1008.65	104.	56.29	0.28	6.970E-03				
1173.15	23044.	0.73	1.79	6.138E-03	1173.24	99.900	7.002E+02	Co1173
1332.39	20769.	0.71	1.87	5.515E-03	1332.50	99.982	7.019E+02	Co1332
1836.05	245.	7.47	1.56	4.208E-03	1836.01	99.200	1.642E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide
146.78	36.81	4847.	1005.	8.731E+04	12.08	0.625	-
198.52	49.73	12365.	1326.	6.673E+04	15.18	0.681	- s
385.40	96.42	1874.	90.	2.532E+03	71.31	0.588	- sc
395.68	98.99	2103.	121.	3.381E+03	58.44	0.394	- s

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 7:35:49 AM Page 3
TestAmerica Spectrum name: 5_TunaCan2nd_20120813.An1

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected
422.09	105.59	2271.	109.	3.012E+03	69.79	0.518	- sc
519.32	129.89	2194.	126.	3.592E+03	62.97	0.298	- s
545.51	136.43	2377.	1263.	3.654E+04	7.42	0.900	- s
954.90	238.72	2247.	327.	1.410E+04	27.04	0.863	- sM
989.00	247.25	1031.	57.	2.516E+03	84.47	0.312	- sc
1036.13	259.01	1532.	93.	4.309E+03	60.17	0.968	- D
1041.90	260.46	1588.	98.	4.525E+03	58.62	0.970	- D
1290.76	322.65	744.	45.	2.473E+03	91.14	0.455	- c
1406.70	351.63	1442.	256.	1.523E+04	27.79	1.058	- s
1628.36	407.02	667.	43.	2.866E+03	90.43	0.562	- sc
1651.47	412.80	1438.	202.	1.370E+04	35.90	0.775	- s
1683.60	420.83	1291.	123.	8.472E+03	52.91	0.720	- s
2043.25	510.72	1553.	188.	1.523E+04	44.32	0.503	- s
2171.67	542.81	587.	148.	1.267E+04	28.69	0.362	- s
2333.63	583.30	785.	161.	1.460E+04	33.50	0.694	- s
3050.97	762.61	614.	129.	1.468E+04	36.06	0.794	- s
3188.11	796.90	856.	151.	1.782E+04	38.71	0.295	- s
3547.15	886.67	963.	129.	1.665E+04	46.77	0.296	- s
3730.41	932.49	1438.	230.	3.096E+04	35.52	0.818	- s
4035.01	1008.65	864.	104.	1.490E+04	56.29	0.275	- s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	186.01	46.61	16470.	72552.	10.077	0.49	0.733
AM-241	237.88	59.57	15419.	75329.	10.462	0.49	0.735
CD-109	351.46	87.94	8772.	40851.	5.674	0.68	0.804
CO-57	487.54	121.94	3880.	9225.	1.281	1.66	0.838
Ce-139	663.30	165.86	2329.	1574.	0.219	6.14	0.840
SN-113	1568.04	391.95	1640.	494.	0.069	16.33	1.153
CS-137	2647.28	661.70	1362.	25582.	3.553	0.71	1.394
Y-898	3591.55	897.77	1410.	428.	0.060	19.21	1.376

Co-1173	4692.83	1173.15	788.	23044.	3.201	0.73	1.786
Co-1332	5329.55	1332.39	98.	20769.	2.885	0.71	1.870
Y-1836	7342.76	1836.05	15.	245.	0.034	7.47	1.556s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 7:35:49 AM Page 4
TestAmerica Spectrum name: 5_TunaCan2nd_20120813.An1

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq/Sample	Peak Energy keV	Peak Activity Bq/Sample	Code	MDA Value Bq/Sample	COMMENTS
Pb-210	N	1.4212E+04				8.15E+03	
			46.54	1.421E+04	(P	1.177E+02 4.91E-01 4.25E+00	G
AM-241		1.1609E+03				1.58E+05	
			59.54	1.161E+03	(	8.959E+00 4.87E-01 3.57E+01	G
CD-109		1.5419E+04				4.63E+02	
			88.03	1.542E+04	(	1.658E+02 6.81E-01 3.61E+00	G
CO-57		3.3478E+02				2.72E+02	
			122.06	3.348E+02	(	1.063E+01 1.66E+00 8.56E+01	G
Ce-139		5.3191E+02				1.38E+02	
			165.85	5.319E+02	(	7.689E+01 6.14E+00 7.99E+01	G
Hg-203		-6.5193E-03				4.66E+01	
			279.17	-6.519E-03	%(	1.788E+00 8.22E+03 8.15E+01	G
SN-113		9.5011E+02				1.15E+02	
			391.69	9.501E+02	(	3.682E+02 1.63E+01 6.40E+01	G
CS-137		4.4236E+02				1.10E+04	
			661.66	4.424E+02	(P	3.020E+00 7.12E-01 8.52E+01	G
Y-898		1.6655E+03				1.07E+02	
			898.02	1.665E+03	(	6.908E+02 1.92E+01 9.37E+01	G
Co-1173		7.0021E+02				1.93E+03	
			1173.24	7.002E+02	(	4.056E+00 7.32E-01 9.99E+01	G
Co-1332		7.0186E+02				1.93E+03	
			1332.50	7.019E+02	(	1.651E+00 7.07E-01 1.00E+02	G
Y-1836		1.6424E+03				1.07E+02	
			1836.01	1.642E+03	(	1.392E+02 7.47E+00 9.92E+01	G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.

@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq/Sample	Time Corrected Activity Bq/Sample	Uncertainty Counting	1 Sigma	MDA Bq/Sample
Pb-210	1.3259E+04	1.4212E+04	4.918E-01%		1.18E+02
AM-241	1.1568E+03	1.1609E+03	4.867E-01%		8.96E+00
CD-109	4.5403E+03	1.5419E+04	6.810E-01%		1.66E+02
CO-57	4.1787E+01	3.3478E+02	1.660E+00%		1.06E+01
Ce-139	8.7347E+00	5.3191E+02	6.138E+00%		7.69E+01
Hg-203 #A	-6.5193E-03	>12 Halflives	8.2197E+03%	1.7882E+00	
SN-113	6.9747E+00	9.5011E+02	1.633E+01%		3.68E+02
CS-137	4.2015E+02	4.4236E+02	7.122E-01%		3.02E+00
Y-898	8.2662E+00	1.6655E+03	1.921E+01%		6.91E+02
Co-1173	5.2196E+02	7.0021E+02	7.316E-01%		4.06E+00
Co-1332	5.2320E+02	7.0186E+02	7.069E-01%		1.65E+00
Y-1836	8.1520E+00	1.6424E+03	7.471E+00%		1.39E+02

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.

```
  < - MDA value printed.
  A - Activity printed, but activity < MDA.
  B - Activity < MDA and failed test.
  C - Area < Critical level.
  F - Failed fraction or key line test.
  H - Halflife limit exceeded
-----------------------------   S U M M A R Y   ----------------------------
Total Activity (  279.0 to  2000.5 keV)     2.050E+04  Bq/Sample
Total Decayed Activity (  279.0 to  2000.5 keV) 3.7761527E+04  Bq/Sample
```

2nd Source Verification

Detector:	Ge7
Geometry:	Tunacan
Reference date	1/1/2010
Source:	81427-334
Standard volume g / vial	1550
Standard volume transferred in g / geometry	318.5
lab ID# of cal standard	6665

Isotope	Certified Activity gammas/sec	Geometry Activity	γ abundance	Bq/sample	Count Results	%recovery
Am-241	2034	418	0.359	1164	1150.4	98.8
Cs-137	1926	396	0.851	465	440.47	94.7
Co-60	3611	742	0.99974	742	681.72	91.9
Co-60	3612	742	0.999856	742	692.1	93.2

Reviewed By: Jody Watson

Date: 3/27/2012

```
     ORTEC g v - i (3263) Env32  G53W4.25  3/28/2012 8:52:25 AM
TestAmerica                      Spectrum name: 7_TunaCan2ndSource_20120479.An1

Sample description
     7_TunaCan2ndSource_81427-334_032712


Spectrum Filename: C:\User\SPC\Det7\7_TunaCan2ndSource_20120479.An1

Acquisition information
       Start time:                 3/27/2012 3:25:25 PM
       Live time:               3600
       Real time:               3684
       Dead time:                  2.28 %
       Detector ID:                   7

Detector system
     Ge 7 SN/154


Calibration
       Filename:                   7_Soil_TunaCan.Clb
     7_TunaCan_90099_032712


       Energy Calibration
            Created:               3/16/2012 11:44:50 AM
            Zero offset:           0.153 keV
            Gain:                  0.250 keV/channel
            Quadratic:             6.716E-09 keV/channel^2

       Efficiency Calibration
            Created:               3/16/2012 11:45:14 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   0.87 %
            Log(Eff):              6.716580E-01 + (-6.166540E-01*Log(E) ) +
                                   ( -2.065917E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.48 %
            Log(Eff):             -2.689695E+01 + ( 1.019544E+01*Log(E) ) +
                                   ( -1.081671E+00*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.65keV )
       Stop channel:            8000 (  2000.21keV )
       Peak rejection level:    1000.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method
```

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 8:52:25 AM
TestAmerica Spectrum name: 7_TunaCan2ndSource_20120479.An1

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2010 11:00:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	7_2012-02-26_0327.PBC 2/26/2012 3:27:47 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 11 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0270

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/Sampl	Nuc
36.65	788.	12.78	0.82	1.487E-02				
40.49	109.	96.90	0.59	1.869E-02				
46.62	49142.	0.63	0.84	2.491E-02	46.54	4.250	1.386E+04	Pb210
49.64	876.	18.72	0.86	2.792E-02				
59.61	54530.	0.58	0.87	3.707E-02	59.54	35.700	1.150E+03	AM241
76.99	260.	38.90	1.03	4.881E-02				
88.06	31019.	0.77	0.89	5.329E-02	88.03	3.610	1.522E+04	CD109
122.04	6834.	2.04	0.94	5.606E-02	122.06	85.600	3.171E+02	CO57
136.41	810.	9.51	1.00	5.411E-02				
165.84	1193.	6.45	0.96	4.765E-02	165.85	79.900	5.180E+02	Ce139
185.66	92.	57.01	0.73	4.445E-02				
213.19	122.	50.56	0.75	3.960E-02				
272.80	146.	47.29	0.28	3.217E-02				
391.67	372.	19.60	1.11	2.360E-02	391.69	64.000	9.332E+02	SN113
442.91	47.	93.72	0.45	2.122E-02				
483.77	95.	38.10	0.62	1.965E-02				
524.63	67.	65.12	0.73	1.831E-02				
604.78	31.	59.37	0.27	1.616E-02				
628.99	32.	94.37	0.58	1.561E-02				
661.67	19152.	0.86	1.47	1.492E-02	661.66	85.210	4.405E+02	CS137
898.03	322.	23.53	1.90	1.137E-02	898.02	93.700	1.694E+03	Y898
910.18	180.	33.99	0.85	1.123E-02				
963.79	49.	71.39	0.69	1.067E-02				
1173.23	16317.	0.86	1.89	8.929E-03	1173.24	99.900	6.817E+02	Co1173
1332.49	14763.	0.85	2.04	7.951E-03	1332.50	99.982	6.921E+02	Co1332
1836.09	186.	9.19	1.40	5.919E-03	1836.01	99.200	1.780E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
146.00	36.65	3116.	788.	5.300E+04	12.78	0.819	-	
161.37	40.49	4419.	109.	5.831E+03	96.90	0.587	-	c
197.99	49.64	8222.	876.	8.[illegible]E+03	18.72	0.855	-	sM

307.39	76.99	3728.	260.	5.319E+03	38.90	1.033	-

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 8:52:25 AM
TestAmerica Spectrum name: 7_TunaCan2ndSource_20120479.An1

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected	
545.11	136.41	1706.	810.	1.497E+04	9.51	1.002	-	
742.15	185.66	1076.	92.	2.081E+03	57.01	0.725	-	s
852.30	213.19	1296.	122.	3.077E+03	50.56	0.748	-	s
1090.74	272.80	1320.	146.	4.539E+03	47.29	0.283	-	s
1771.26	442.91	710.	47.	2.215E+03	93.72	0.453	-	sc
1934.71	483.77	486.	95.	4.835E+03	38.10	0.616	-	s
2098.18	524.63	583.	67.	3.669E+03	65.12	0.732	-	s
2418.80	604.78	172.	31.	1.939E+03	59.37	0.268	-	s
2515.62	628.99	330.	32.	2.050E+03	94.37	0.581	-	sc
3640.41	910.18	855.	180.	1.603E+04	33.99	0.852	-	s
3854.87	963.79	447.	49.	4.625E+03	71.39	0.695	-	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	185.90	46.62	12530.	49107.	13.641	0.63	0.840
AM-241	237.87	59.61	10985.	54530.	15.147	0.58	0.871
CD-109	351.70	88.06	6100.	31019.	8.616	0.77	0.892
CO-57	487.62	122.04	3040.	6834.	1.898	2.04	0.937
Ce-139	662.88	165.84	1495.	1193.	0.331	6.45	0.956
Hg-203	1114.79	278.81	2119.	-42.	-0.012	155.58	1.105s
SN-113	1566.31	391.67	1236.	372.	0.103	19.60	1.107
CS-137	2646.35	661.67	1156.	19152.	5.320	0.86	1.474
Y-898	3591.81	898.03	1084.	322.	0.089	23.53	1.897
Co-1173	4692.59	1173.23	493.	16317.	4.532	0.86	1.893
Co-1332	5329.55	1332.49	127.	14763.	4.101	0.85	2.038
Y-1836	7343.66	1836.09	16.	186.	0.052	9.19	1.399s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 8:52:25 AM
TestAmerica Spectrum name: 7_TunaCan2ndSource_20120479.An1

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq/Sample	Peak Energy keV	Peak Activity Bq/Sample	Code	MDA Value Bq/Sample	COMMENTS
Pb-210	N	1.3857E+04					8.15E+03
			46.54	1.386E+04	(P	1.480E+02	6.34E-01 4.25E+00 G
AM-241		1.1504E+03					1.58E+05
			59.54	1.150E+03	(	1.036E+01	5.81E-01 3.57E+01 G
CD-109		1.5217E+04					4.63E+02
			88.03	1.522E+04	(	1.799E+02	7.73E-01 3.61E+00 G
CO-57		3.1712E+02					2.72E+02
			122.06	3.171E+02	(	1.205E+01	2.04E+00 8.56E+01 G
Ce-139		5.1801E+02					1.38E+02
			165.85	5.180E+02	(	7.941E+01	6.45E+00 7.99E+01 G
Hg-203		-4.5441E-01					4.66E+01
			279.17	-4.544E-01	?(	2.347E+00	1.56E+02 8.15E+01 G
SN-113		9.3315E+02					1.15E+02
			391.69	9.332E+02	(	4.178E+02	1.96E+01 6.40E+01 G
CS-137		4.4047E+02					1.10E+04
			661.66	4.405E+02	(	3.706E+00	8.56E-01 8.52E+01 G
Y-898		1.6944E+03					1.07E+02
			898.02	1.694E+03	(	8.216E+02	2.35E+01 9.37E+01 G
Co-1173		6.8172E+02					1.93E+03
			1173.24	6.817E+02	(	4.436E+00	8.58E-01 9.99E+01 G
Co-1332		6.9210E+02					1.93E+03
			1332.50	6.921E+02	(	2.586E+00	8.49E-01 1.00E+02 G
Y-1836		1.7801E+03					1.07E+02
			1836.01	1.780E+03	(	2.065E+02	9.19E+00 9.92E+01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 8:52:25 AM
TestAmerica Spectrum name: 7_TunaCan2ndSource_20120479.An1

@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity
Hg-203	278.81	2119.	-42.	-0.012	155.58	0.000E+00

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq/Sample	Time Corrected Activity Bq/Sample	Uncertainty Counting	1 Sigma	MDA Bq/Sample
Pb-210	1.2927E+04	1.3857E+04	6.344E-01%		1.48E+02
AM-241	1.1462E+03	1.1504E+03	5.808E-01%		1.04E+01
CD-109	4.4794E+03	1.5217E+04	7.727E-01%		1.80E+02
CO-57	3.9561E+01	3.1712E+02	2.043E+00%		1.20E+01
Ce-139	8.4971E+00	5.1801E+02	6.453E+00%		7.94E+01
Hg-203 #A	-4.5441E-01	>12 Halflives	1.5558E+02%	2.3474E+00	
SN-113	6.8413E+00	9.3315E+02	1.960E+01%		4.18E+02
CS-137	4.1835E+02	4.4047E+02	8.557E-01%		3.71E+00
Y-898	8.3979E+00	1.6944E+03	2.353E+01%		8.22E+02
Co-1173	5.0814E+02	6.8172E+02	8.581E-01%		4.44E+00
Co-1332	5.1588E+02	6.9210E+02	8.485E-01%		2.59E+00
Y-1836	8.8227E+00	1.7801E+03	9.190E+00%		2.07E+02

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 8:52:25 AM
TestAmerica Spectrum name: 7_TunaCan2ndSource_20120479.An1

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.2 keV) 2.007E+04 Bq/Sample
Total Decayed Activity (37.6 to 2000.2 keV) 3.7281199E+04 Bq/Sample

Analyzed by: _____
Admin

Reviewed by: _____
Supervisor

Laboratory: TestAmerica

2nd Source Verification

Detector:	Ge8
Geometry:	Tunacan
Reference date	1/1/2010
Source:	81427-334
Standard volume g / vial	1550
Standard volume transferred in g / geometry	318.5
lab ID# of cal standard	6665

Isotope	Certified Activity gammas/sec	Geometry Activity	γ abundance	Bq/sample	Count Results	%recovery
Am-241	2034	418	0.359	1164	1175.4	101.0
Cs-137	1926	396	0.851	465	446.61	96.0
Co-60	3611	742	0.99974	742	697.22	93.9
Co-60	3612	742	0.999856	742	691.92	93.2

Reviewed By: Jody Watson

Date: 3/29/2012

```
     ORTEC g v - i (3263) Env32  G53W4.25  3/29/2012 7:45:38 AM    Page  1
TestAmerica                     Spectrum name: 8_TunaCan2nd_20120697.An1

Sample description
     8_TunaCan_81427-334_2ndsource_032912


Spectrum Filename: C:\User\SPC\Det8\8_TunaCan2nd_20120697.An1

Acquisition information
       Start time:                 3/29/2012 1:58:04 AM
       Live time:               3600
       Real time:               3622
       Dead time:                  0.61 %
       Detector ID:                    8

Detector system
     Ge 8 SN/174


Calibration
       Filename:                   8_Soil_TunaCan.Clb
     8_Soil_TunaCan_90099_032712


       Energy Calibration
            Created:               3/28/2012 10:35:07 AM
            Zero offset:           0.050 keV
            Gain:                  0.250 keV/channel
            Quadratic:             8.067E-10 keV/channel^2

       Efficiency Calibration
            Created:               3/28/2012 10:35:20 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.39 %
            Log(Eff):             -1.098764E-01 + (-4.958544E-01*Log(E) ) +
                                   ( -2.572270E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.71 %
            Log(Eff):             -2.525301E+01 + ( 9.398253E+00*Log(E) ) +
                                   ( -1.000034E+00*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.55keV )
       Stop channel:            8000 (  2000.30keV )
       Peak rejection level:    1000.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method

     ORTEC g v - i (3263) Env32  G53W4.25  3/29/2012 7:45:38 AM    Page  2
TestAmerica                     Spectrum name: 8_TunaCan2nd_20120697.An1
                                      Page 1
```

Random error: 4.0000000E+00
Systematic error: 4.0000000E+00
Fraction Limit: 0.000%
Background width: average of three points.

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2010 11:00:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	8_2012-03-02_0402.PBC 3/2/2012 4:02:11 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 27.9595

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/Sampl	Nuc
36.61	594.	17.47	1.15	1.254E-02				
46.53	38495.	0.62	0.95	2.001E-02	46.54	4.250	1.345E+04	Pb210
49.81	542.	25.92	1.04	2.243E-02				
59.48	43371.	0.71	0.98	2.878E-02	59.54	35.700	1.175E+03	AM241
84.86	327.	26.82	0.98	3.922E-02				
88.03	22911.	0.76	0.98	3.992E-02	88.03	3.610	1.504E+04	CD109
122.06	5318.	2.55	1.03	4.146E-02	122.06	85.600	3.349E+02	CO57
136.54	691.	14.03	0.89	3.998E-02				
165.93	1033.	8.62	1.19	3.628E-02	165.85	79.900	6.077E+02	Ce139
177.05	71.	70.08	0.69	3.453E-02				
185.74	128.	40.98	0.85	3.329E-02				
227.93	52.	65.04	0.45	2.844E-02				
270.79	87.	50.41	0.41	2.486E-02				
278.94	44.	131.33	1.13	2.428E-02	279.17	81.500	HL>Cutoff	Hg203
302.52	63.	54.81	0.69	2.279E-02				
370.09	35.	84.23	0.41	1.941E-02				
391.61	316.	17.91	0.81	1.855E-02	391.69	64.000	1.016E+03	SN113
409.22	93.	50.95	0.41	1.791E-02				
428.24	88.	46.51	0.39	1.726E-02				
564.57	72.	45.26	0.57	1.378E-02				
591.73	73.	42.60	0.61	1.326E-02				
661.62	15734.	0.88	1.38	1.209E-02	661.66	85.210	4.466E+02	CS137
720.39	41.	72.89	0.46	1.126E-02				
831.73	36.	50.61	0.44	9.986E-03				
897.91	396.	17.93	1.52	9.360E-03	898.02	93.700	2.554E+03	Y898
1092.31	69.	44.41	0.50	7.924E-03				
1173.30	13922.	0.92	1.73	7.452E-03	1173.24	99.900	6.972E+02	Co1173
1332.56	12390.	0.92	1.75	6.677E-03	1332.50	99.982	6.919E+02	Co1332
1836.18	152.	9.00	1.63	5.046E-03	1836.01	99.200	1.724E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide
146.23	36.61	3218.	594.	4.742E+04	17.47	1.147	- s
199.01	49.81	6400.	542.	2.416E+04	25.92	1.039	- sM
339.16	84.85	3491.	236.	6.026E+03	42.58	0.697	- sM

ORTEC g v - i (3263) Env32 G53W4.25 3/29/2012 7:45:38 AM Page 3
TestAmerica Spectrum name: 8_TunaCan2nd_20120697.An1

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected
545.91	136.54	2178.	691.	1.728E+04	14.03	0.888	-
707.94	177.05	893.	71.	2.046E+03	70.08	0.693	- sM
742.68	185.74	978.	128.	3.835E+03	40.98	0.847	- sM
911.43	227.93	546.	52.	1.829E+03	65.04	0.445	- sc
1082.86	270.79	683.	87.	3.486E+03	50.41	0.413	- sM
1209.76	302.52	484.	63.	2.765E+03	54.81	0.692	- s
1480.00	370.09	385.	35.	1.803E+03	84.23	0.412	- sc
1636.49	409.22	685.	93.	5.212E+03	50.95	0.407	- s
1712.56	428.24	565.	88.	5.117E+03	46.51	0.393	- s
2257.86	564.57	330.	72.	5.224E+03	45.26	0.565	- s
2366.45	591.73	298.	73.	5.505E+03	42.60	0.613	- s
2881.06	720.39	284.	41.	3.640E+03	72.89	0.464	- s
3326.37	831.73	148.	36.	3.605E+03	50.61	0.439	- s
4368.55	1092.31	290.	69.	8.708E+03	44.41	0.495	- s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	185.71	46.48	12173.	40702.	11.306	0.74	0.992
AM-241	237.70	59.48	10649.	43371.	12.047	0.71	0.984
CD-109	351.85	88.02	4506.	23196.	6.443	0.88	1.056
CO-57	487.99	122.06	2908.	5318.	1.477	2.55	1.026
Ce-139	663.47	165.93	1722.	1033.	0.287	8.62	1.189s
Hg-203	1115.46	278.94	1642.	44.	0.012	131.33	1.133
SN-113	1566.07	391.61	822.	316.	0.088	17.91	0.806s
CS-137	2646.01	661.62	665.	15731.	4.370	0.88	1.379
Y-898	3591.03	897.91	871.	396.	0.110	17.93	1.524
Co-1173	4692.46	1173.30	374.	13922.	3.867	0.92	1.726
Co-1332	5329.42	1332.56	82.	12390.	3.442	0.92	1.753
Y-1836	7343.62	1836.18	6.	152.	0.042	9.00	1.626s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

ORTEC g v - i (3263) Env32 G53W4.25 3/29/2012 7:45:38 AM Page 4
TestAmerica Spectrum name: 8_TunaCan2nd_20120697.An1
Page 3

```
 *****   S U M M A R Y   O F   L I B R A R Y   P E A K   U S A G E   *****
- Nuclide -  Average     ------------- Peak --------------
Name   Code  Activity     Energy   Activity Code MDA Value
             Bq/Sample     keV     Bq/Sample     Bq/Sample      COMMENTS
 ____________________________________________________________________________

Pb-210   N   1.4221E+04                                     8.15E+03
                            46.54 1.422E+04  (  1.806E+02 7.43E-01 4.25E+00 G

AM-241       1.1754E+03                                     1.58E+05
                            59.54 1.175E+03  (  1.311E+01 7.10E-01 3.57E+01 G

CD-109       1.5223E+04                                     4.63E+02
                            88.03 1.522E+04  (  2.071E+02 8.83E-01 3.61E+00 G

CO-57        3.3494E+02                                     2.72E+02
                           122.06 3.349E+02  (  1.600E+01 2.55E+00 8.56E+01 G

Ce-139       6.0766E+02                                     1.38E+02
                           165.85 6.077E+02 *(  1.153E+02 8.62E+00 7.99E+01 G

Hg-203       6.1671E-01                                     4.66E+01
                           279.17 6.167E-01  (  2.689E+00 1.31E+02 8.15E+01 G

SN-113       1.0157E+03                                     1.15E+02
                           391.69 1.016E+03  (  4.390E+02 1.79E+01 6.40E+01 G

CS-137       4.4661E+02                                     1.10E+04
                           661.66 4.466E+02  (P 3.489E+00 8.85E-01 8.52E+01 G

Y-898        2.5543E+03                                     1.07E+02
                           898.02 2.554E+03  (  9.046E+02 1.79E+01 9.37E+01 G

Co-1173      6.9722E+02                                     1.93E+03
                          1173.24 6.972E+02  (  4.649E+00 9.19E-01 9.99E+01 G

Co-1332      6.9192E+02                                     1.93E+03
                          1332.50 6.919E+02  (  2.515E+00 9.18E-01 1.00E+02 G

Y-1836       1.7236E+03                                     1.07E+02
                          1836.01 1.724E+03  (  1.542E+02 9.00E+00 9.92E+01 G
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
```



```
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
       failed one or more qualification tests.
   + - Peak activity higher than counting uncertainty range.
   - - Peak activity lower than counting uncertainty range.
   = - Peak outside analysis energy range.
   & - Calculated peak centroid is not close enough to the
       library energy centroid for positive identification.
```

P - Peakbackground subtraction
} - Peak is too close to another for the activity
to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq/Sample	Time Corrected Activity Bq/Sample	Uncertainty Counting	1 Sigma	MDA Bq/Sample
Pb-210	1.3265E+04	1.4221E+04	7.429E-01%		1.81E+02
AM-241	1.1712E+03	1.1754E+03	7.101E-01%		1.31E+01
CD-109	4.4713E+03	1.5223E+04	8.832E-01%		2.07E+02
CO-57	4.1631E+01	3.3494E+02	2.551E+00%		1.60E+01
Ce-139 #	9.8959E+00	6.0766E+02	8.616E+00%		1.15E+02
Hg-203 A	6.1671E-01	>12 Halflives	1.3133E+02%	2.6892E+00	
SN-113	7.3819E+00	1.0157E+03	1.791E+01%		4.39E+02
CS-137	4.2415E+02	4.4661E+02	8.848E-01%		3.49E+00
Y-898	1.2542E+01	2.5543E+03	1.793E+01%		9.05E+02
Co-1173	5.1942E+02	6.9722E+02	9.185E-01%		4.65E+00
Co-1332	5.1548E+02	6.9192E+02	9.176E-01%		2.52E+00
Y-1836	8.4633E+00	1.7236E+03	8.997E+00%		1.54E+02

ORTEC g v - i (3263) Env32 G53W4.25 3/29/2012 7:45:38 AM Page 6
TestAmerica Spectrum name: 8_TunaCan2nd_20120697.An1

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.3 keV) 2.045E+04 Bq/Sample
Total Decayed Activity (37.6 to 2000.3 keV) 3.8690848E+04 Bq/Sample

Annual Calibration Verifications

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANNUAL CALIBRATION VERIFICATION

Detector ID: **Detector # 5**

SpectrumID: 5_20160128006_EffVerif

Analysis Description: ACVTop-776670;TunaCan2006

Calibration: 5_Soil_TunaCan_90099_032612

Detector: Ge 5 SN/157

Verification Date: 2016-01-28 10:21

Source Assay Date/Time: 2006-10-01 11:00

Isotope	Gamma Energy (kev)	Source Emission Rate (GPS) (Assay)	Observed Activity (GPS) (Actual)	Percent Difference (%) Assay-Actual / Assay
Am-241	59.54	449	4.57E+02	-1.7%
Cs-137	661.66	400	3.97E+02	0.7%
Co-1332	1332.5	777	7.71E+02	0.8%

Comments:

Perform ___Jody Watson 1/28/16_____

Reviev _____Rachel Mueller 1/28/16_____

C:\User\CRpt\5_20160128006_EffVerif.xls

Sample Description: ACVTop-776670;TunaCan2006
Detector: Ge 5 SN/157
Source Date: 10/1/2006 11:00
Acquired: 1/28/2016 10:21:33
Analyzed: 2/4/2016 10:52

Analyst: Jody Watson

Efficiency: 5_Soil_TunaCan_90099_032612
Library: DET_EfficiencyVerification.lib

Nuclide	Activity uCi/Source	Uncertainty %
AM-241	4.566E+02	0.45
CS-137	3.974E+02	0.71
Co-1332	7.707E+02	1.09
Total	1.625E+03	

TestAmerica Spectrum name: 5_20160128006_EffVerif.An1

Sample description
ACVTop-776670;TunaCan2006

Spectrum Filename: C:\User\SPC\Det5\5_20160128006_EffVerif.An1

Acquisition information
Start time: 1/28/2016 10:21:33 AM
Live time: 7200
Real time: 7242
Dead time: 0.59 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: 5_Soil_TunaCan.Clb
5_Soil_TunaCan_90099_032612

Energy Calibration
Created: 2/28/2012 7:35:48 PM
Zero offset: 0.158 keV
Gain: 0.250 keV/channel
Quadratic: 3.911E-08 keV/channel^2

Efficiency Calibration
Created: 3/27/2012 5:20:37 PM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.466115E-01 + (-7.830454E-01*Log(E)) +
(-4.117504E-03*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.43 %
Log(Eff): -2.462251E+01 + (9.075211E+00*Log(E)) +
(-9.664422E-01*Log(E)^2)

Library Files
Main analysis library: DET_EfficiencyVerification.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G53W4.25
Start channel: 150 (37.62keV)
Stop channel: 8000 (2000.81keV)
Peak rejection level: 10.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00
Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) =
1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            average of three points.
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       10/1/2006 11:00:00 AM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  NO
       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    3 cutoff: 5.00E+01%
       Energy Calibration
            Normalized diff:       0.0281

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    uCi/Sour
_____________________________________________________________________________
   46.59    62614.   0.54   0.73  1.791E-02
   59.55    82059.   0.45   0.73  2.534E-02    59.54 100.000  4.566E+02 AM241
   87.79     1068.   8.88   0.81  3.458E-02
  661.63    22901.   0.71   1.29  9.925E-03   661.66 100.000  3.973E+02 CS137
 1173.12     9966.   1.10   1.75  6.139E-03
 1332.41     8977.   1.09   1.90  5.515E-03  1332.50 100.000  7.707E+02 Co1332


************ U N I D E N T I F I E D    P E A K   S U M M A R Y ************
  Peak Centroid  Background Net Area  Efficiency  Uncert   FWHM  Suspected
Channel   Energy   Counts     Counts   * Area    1 Sigma %  keV   Nuclide
_____________________________________________________________________________
  185.88    46.59     15162.     62614. 3.496E+06    0.54   0.733  -
  350.82    87.79      2502.      1068. 3.087E+04    8.88   0.809  -      s
 4692.76  1173.12       266.      9966. 1.624E+06    1.10   1.754  -

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  L - Peak written from unknown list.
  C - Area < Critical level.

-------------------------------------------------------------
This section based on library: DET_EfficiencyVerification.lib
```

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
AM-241	237.79	59.55	13086.	82059.	11.397	0.45	0.731
CS-137	2647.26	661.63	612.	22901.	3.181	0.71	1.293
Co-1332	5329.50	1332.41	77.	8977.	1.247	1.09	1.898

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity uCi/Source	Peak Energy keV	Peak Activity uCi/Source	Code	MDA Value uCi/Source	COMMENTS
AM-241		4.5663E+02				1.58E+05	
			59.54	4.566E+02	(	2.981E+00 4.47E-01 1.00E+02 G	
CS-137		3.9735E+02				1.10E+04	
			661.66	3.973E+02	(	2.047E+00 7.08E-01 1.00E+02 G	
Co-1332		7.7068E+02				1.93E+03	
			1332.50	7.707E+02	(	3.743E+00 1.09E+00 1.00E+02 G	

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay

N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity uCi/Source	Time Corrected Activity uCi/Source	Uncertainty Counting 1 Sigma	MDA
AM-241	4.4986E+02	4.5663E+02	4.468E-01%	2.98E+00
CS-137	3.2049E+02	3.9735E+02	7.077E-01%	2.05E+00
Co-1332	2.2610E+02	7.7068E+02	1.091E+00%	3.74E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.8 keV) 9.965E+02 uCi/Source
Total Decayed Activity (37.6 to 2000.8 keV) 1.6246621E+03 uCi/Source

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANNUAL CALIBRATION VERIFICATION

Detector ID: **Detector # 7**
SpectrumID: 7_20160123003_EffVerif
Analysis Description: ACVTop-776670;TunaCan2006
Calibration: 7_TunaCan_90099_032712
Detector: Ge 7 SN/154

Verification Date: 2016-01-23 19:25
Source Assay Date/Time: 2006-10-01 11:00

Isotope	Gamma Energy (kev)	Source Emission Rate (GPS) (Assay)	Observed Activity (GPS) (Actual)	Percent Difference (%) Assay-Actual / Assay
Am-241	59.54	449	4.38E+02	2.5%
Cs-137	661.66	400	3.86E+02	3.6%
Co-1332	1332.5	777	7.19E+02	7.5%

Comments:

Perform ____Kody Saulters 2/4/16_____ Reviev ___Jody Watson 2/4/16_____

C:\User\CRpt\7_20160123003_EffVerif.xls

Sample Description: ACVTop-776670;TunaCan2006
Detector: Ge 7 SN/154
Source Date: 10/1/2006 11:00
Acquired: 1/23/2016 19:25:53
Analyzed: 2/4/2016 10:49

Analyst: Jody Watson

Efficiency: 7_TunaCan_90099_032712
Library: DET_EfficiencyVerification.lib

Nuclide	Activity uCi/Source	Uncertainty %
AM-241	4.380E+02	0.38
CS-137	3.857E+02	0.59
Co-1332	7.189E+02	0.94
Total	1.543E+03	

TestAmerica Spectrum name: 7_20160123003_EffVerif.An1

Sample description
ACVTop-776670;TunaCan2006

Spectrum Filename: C:\User\SPC\Det7\7_20160123003_EffVerif.An1

Acquisition information

Start time:	1/23/2016 7:25:53 PM
Live time:	7200
Real time:	7361
Dead time:	2.18 %
Detector ID:	7

Detector system
Ge 7 SN/154

Calibration

Filename:	7_Soil_TunaCan.Clb

7_TunaCan_90099_032712

Energy Calibration

Created:	2/23/2012 8:40:56 AM
Zero offset:	0.117 keV
Gain:	0.250 keV/channel
Quadratic:	3.508E-09 keV/channel^2

Efficiency Calibration

Created:	3/16/2012 11:45:14 AM
Knee Energy:	165.85 keV
Above the Knee:	Quadratic Uncertainty = 0.87 %
Log(Eff):	6.716580E-01 + (-6.166540E-01*Log(E)) + (-2.065917E-02*Log(E)^2)
Below the Knee:	Quadratic Uncertainty = 1.48 %
Log(Eff):	-2.689695E+01 + (1.019544E+01*Log(E)) + (-1.081671E+00*Log(E)^2)

Library Files

Main analysis library:	DET_EfficiencyVerification.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G53W4.25
Start channel:	150 (37.61keV)
Stop channel:	8000 (2000.12keV)
Peak rejection level:	10.000%
Peak search sensitivity:	3
Sample Size:	1.0000E+00
Activity scaling factor:	1.0000E+00/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method:	Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            average of three points.
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                           Status          Comments
       Decay correct to date:          YES       10/1/2006 11:00:00 AM
       Decay during acquisition:       YES
       Decay during collection:        NO
       True coincidence correction:    NO
       Peaked background correction:   NO
       Absorption (Internal):          NO
       Geometry correction:            NO
       Random summing:                 NO


total peaks alloc.    3 cutoff: 5.00E+01%
       Energy Calibration
            Normalized diff:       0.0434

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    uCi/Sour
_____________________________________________________________________________
   36.52     1402.   9.33   1.11  1.474E-02
   46.60    75982.   0.45   0.84  2.485E-02
   59.55   114994.   0.38   0.89  3.702E-02    59.54 100.000  4.380E+02 AM241
   87.94     1428.   8.44   0.97  5.326E-02
  661.74    33440.   0.59   1.49  1.492E-02   661.66 100.000  3.857E+02 CS137
 1173.38    13650.   0.99   1.95  8.928E-03
 1332.63    12093.   0.94   1.99  7.950E-03  1332.50 100.000  7.189E+02 Co1332


************ U N I D E N T I F I E D    P E A K   S U M M A R Y ************
  Peak Centroid  Background Net Area  Efficiency  Uncert   FWHM  Suspected
Channel   Energy   Counts     Counts   * Area    1 Sigma %  keV   Nuclide
_____________________________________________________________________________
  145.62    36.52      4964.      1402. 9.512E+04    9.33   1.111  -      s
  185.78    46.56     20640.     82430. 3.318E+06    0.48   0.912  -
  351.31    87.94      3932.      1428. 2.682E+04    8.44   0.972  -      s
 4693.26  1173.38       567.     13650. 1.529E+06    0.99   1.950  -

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  L - Peak written from unknown list.
  C - Area < Critical level.

-------------------------------------------------------------
This section based on library: DET_EfficiencyVerification.lib
```

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
AM-241	237.75	59.55	18759.	114994.	15.971	0.38	0.895
CS-137	2646.69	661.74	882.	33440.	4.644	0.59	1.494
Co-1332	5330.24	1332.63	117.	12093.	1.680	0.94	1.990

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity uCi/Source	Peak Energy keV	Peak Activity uCi/Source	Code	MDA Value uCi/Source	COMMENTS
AM-241		4.3796E+02				1.58E+05	
			59.54	4.380E+02	(	2.441E+00 3.82E-01 1.00E+02 G	
CS-137		3.8573E+02				1.10E+04	
			661.66	3.857E+02	(	1.628E+00 5.85E-01 1.00E+02 G	
Co-1332		7.1885E+02				1.93E+03	
			1332.50	7.189E+02	(	3.157E+00 9.42E-01 1.00E+02 G	

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay

N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity uCi/Source	Time Corrected Activity uCi/Source	Uncertainty Counting 1 Sigma	MDA
AM-241	4.3147E+02	4.3796E+02	3.822E-01%	2.44E+00
CS-137	3.1121E+02	3.8573E+02	5.852E-01%	1.63E+00
Co-1332	2.1125E+02	7.1885E+02	9.418E-01%	3.16E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.1 keV) 9.539E+02 uCi/Source
Total Decayed Activity (37.6 to 2000.1 keV) 1.5425436E+03 uCi/Source

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANNUAL CALIBRATION VERIFICATION

Detector ID: **Detector # 8**

SpectrumID: 8_20160128004_EffVerif

Analysis Description: ACVTop-776670;TunaCan2006

Calibration: 8_Soil_TunaCan_90099_032712

Detector: Ge 8 SN/174

Verification Date: 2016-01-28 18:34

Source Assay Date/Time: 2006-10-01 11:00

Isotope	Gamma Energy (kev)	Source Emission Rate (GPS) (Assay)	Observed Activity (GPS) (Actual)	Percent Difference (%) Assay-Actual / Assay
Am-241	59.54	449	4.79E+02	-6.7%
Cs-137	661.66	400	3.90E+02	2.5%
Co-1332	1332.5	777	7.56E+02	2.7%

Comments:

Perform Aaron Schroder 1/28/16

Reviev __Jody Watson_____1/29/16_____

C:\User\CRpt\8_20160128004_EffVerif.xls

Sample Description: ACVTop-776670;TunaCan2006
Detector: Ge 8 SN/174
Source Date: 10/1/2006 11:00
Acquired: 1/28/2016 18:34:05
Analyzed: 2/4/2016 10:51

Analyst: Jody Watson

Efficiency: 8_Soil_TunaCan_90099_032712
Library: DET_EfficiencyVerification.lib

Nuclide	Activity uCi/Source	Uncertainty %
AM-241	4.789E+02	0.41
CS-137	3.899E+02	0.64
Co-1332	7.564E+02	0.99
Total	1.625E+03	

TestAmerica Spectrum name: 8_20160128004_EffVerif.An1

Sample description
ACVTop-776670;TunaCan2006

Spectrum Filename: C:\User\SPC\Det8\8_20160128004_EffVerif.An1

Acquisition information
Start time: 1/28/2016 6:34:05 PM
Live time: 7200
Real time: 7434
Dead time: 3.15 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 3/28/2012 10:35:20 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.39 %
Log(Eff): -1.098764E-01 + (-4.958544E-01*Log(E)) + (-2.572270E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.71 %
Log(Eff): -2.525301E+01 + (9.398253E+00*Log(E)) + (-1.000034E+00*Log(E)^2)

Library Files
Main analysis library: DET_EfficiencyVerification.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G53W4.25
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.96keV)
Peak rejection level: 10.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00
Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            average of three points.
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                           Status          Comments
       Decay correct to date:          YES       10/1/2006 11:00:00 AM
       Decay during acquisition:       YES
       Decay during collection:        NO
       True coincidence correction:    NO
       Peaked background correction:   NO
       Absorption (Internal):          NO
       Geometry correction:            NO
       Random summing:                 NO


total peaks alloc.    3 cutoff: 5.00E+01%
       Energy Calibration
            Normalized diff:       0.0632

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    uCi/Sour
_____________________________________________________________________________
   46.57    74004.   0.44   1.01  2.005E-02
   59.58   102880.   0.35   1.02  2.881E-02    59.54 100.000  5.034E+02 AM241
   88.09     1218.   9.96   0.76  3.993E-02
  661.54    27378.   0.64   1.34  1.209E-02   661.66 100.000  3.899E+02 CS137
 1173.07    11810.   1.00   1.56  7.454E-03
 1332.31    10667.   0.99   1.75  6.678E-03  1332.50 100.000  7.564E+02 Co1332


************ U N I D E N T I F I E D    P E A K    S U M M A R Y ************
  Peak Centroid  Background Net Area  Efficiency  Uncert   FWHM  Suspected
Channel   Energy   Counts     Counts   * Area    1 Sigma %  keV   Nuclide
_____________________________________________________________________________
  185.94    46.53     19029.     71370. 3.560E+06    0.54   0.847  -
  352.16    88.09      3683.      1218. 3.051E+04    9.96   0.764  -      s
 4692.32  1173.07       306.     11810. 1.584E+06    1.00   1.561  -

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  L - Peak written from unknown list.
  C - Area < Critical level.

-----------------------------------------------------------------
This section based on library: DET_EfficiencyVerification.lib
```

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
AM-241	237.97	59.54	15110.	97876.	13.594	0.41	0.867D
CS-137	2646.10	661.54	638.	27378.	3.802	0.64	1.335
Co-1332	5329.28	1332.31	68.	10667.	1.482	0.99	1.753

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity uCi/Source	Peak Energy keV	Peak Activity uCi/Source	Code	MDA Value uCi/Source	COMMENTS
AM-241		4.7889E+02				1.58E+05	
			59.54	4.789E+02	(	2.816E+00 4.13E-01 1.00E+02 G	
CS-137		3.8993E+02				1.10E+04	
			661.66	3.899E+02	(	1.714E+00 6.40E-01 1.00E+02 G	
Co-1332		7.5635E+02				1.93E+03	
			1332.50	7.564E+02	(	2.913E+00 9.90E-01 1.00E+02 G	

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay

N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity uCi/Source	Time Corrected Activity uCi/Source	Uncertainty Counting 1 Sigma	MDA
AM-241	4.7179E+02	4.7889E+02	4.129E-01%	2.82E+00
CS-137	3.1450E+02	3.8993E+02	6.397E-01%	1.71E+00
Co-1332	2.2187E+02	7.5635E+02	9.900E-01%	2.91E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 1.008E+03 uCi/Source
Total Decayed Activity (37.5 to 2000.0 keV) 1.6251797E+03 uCi/Source

Monthly Backgrounds

Test America
St. Louis
Background Check

Spectrum: 5_20160730007_BGLong
Description: Background Long PBC Count
Acquired: 7/30/2016 5:50:09 PM
Detector: Detector # 5
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.45	1.30	1.35	1.43	1.55	1.60	PASS

Analyst: Mike Aldridge Reviewer: Rachel Mueller

(Page 1 of 1)

Test America
St. Louis
Background Check

Spectrum: 7_20160730008_BGLong
Description: Background Long PBC Count
Acquired: 7/30/2016 6:29:26 PM
Detector: Detector # 7
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.30	1.16	1.21	1.29	1.40	1.45	PASS

Analyst: Mike Aldridge Reviewer: Rachel Mueller

(Page 1 of 1)

Test America
St. Louis
Background Check

Spectrum: 8_20160807001_BGLong
Description: Background Long PBC Count
Acquired: 8/7/2016 10:06:19 PM
Detector: Detector # 8
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.56	1.39	1.45	1.58	1.68	1.74	PASS

Analyst: Aaron Schroder Reviewer: Aaron Schroder

(Page 1 of 7)

Sample description
Background Long PBC Count

Spectrum Filename: C:\User\SPC\Det8\8_20160807001_BGLong.An1

Acquisition information
Start time: 8/7/2016 10:06:19 PM
Live time: 72000
Real time: 73864
Dead time: 2.52 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_QC.Clb
Ge8_QC

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 1/6/2011 8:07:20 AM
Knee Energy: 0.00 keV
Above the Knee: Interpolative Uncertainty = 0.00 %
Below the Knee: Interpolative Uncertainty = 0.00 %

Library Files
Main analysis library: DET_Long Background PBC.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 30.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) =
1.0000E+00
Detection limit method: Reg. Guide 4.16 Method
Random error: 4.0000000E+00
Systematic error: 4.0000000E+00
Fraction Limit: 0.000%
Background width: 3

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 16 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.0882

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. DPS	Nuc
59.59	443.	9.67	1.02	8.697E-02	59.54	35.900	1.971E-01	AM241
63.26	1018.	4.71	1.03	9.237E-02	63.29	3.810	4.015E+00	TH234
84.16	249.	20.41	0.81	1.232E-01				
92.66	2098.	3.77	1.06	1.295E-01	92.59	5.584	4.029E+00	TH234
					93.35	5.561	4.043E+00	AC228
98.58	180.	27.23	0.69	1.303E-01				
143.65	260.	19.95	0.89	1.248E-01	143.79	10.960	2.637E-01	U235
185.84	1118.	6.00	1.00	1.107E-01	185.72	54.000	2.596E-01	U235
					185.99	3.280	4.276E+00	Ra226
238.77	370.	14.28	1.05	9.635E-02	238.63	43.300	1.232E-01	PB212
582.93	136.	29.71	1.21	3.958E-02	583.02	84.500	5.627E-02	TL208
661.65	252.	13.69	1.06	3.334E-02	661.66	85.210	1.234E-01	CS137
1001.01	156.	19.09	1.20	2.158E-02	1001.00	0.837	1.201E+01	PA234M
1332.62	135.	19.92	0.43	1.637E-02	1332.50	99.980	1.145E-01	CO60
					1332.50	99.980	1.145E-01	CO60
1460.44	142.	16.98	2.24	1.543E-02	1460.83	10.670	1.201E+00	K40

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide
336.46	84.16	700.	249.	2.021E+03	20.41	0.813	- s
394.13	98.58	635.	180.	1.382E+03	27.23	0.688	- s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: DET_Long Background PBC.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
AM-241	237.95	59.54	751.	444.	0.006	9.94	1.022D
TH-234	252.96	63.29	686.	1018.	0.014	4.80	1.025D
TH-234	370.45	92.66	994.	2098.	0.029	3.77	1.055
U-235	574.42	143.65	661.	260.	0.004	19.95	0.887s
U-235	742.71	185.72	780.	1090.	0.015	4.27	1.003D
PB-212	954.94	238.77	583.	370.	0.005	14.28	1.053
TL-208	2331.65	582.93	288.	136.	0.002	29.71	1.214
CS-137	2646.52	661.65	202.	252.	0.004	13.69	1.062s
PA-234M	4004.05	1001.01	119.	156.	0.002	19.09	1.196s
CO-60	5330.55	1332.62	84.	135.	0.002	19.92	0.434s
K-40	5841.82	1460.44	62.	142.	0.002	16.98	2.244

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

Nuclide Name	Nuclide Code	Average Activity DPS	Peak Energy keV	Peak Activity DPS	Peak Code	MDA Value DPS		COMMENTS
K-40	N	1.2010E+00					4.66E+11	
			1460.83	1.201E+00	(	3.316E-01	1.70E+01	1.07E+01 G
CO-60	F	1.1454E-01					1.93E+03	
			1332.50	1.145E-01	?(	3.854E-02	1.99E+01	1.00E+02 G
CS-137	I	1.2336E-01					1.10E+04	
			661.66	1.234E-01	(	3.368E-02	1.37E+01	8.52E+01 G
TL-208	N	5.6266E-02					6.98E+02	
			583.02	5.627E-02	(	3.394E-02	2.97E+01	8.45E+01 G
			277.28	0.000E+00	%	1.592E-01	9.63E+01	6.31E+00 G
			860.56	0.000E+00	%	1.660E-01	6.24E+01	1.24E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-212	N	1.2324E-01					6.98E+02	
			238.63	1.232E-01	(	3.834E-02	1.43E+01	4.33E+01 G
			300.03	0.000E+00	%	3.039E-01	3.89E+01	3.28E+00 GA
TH-234	N	4.0234E+00					1.63E+12	
			63.29	4.015E+00	(	4.921E-01	4.80E+00	3.81E+00 G
			92.59	4.029E+00	(	2.874E-01	3.77E+00	5.58E+00 G
PA-234M	N	1.2010E+01					1.63E+12	
			1001.00	1.201E+01	?(	4.115E+00	1.91E+01	8.37E-01 G
			766.41	0.000E+00	%	6.184E+00	3.21E+01	2.94E-01 G
U-235	N	2.6374E-01					2.57E+11	
			185.72	2.530E-01	}	3.085E-02	4.27E+00	5.40E+01 GA
			143.79	2.637E-01	*(	1.245E-01	2.00E+01	1.10E+01 G
			205.33	0.000E+00	%	1.857E-01	3.16E+01	5.01E+00 G
			163.38	0.000E+00	%	1.792E-01	4.01E+01	5.08E+00 G
AM-241	T	1.9758E-01					1.58E+05	
			59.54	1.976E-01	(	5.807E-02	9.94E+00	3.59E+01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average

R - Coincidence Corrected C - Coincidence Peak
H - Halflife limit exceeded

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity DPS	Uncertainty 1 Sigma Counting	MDA
BE-7	<	2.1074E-01		
NA-22	<	3.2759E-02		
K-40		1.2010E+00	1.6983E+01%	3.316E-01
Sc-46	<	1.2420E-02		
CR-51	<	1.0349E-01		
MN-54	<	2.1811E-02		
FE-59	<	4.3605E-02		
Co-56	<	2.1139E-02		
CO-57	<	1.0718E-02		
CO-58	<	1.9336E-02		
CO-60	#	1.1454E-01	1.9918E+01%	3.854E-02
ZN-65	<	5.8930E-02		
NB-94	<	2.2388E-02		
ZR-95	<	3.7566E-02		
NB-95	<	3.0190E-02		
RU-103	<	1.7382E-02		
RH-106	<	1.1298E-01		
AG-108M	<	1.7064E-02		
AG-110M	<	3.6859E-02		
SN-113	<	2.2462E-02		
SB-124	<	1.5810E-02		
SB-125	<	5.0181E-02		
I-131	<	1.6793E-02		
BA-133	<	1.7715E-02		
CS-134	<	2.9686E-02		
CS-137		1.2336E-01	1.3691E+01%	3.368E-02
CE-139	<	1.1188E-02		
Ba-140	<	6.6143E-02		
La-140	<	3.0947E-02		
CE-141	<	1.3058E-02		
CE-144	<	8.7434E-02		
PM-144	<	2.3000E-02		
EU-152	<	6.2071E-02		
EU-154	<	2.7305E-01		
EU-155	<	3.8049E-02		

HF-181	<	2.6820E-02		
Ta-182	<	3.8846E-02		
Hg-203	<	1.6311E-02		
TL-208		5.6266E-02	2.9713E+01%	3.394E-02
pm-146	<	5.8568E-02		
y-88	<	3.0340E-02		
PB-210	<	3.8810E-01		
PB-212		1.2324E-01	1.4284E+01%	3.834E-02
PB-214	<	3.2306E-02		
BI-207	<	2.6400E-02		
BI-212	<	2.5440E-01		
BI-214	<	4.1397E-02		
BI-210M	<	1.8907E-02		
RA-224	<	3.8591E-01		
AC-228	<	1.0933E-01		
TH-227	<	1.1459E-01		
TH-229	<	2.1056E-01		
TH-234		4.0234E+00	3.0513E+00%	4.921E-01
PA-231	<	4.0252E-01		
PA-233	<	2.9282E-02		
PA-234	<	5.1695E-02		
PA-234M#		1.2010E+01	1.9092E+01%	4.115E+00
U-235		2.6374E-01	1.9954E+01%	1.245E-01
AM-241		1.9758E-01	9.9404E+00%	5.807E-02
Np-237	<	9.7820E-02		

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 1.811E+01 DPS

Run Logs

Gamma Spectroscopy Run Log

Detector: GV5

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
03/26/12 15:05		IC 160-12297/1		12297			JLW
03/27/12 10:12		ICV 160-12297/2		12297			JLW
01/28/16 10:21		ACVTOP 160-236240/1		236240			PS
07/30/16 17:50		ICB 160-262848/1		262848			RTM
08/12/16 00:45		CCB 160-264594/1		264594			RTM
08/12/16 03:01		CCV 160-264594/2		264594			
08/12/16 03:23		CCV 160-264594/3		264594			RTM
08/12/16 08:03	60	ZZZZZ		264594			
08/12/16 09:30	30	ZZZZZ		264594			
08/12/16 10:35	30	ZZZZZ		264594			
08/12/16 14:13		TCCLBA 160-264643/1-A		264594	264643	TC-02-RC	RTM
08/12/16 14:32		TCCLBC 160-264643/3-A		264594	264643	TC-02-RC	RTM
08/12/16 14:51		TCCLBB 160-264643/2-A		264594	264643	TC-02-RC	RTM
08/12/16 16:40		MB 160-264677/1-A		264594	264677	TC-02-RC	RTM
08/12/16 17:11		ZZZZZ		264594			
08/12/16 17:42		ZZZZZ		264594			
08/12/16 18:08		ZZZZZ		264594			
08/12/16 18:24		ZZZZZ		264594			
08/12/16 18:44		ZZZZZ		264594			
08/12/16 19:19		ZZZZZ		264594			

Detector: GV7

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
03/27/12 08:10		IC 160-12302/1		12302			JLW
03/27/12 15:25		ICV 160-12302/2		12302			JLW
01/23/16 19:25		ACVTOP 160-236241/1		236241			PS
07/30/16 18:29		ICB 160-262849/1		262849			RTM
08/12/16 00:56		CCB 160-264595/1		264595			RTM
08/12/16 03:11		CCV 160-264595/2		264595			
08/12/16 03:33		CCV 160-264595/3		264595			RTM
08/12/16 08:05	60	ZZZZZ		264595			
08/12/16 09:15		ZZZZZ		264595			
08/12/16 09:31	30	ZZZZZ		264595			
08/12/16 10:34	30	ZZZZZ		264595			
08/12/16 12:49	60	ZZZZZ		264595			
08/12/16 14:14		TCCLBB 160-264643/2-A		264595	264643	TC-02-RC	RTM
08/12/16 14:30		TCCLBA 160-264643/1-A		264595	264643	TC-02-RC	RTM
08/12/16 14:52		TCCLBC 160-264643/3-A		264595	264643	TC-02-RC	RTM
08/12/16 16:41		LCS 160-264677/2-A		264595	264677	TC-02-RC	RTM
08/12/16 17:09		ZZZZZ		264595			
08/12/16 17:43		160-18521-1	YMTFA74SE001	264595	264677	TC-02-RC	RTM
08/12/16 18:04		ZZZZZ		264595			
08/12/16 18:26		ZZZZZ		264595			
08/12/16 18:42		ZZZZZ		264595			
08/12/16 19:20		ZZZZZ		264595			

Gamma Spectroscopy Run Log

Detector: GV8

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
03/27/12 10:58		IC 160-12311/1		12311			JLW
03/29/12 01:58		ICV 160-12311/2		12311			JLW
01/28/16 18:34		ACVTOP 160-236248/1		236248			PS
08/07/16 22:06		ICB 160-263973/1		263973			ALS
08/12/16 00:58		CCB 160-264596/1		264596			RTM
08/12/16 03:12		CCV 160-264596/2		264596			
08/12/16 03:35		CCV 160-264596/3		264596			RTM
08/12/16 08:04	60	ZZZZZ		264596			
08/12/16 09:16		ZZZZZ		264596			
08/12/16 09:29	30	ZZZZZ		264596			
08/12/16 10:36	30	ZZZZZ		264596			
08/12/16 14:16		TCCLBC 160-264643/3-A		264596	264643	TC-02-RC	RTM
08/12/16 14:29		TCCLBB 160-264643/2-A		264596	264643	TC-02-RC	RTM
08/12/16 14:54		TCCLBA 160-264643/1-A		264596	264643	TC-02-RC	RTM
08/12/16 16:43		ZZZZZ		264596			
08/12/16 17:04		160-18504-C-3-G DU		264596	264677	TC-02-RC	RTM
08/12/16 17:45		160-18521-2	YMTFA75SE001	264596	264677	TC-02-RC	RTM
08/12/16 18:03		ZZZZZ		264596			
08/12/16 18:27		ZZZZZ		264596			
08/12/16 18:41		ZZZZZ		264596			
08/12/16 19:21		ZZZZZ		264596			

GAS FLOW PROPORTIONAL COUNTER

Method A-01-R Np Tracer

Isotopic Neptunium Tracer

Prep Batch: 264040

Isotopic Neptunium Tracer Prep

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - C

Addr: 2

Sample ID MB 160-264040/1-A

Repeat 1

Carrier No. 0

Batch ID 264040

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 8/11/2016 1:51:04 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 8/11/2016 2:51:09 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.057	7	0.117	0.060
sd	0.000			0.008	2.646	0.044	0.045
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.277	863	14.383	14.106
sd	0.000			0.017	29.377	0.490	0.490

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - D

Addr: 3

Sample ID LCS 160-264040/2-A

Repeat 1

Carrier No. 0

Batch ID 264040

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***l***	**sd**	0 ***l***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 8/11/2016 1:51:10 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 8/11/2016 2:51:14 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.095	157	2.617	2.522
sd	0.000			0.010	12.530	0.209	0.209
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.555	990	16.500	15.945
sd	0.000			0.024	31.464	0.524	0.525

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 4-7 - B

Addr: 5

Sample ID 160-18504-F-1-D DU

Repeat 1

Carrier No. 0

Batch ID 264040

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 8/11/2016 1:51:25 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 8/11/2016 2:51:29 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.135	9	0.150	0.015
sd	0.000			0.012	3.000	0.050	0.051
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.421	939	15.650	15.229
sd	0.000			0.021	30.643	0.511	0.511

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - C

Addr: 2

Sample ID 160-18521-F-1-B

Repeat 1

Carrier No. 0

Batch ID 264040

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 8/11/2016 3:33:51 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 8/11/2016 4:33:55 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.057	7	0.117	0.060
sd	0.000			0.008	2.646	0.044	0.045
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.277	819	13.650	13.373
sd	0.000			0.017	28.618	0.477	0.477

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - D

Addr: 3

Sample ID 160-18521-F-2-B

Repeat 1

Carrier No. 0

Batch ID 264040

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 8/11/2016 3:34:06 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 8/11/2016 4:34:10 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.095	11	0.183	0.088
sd	0.000			0.010	3.317	0.055	0.056
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.555	841	14.017	13.462
sd	0.000			0.024	29.000	0.483	0.484

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Method SR-03-RC Sr

Total Strontium (GFPC) by Method SR-03-RC

Prep Batch: 264358

Preparation, Digestion/ Precipitate

Gas Flow Proportional Counter Analysis Detail Report
Prep Batch: 264358

Lab ID: MB 160-264358/1-A | Analyzed: 08/15/16 20:49 | Decay Corrected: No | Ts: 200
Client ID: | Detector: Purple0 | Yield Truncated: No | Tb: 1000
Sigma: 2 | Dil Fac: 1 | Calibration Type: 1

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	Eff	Anly Batch
Strontium 89/90	0.1155	0.180	0.180	U	pCi/g	3.00	0.302	119	519	0.595	0.519	0.42690	264773

Carrier	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Sr Carrier	0.06590				g		0.105	62.9	40 - 110

Lab ID: LCS 160-264358/2-A | Analyzed: 08/17/16 09:04 | Decay Corrected: No | Ts: 200
Client ID: | Detector: Purple10 | Yield Truncated: No | Tb: 1000
Sigma: 2 | Dil Fac: 1 | Calibration Type: 1

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	Eff	Anly Batch
Strontium 89/90	7.395	0.366	0.634		pCi/g	3.00	0.135	1761	301	8.805	0.301	0.41501	265358

Carrier	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Sr Carrier	0.09380				g		0.105	89.5	40 - 110

Lab ID: 160-18504-F-1-N DU | Analyzed: 08/15/16 20:49 | Decay Corrected: No | Ts: 200
Client ID: | Detector: Purple4 | Yield Truncated: No | Tb: 1000
Sigma: 2 | Dil Fac: 1 | Calibration Type: 1

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	Eff	Anly Batch
Strontium 89/90	0.03261	0.144	0.144	U	pCi/g	3.00	0.252	103	490	0.515	0.490	0.41685	264773

Carrier	DU Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Sr Carrier	0.07870				g		0.105	75.1	40 - 110

Lab ID: 160-18521-1 | Analyzed: 08/15/16 20:49 | Decay Corrected: No | Ts: 200
Client ID: YMTFA74SE001 | Detector: Purple9 | Yield Truncated: No | Tb: 1000
Sigma: 2 | Dil Fac: 1 | Calibration Type: 1

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	Eff	Anly Batch
Strontium 89/90	0.0876	0.167	0.167	U	pCi/g	3.00	0.285	74	321	0.370	0.321	0.43077	264773

Carrier	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Sr Carrier	0.0553				g		0.105	52.8	40 - 110

Gas Flow Proportional Counter Analysis Detail Report
Prep Batch: 264358

Lab ID:	160-18521-2	Analyzed:	08/15/16 20:49	Decay Corrected:	No	Ts:	200
Client ID:	YMTFA75SE001	Detector:	Purple10	Yield Truncated:	No	Tb:	1000
Sigma:	2	Dil Fac:	1	Calibration Type:	1		

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	Eff	Anly Batch
Strontium 89/90	0.00725	0.155	0.155	U	pCi/g	3.00	0.281	61	301	0.305	0.301	0.43154	264773

Carrier	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Sr Carrier	0.0548				g		0.105	52.3	40 - 110

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-264358/1-A	Strontium 89/90			0.1155	U	pCi/g							1.28443712

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-264358/2-A	Strontium 89/90		8.61	7.395		pCi/g	86	75 - 125					-2.496005093

Duplicate ID:	Analyte	Parent Result	Spike Added	DU Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18504-F-1-N DU	Strontium 89/90	-0.00786		0.03261	U	pCi/g			327	0.13	0.35	1	

Glossary:

- Ts = Count Duration, Sample
- Tb = Count Duration, Background
- Cs = Total Counts, Sample
- Cb = Total Counts, Background
- CPMs = Counts Per Minute, Sample
- CPMb = Counts Per Minute, Background
- Eff = Efficiency

GAS FLOW PROPORTIONAL COUNTER BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264358 Batch Start Date: 08/10/16 21:28 Batch Analyst: Jones, Markquice C

Batch Method: DPS-0 Batch End Date: 08/15/16 14:02

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	Sr_TareWt	Sr_GrossWt	Sr_Mass	IngDecDate1	FinalSrWashTime
MB 160-264358/1		DPS-0, SR-03-RC		1 g	8.6323 g	8.6982 g	0.1048 g	08/15/2016 12:12	08/15/2016 12:21
LCS 160-264358/2		DPS-0, SR-03-RC		1 g	8.7168 g	8.8106 g	0.1048 g	08/15/2016 12:12	08/15/2016 12:21
160-18504-F-1-A DU		DPS-0, SR-03-RC	T	0.9994 g	8.6797 g	8.7584 g	0.1048 g	08/15/2016 12:12	08/15/2016 12:21
160-18521-F-1-A	YMTFA74SE001	DPS-0, SR-03-RC	T	1.0045 g	8.5944 g	8.6497 g	0.1048 g	08/15/2016 12:12	08/15/2016 12:21
160-18521-F-2-A	YMTFA75SE001	DPS-0, SR-03-RC	T	0.9973 g	8.6762 g	8.7310 g	0.1048 g	08/15/2016 12:12	08/15/2016 12:21

Lab Sample ID	Client Sample ID	Method Chain	Basis	NativeMassSr	Sr Carrier 00037	Sr-90 00031			
MB 160-264358/1		DPS-0, SR-03-RC		0 g	2 mL				
LCS 160-264358/2		DPS-0, SR-03-RC		0 g	2 mL	1 mL			
160-18504-F-1-A DU		DPS-0, SR-03-RC	T	0 g	2 mL				
160-18521-F-1-A	YMTFA74SE001	DPS-0, SR-03-RC	T	0 g	2 mL				
160-18521-F-2-A	YMTFA75SE001	DPS-0, SR-03-RC	T	0 g	2 mL				

Batch Notes	
Balance ID	1125330898
Pipette ID	R111,RAD066
Analyst ID - Reagent Drop Witness	TJT per MRB
Analyst ID - Reagent Drop	MCJ per MRB

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID MB 160-264358/1-A

Repeat 1

Carrier No. 0

Batch ID 264358

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 8/15/2016 8:49:15 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 8/16/2016 12:09:28 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 200.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.118	29	0.145	0.027
sd	0.000			0.011	5.385	0.027	0.029
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.519	119	0.595	0.076
sd	0.000			0.023	10.909	0.055	0.059

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID LCS 160-264358/2-A

Repeat 2

Carrier No. 0

Batch ID 264358

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 8/17/2016 9:04:41 AM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 8/17/2016 12:24:54 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 200.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.054	12	0.060	0.006
sd	0.000			0.007	3.464	0.017	0.019
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.301	1,761	8.805	8.504
sd	0.000			0.017	41.964	0.210	0.211

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID 160-18504-F-1-N DU

Repeat 1

Carrier No. 0

Batch ID 264358

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 8/15/2016 8:49:43 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 8/16/2016 12:09:55 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 200.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.093	22	0.110	0.017
sd	0.000			0.010	4.690	0.023	0.025
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.490	103	0.515	0.025
sd	0.000			0.022	10.149	0.051	0.055

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID 160-18521-F-1-G

Repeat 1

Carrier No. 0

Batch ID 264358

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 8/15/2016 8:49:51 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 8/16/2016 12:10:02 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 200.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	18	0.090	0.037
sd	0.000			0.007	4.243	0.021	0.022
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.321	74	0.370	0.049
sd	0.000			0.018	8.602	0.043	0.047

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID 160-18521-F-2-G

Repeat 1

Carrier No. 0

Batch ID 264358

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 8/15/2016 8:49:54 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 8/16/2016 12:10:06 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 200.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.054	17	0.085	0.031
sd	0.000			0.007	4.123	0.021	0.022
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.301	61	0.305	0.004
sd	0.000			0.017	7.810	0.039	0.043

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Daily Checks

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

APPROVED
By Jody Watson at 2:17 pm, Aug 15, 2016

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
Detector 0											
12:15 AM	**Efficiency**	9444.61	9633.03	288.99	-188.42	Pass					
	Background										
	Crosstalk	2991.500	2982.450	36.772	9.050	Pass					
12:18 AM	**Efficiency**						34147.52	34083.23	1022.50	64.30	Pass
	Background										
	Crosstalk						93.357	320.900	109.197	-227.543	**WARNING**
4:32 AM	**Efficiency**										
	Background	0.190	0.124	0.027	0.066	Pass	0.380	0.438	0.062	-0.058	Pass
	Crosstalk										
Detector 1											
12:15 AM	**Efficiency**	9741.38	9849.00	295.47	-107.62	Pass					
	Background										
	Crosstalk	3169.500	2927.125	39.131	242.375	**DOEF**					
12:18 AM	**Efficiency**						33923.89	33980.83	1019.42	-56.93	Pass
	Background										
	Crosstalk						109.801	373.900	125.183	-264.099	**WARNING**
4:32 AM	**Efficiency**										
	Background	0.135	0.128	0.028	0.008	Pass	0.525	0.512	0.063	0.013	Pass
	Crosstalk										
Detector 2											
12:15 AM	**Efficiency**	10648.20	10869.00	326.07	-220.80	Pass					
	Background										
	Crosstalk	3606.500	3447.025	39.380	159.475	**DOEF**					
12:18 AM	**Efficiency**						23559.30	23729.90	711.90	-170.60	Pass
	Background										
	Crosstalk						23.870	68.100	29.539	-44.230	Pass

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
4:32 AM	**Efficiency**										
	Background	0.130	0.111	0.031	0.019	Pass	0.620	0.493	0.052	0.127	Pass
	Crosstalk										
Detector 3											
12:14 AM	**Efficiency**	10570.13	10733.95	322.02	-163.82	Pass					
	Background										
	Crosstalk	3607.000	3515.925	56.325	91.075	Pass					
12:18 AM	**Efficiency**						30921.11	31136.73	934.10	-215.61	Pass
	Background										
	Crosstalk						10.078	23.375	10.367	-13.297	Pass
4:33 AM	**Efficiency**										
	Background	0.145	0.120	0.024	0.025	Pass	0.595	0.591	0.068	0.004	Pass
	Crosstalk										
Detector 4											
12:14 AM	**Efficiency**	9977.09	10190.00	305.70	-212.91	Pass					
	Background										
	Crosstalk	3516.000	3245.875	63.369	270.125	**DOEF**					
12:18 AM	**Efficiency**						25903.85	26003.64	780.11	-99.79	Pass
	Background										
	Crosstalk						8.487	11.523	8.865	-3.036	Pass
4:33 AM	**Efficiency**										
	Background	0.120	0.091	0.018	0.029	Pass	0.470	0.502	0.070	-0.032	Pass
	Crosstalk										
Detector 5											
12:15 AM	**Efficiency**	10345.43	10554.65	316.64	-209.22	Pass					
	Background										
	Crosstalk	3708.000	3579.950	36.901	128.050	**DOEF**					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
12:18 AM	**Efficiency**						21381.18	22243.58	667.31	-862.40	**FAIL**
	Background										
	Crosstalk						2.122	6.825	2.358	-4.703	Pass
1:01 AM	**Efficiency**						21534.24	22243.58	667.31	-709.33	**FAIL**
	Background										
	Crosstalk						7.957	6.825	2.358	1.132	Pass
4:33 AM	**Efficiency**										
	Background	0.065	0.073	0.019	-0.008	Pass	0.310	0.412	0.059	-0.102	Pass
	Crosstalk										
Detector 6											
12:15 AM	**Efficiency**	10347.43	10653.03	319.59	-305.60	Pass					
	Background										
	Crosstalk	3899.500	3640.575	39.582	258.925	**DOEF**					
12:18 AM	**Efficiency**						29223.86	29418.00	882.54	-194.14	Pass
	Background										
	Crosstalk						9.017	7.125	1.716	1.892	Pass
4:33 AM	**Efficiency**										
	Background	0.090	0.074	0.020	0.016	Pass	0.580	0.545	0.069	0.035	Pass
	Crosstalk										
Detector 7											
12:15 AM	**Efficiency**	11016.54	11302.63	339.08	-286.09	Pass					
	Background										
	Crosstalk	3998.000	3704.025	33.741	293.975	**DOEF**					
12:18 AM	**Efficiency**						27345.26	27420.53	822.62	-75.26	Pass
	Background										
	Crosstalk						3.183	4.900	1.438	-1.717	Pass
4:33 AM	**Efficiency**										
	Background	0.115	0.085	0.023	0.031	Pass	0.435	0.474	0.052	-0.038	Pass
	Crosstalk										

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
Detector 8											
12:17 AM	**Efficiency**	9483.14	9616.00	288.48	-132.86	Pass					
	Background										
	Crosstalk	3054.000	2911.050	40.089	142.950	**DOEF**					
12:27 AM	**Efficiency**						33673.26	33973.08	1019.19	-299.81	Pass
	Background										
	Crosstalk						32.887	128.750	85.989	-95.863	Pass
4:33 AM	**Efficiency**										
	Background	0.095	0.057	0.023	0.039	Pass	0.405	0.419	0.055	-0.014	Pass
	Crosstalk										
Detector 9											
12:17 AM	**Efficiency**	9548.20	9670.03	290.10	-121.83	Pass					
	Background										
	Crosstalk	3238.000	3124.225	36.788	113.775	**DOEF**					
12:27 AM	**Efficiency**						33655.33	34247.35	1027.42	-592.02	Pass
	Background										
	Crosstalk						25.461	75.800	62.995	-50.339	Pass
4:33 AM	**Efficiency**										
	Background	0.080	0.055	0.020	0.026	Pass	0.385	0.390	0.067	-0.004	Pass
	Crosstalk										
Detector 10											
12:17 AM	**Efficiency**	10678.73	10784.38	323.53	-105.65	Pass					
	Background										
	Crosstalk	3742.500	3558.050	39.215	184.450	**DOEF**					
12:27 AM	**Efficiency**						23360.55	23415.88	702.48	-55.32	Pass
	Background										
	Crosstalk						16.974	38.475	31.652	-21.501	Pass

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
4:33 AM	**Efficiency**										
	Background	0.065	0.056	0.020	0.009	Pass	0.300	0.351	0.056	-0.051	Pass
	Crosstalk										
Detector 11											
12:17 AM	**Efficiency**	10034.87	9770.30	293.11	264.57	Pass					
	Background										
	Crosstalk	3940.000	3775.100	96.080	164.900	Pass					
12:27 AM	**Efficiency**						28402.41	28486.48	854.59	-84.06	Pass
	Background										
	Crosstalk						5.540	10.925	2.750	-5.385	Pass
4:33 AM	**Efficiency**										
	Background	0.165	0.149	0.029	0.016	Pass	0.600	0.537	0.062	0.063	Pass
	Crosstalk										
Detector 12											
12:17 AM	**Efficiency**	10143.74	10252.78	307.58	-109.04	Pass					
	Background										
	Crosstalk	3418.500	3495.200	40.804	-76.700	Pass					
12:27 AM	**Efficiency**						26019.60	26591.88	797.76	-572.27	Pass
	Background										
	Crosstalk						15.913	42.225	35.724	-26.312	Pass
4:33 AM	**Efficiency**										
	Background	0.080	0.060	0.020	0.021	Pass	0.505	0.405	0.066	0.101	Pass
	Crosstalk										
Detector 13											
12:18 AM	**Efficiency**	10657.71	10829.75	324.89	-172.04	Pass					
	Background										
	Crosstalk	3676.500	3492.900	47.285	183.600	**DOEF**					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
12:27 AM	**Efficiency**						22118.32	22324.83	669.74	-206.50	Pass
	Background										
	Crosstalk						11.670	16.300	12.882	-4.630	Pass
4:33 AM	**Efficiency**										
	Background	0.050	0.041	0.013	0.009	Pass	0.330	0.315	0.057	0.015	Pass
	Crosstalk										
Detector 14											
12:18 AM	**Efficiency**	10567.13	10855.80	325.67	-288.67	Pass					
	Background										
	Crosstalk	3733.000	3620.725	43.943	112.275	**WARNING**					
12:27 AM	**Efficiency**						29759.63	29408.13	882.24	351.50	Pass
	Background										
	Crosstalk						15.913	22.150	21.746	-6.237	Pass
4:33 AM	**Efficiency**										
	Background	0.075	0.051	0.016	0.024	Pass	0.285	0.333	0.055	-0.048	Pass
	Crosstalk										
Detector 15											
12:18 AM	**Efficiency**	11324.82	11478.80	344.36	-153.98	Pass					
	Background										
	Crosstalk	3788.500	3555.075	51.248	233.425	**DOEF**					
12:27 AM	**Efficiency**						27514.44	27482.45	824.47	31.99	Pass
	Background										
	Crosstalk						10.078	18.375	19.603	-8.297	Pass
4:33 AM	**Efficiency**										
	Background	0.075	0.053	0.016	0.022	Pass	0.355	0.389	0.046	-0.034	Pass
	Crosstalk										
Detector 16											

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
12:25 AM	**Efficiency**	10501.56	9600.13	288.00	901.44	FAIL					
	Background										
	Crosstalk	3336.000	2846.175	43.443	489.825	DOEF					
12:30 AM	**Efficiency**						33323.53	33567.73	1007.03	-244.20	Pass
	Background										
	Crosstalk						26.522	56.975	44.714	-30.453	Pass
12:58 AM	**Efficiency**	9266.94	9600.13	288.00	-333.19	FAIL					
	Background										
	Crosstalk	2990.000	2846.175	43.443	143.825	DOEF					
4:33 AM	**Efficiency**										
	Background	0.075	0.048	0.017	0.027	Pass	0.485	0.405	0.045	0.081	Pass
	Crosstalk										
Detector 17											
12:25 AM	**Efficiency**	10873.90	9953.80	298.61	920.10	FAIL					
	Background										
	Crosstalk	3225.500	2863.425	42.996	362.075	DOEF					
12:30 AM	**Efficiency**						30292.61	30110.88	903.33	181.73	Pass
	Background										
	Crosstalk						1208.748	1349.100	149.637	-140.352	Pass
12:58 AM	**Efficiency**	9946.06	9953.80	298.61	-7.74	Pass					
	Background										
	Crosstalk	2975.500	2863.425	42.996	112.075	WARNING					
4:33 AM	**Efficiency**										
	Background	0.160	0.098	0.025	0.062	Pass	0.325	0.325	0.049	0.000	Pass
	Crosstalk										
Detector 18											
12:25 AM	**Efficiency**	9579.72	10713.95	321.42	-1134.23	FAIL					
	Background										
	Crosstalk	3388.500	3550.150	52.219	-161.650	DOEF					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
12:31 AM	**Efficiency**						23164.82	23091.80	692.75	73.02	Pass
	Background										
	Crosstalk						10.078	17.925	3.718	-7.847	**WARNING**
12:59 AM	**Efficiency**	10641.19	10713.95	321.42	-72.76	Pass					
	Background										
	Crosstalk	3730.500	3550.150	52.219	180.350	**DOEF**					
4:33 AM	**Efficiency**										
	Background	0.085	0.047	0.019	0.039	Pass	0.365	0.360	0.063	0.006	Pass
	Crosstalk										
Detector 19											
12:26 AM	**Efficiency**	9642.78	10850.55	325.52	-1207.77	**FAIL**					
	Background										
	Crosstalk	3199.000	3409.575	46.485	-210.575	**DOEF**					
12:31 AM	**Efficiency**						30745.29	30702.48	921.07	42.81	Pass
	Background										
	Crosstalk						46.148	59.600	14.515	-13.452	Pass
12:59 AM	**Efficiency**	10771.31	10850.55	325.52	-79.24	Pass					
	Background										
	Crosstalk	3629.500	3409.575	46.485	219.925	**DOEF**					
4:33 AM	**Efficiency**										
	Background	0.080	0.056	0.021	0.024	Pass	0.445	0.499	0.062	-0.054	Pass
	Crosstalk										
Detector 20											
12:26 AM	**Efficiency**	10151.24	10288.40	308.65	-137.16	Pass					
	Background										
	Crosstalk	3337.000	3315.300	23.698	21.700	Pass					
12:47 AM	**Efficiency**						26247.80	26367.68	791.03	-119.88	Pass
	Background										
	Crosstalk						35.539	48.250	11.450	-12.711	Pass

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
4:33 AM	**Efficiency**										
	Background	0.080	0.067	0.019	0.014	Pass	0.360	0.451	0.075	-0.091	Pass
	Crosstalk										
Detector 21											
12:26 AM	**Efficiency**	10498.06	10631.70	318.95	-133.64	Pass					
	Background										
	Crosstalk	3758.500	3640.175	45.122	118.325	**WARNING**					
12:48 AM	**Efficiency**						21400.31	22324.13	669.72	-923.82	**FAIL**
	Background										
	Crosstalk						25.461	20.175	6.313	5.286	Pass
12:58 AM	**Efficiency**						21481.70	22324.13	669.72	-842.42	**FAIL**
	Background										
	Crosstalk						21.748	20.175	6.313	1.573	Pass
4:33 AM	**Efficiency**										
	Background	0.040	0.068	0.017	-0.028	Pass	0.365	0.359	0.067	0.007	Pass
	Crosstalk										
Detector 22											
12:26 AM	**Efficiency**	10511.57	10768.75	323.06	-257.18	Pass					
	Background										
	Crosstalk	3642.500	3430.650	61.341	211.850	**DOEF**					
12:48 AM	**Efficiency**						29179.81	29286.25	878.59	-106.44	Pass
	Background										
	Crosstalk						14.953	73.425	20.588	-58.472	**WARNING**
4:33 AM	**Efficiency**										
	Background	0.065	0.048	0.017	0.017	Pass	0.330	0.324	0.042	0.006	Pass
	Crosstalk										
Detector 23											

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Monday, August 15, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
12:26 AM	**Efficiency**	11125.13	11416.23	342.49	-291.09	Pass					
	Background										
	Crosstalk	4255.500	4120.500	59.149	135.000	**WARNING**					
12:49 AM	**Efficiency**						27391.29	27656.06	829.68	-264.77	Pass
	Background										
	Crosstalk						3.183	703.441	581.762	-700.259	Pass
4:33 AM	**Efficiency**										
	Background	0.095	0.050	0.020	0.045	Pass	0.730	0.714	0.082	0.016	Pass
	Crosstalk										

The Alpha and Beta +/- limit are based upon initial 20-point population.

The Alpha and Beta +/- limit for Efficiency is stated at 3%. Flags are "FAIL" > 3%.

The Alpha and Beta +/- limit for Background is stated at 1 StDev. Flags are "FAIL" > 3 StDev.

The Alpha and Beta +/- limit for Crosstalk is stated at 1 StDev. Flags are "Warning > 2 StDev and "DOEF" > 3 StDev.

Times shown reflect the end of the count duration.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

APPROVED
By Rachel Mueller at 3:44 pm, Aug 17, 2016

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
Detector 0											
5:08 AM	**Efficiency**	9678.40	9633.03	288.99	45.38	Pass					
	Background										
	Crosstalk	3025.500	2982.450	36.772	43.050	Pass					
5:13 AM	**Efficiency**						33742.71	34083.23	1022.50	-340.51	Pass
	Background										
	Crosstalk						94.431	320.900	109.197	-226.469	**WARNING**
8:50 AM	**Efficiency**										
	Background	0.085	0.124	0.027	-0.039	Pass	0.530	0.438	0.062	0.092	Pass
	Crosstalk										
Detector 1											
5:08 AM	**Efficiency**	9747.97	9849.00	295.47	-101.03	Pass					
	Background										
	Crosstalk	3084.500	2927.125	39.131	157.375	**DOEF**					
5:13 AM	**Efficiency**						34072.23	33980.83	1019.42	91.40	Pass
	Background										
	Crosstalk						135.280	373.900	125.183	-238.620	Pass
8:50 AM	**Efficiency**										
	Background	0.125	0.128	0.028	-0.003	Pass	0.740	0.512	0.063	0.228	**FAIL**
	Crosstalk										
Detector 2											
5:08 AM	**Efficiency**	10716.86	10869.00	326.07	-152.14	Pass					
	Background										
	Crosstalk	3633.000	3447.025	39.380	185.975	**DOEF**					
5:13 AM	**Efficiency**						23263.83	23729.90	711.90	-466.07	Pass
	Background										
	Crosstalk						18.568	68.100	29.539	-49.532	Pass

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
8:50 AM	**Efficiency**										
	Background	0.120	0.111	0.031	0.009	Pass	0.445	0.493	0.052	-0.048	Pass
	Crosstalk										
Detector 3											
5:08 AM	**Efficiency**	10487.15	10733.95	322.02	-246.80	Pass					
	Background										
	Crosstalk	3836.500	3515.925	56.325	320.575	**DOEF**					
5:13 AM	**Efficiency**						30944.74	31136.73	934.10	-191.98	Pass
	Background										
	Crosstalk						5.836	23.375	10.367	-17.539	Pass
8:50 AM	**Efficiency**										
	Background	0.150	0.120	0.024	0.030	Pass	0.520	0.591	0.068	-0.071	Pass
	Crosstalk										
Detector 4											
5:08 AM	**Efficiency**	10009.21	10190.00	305.70	-180.79	Pass					
	Background										
	Crosstalk	3485.000	3245.875	63.369	239.125	**DOEF**					
5:13 AM	**Efficiency**						25912.16	26003.64	780.11	-91.47	Pass
	Background										
	Crosstalk						9.549	11.523	8.865	-1.974	Pass
8:50 AM	**Efficiency**										
	Background	0.100	0.091	0.018	0.009	Pass	0.495	0.502	0.070	-0.007	Pass
	Crosstalk										
Detector 5											
5:08 AM	**Efficiency**	10467.63	10554.65	316.64	-87.02	Pass					
	Background										
	Crosstalk	3674.000	3579.950	36.901	94.050	**WARNING**					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
5:13 AM	**Efficiency**						21337.31	22243.58	667.31	-906.26	**FAIL**
	Background										
	Crosstalk						3.183	6.825	2.358	-3.642	Pass
5:23 AM	**Efficiency**						21470.86	22243.58	667.31	-772.72	**FAIL**
	Background										
	Crosstalk						7.427	6.825	2.358	0.602	Pass
8:50 AM	**Efficiency**										
	Background	0.060	0.073	0.019	-0.013	Pass	0.385	0.412	0.059	-0.027	Pass
	Crosstalk										
Detector 6											
5:08 AM	**Efficiency**	10627.78	10653.03	319.59	-25.25	Pass					
	Background										
	Crosstalk	3857.000	3640.575	39.582	216.425	**DOEF**					
5:13 AM	**Efficiency**						29246.72	29418.00	882.54	-171.28	Pass
	Background										
	Crosstalk						6.366	7.125	1.716	-0.759	Pass
8:50 AM	**Efficiency**										
	Background	0.075	0.074	0.020	0.001	Pass	0.570	0.545	0.069	0.025	Pass
	Crosstalk										
Detector 7											
5:08 AM	**Efficiency**	11084.70	11302.63	339.08	-217.93	Pass					
	Background										
	Crosstalk	4144.000	3704.025	33.741	439.975	**DOEF**					
5:13 AM	**Efficiency**						27282.10	27420.53	822.62	-138.42	Pass
	Background										
	Crosstalk						3.183	4.900	1.438	-1.717	Pass
8:50 AM	**Efficiency**										
	Background	0.100	0.085	0.023	0.016	Pass	0.370	0.474	0.052	-0.104	Pass
	Crosstalk										

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
Detector 8											
5:11 AM	**Efficiency**	9492.23	9616.00	288.48	-123.77	Pass					
	Background										
	Crosstalk	3025.500	2911.050	40.089	114.450	**WARNING**					
5:16 AM	**Efficiency**						33992.03	33973.08	1019.19	18.96	Pass
	Background										
	Crosstalk						45.093	128.750	85.989	-83.657	Pass
8:50 AM	**Efficiency**										
	Background	0.065	0.057	0.023	0.008	Pass	0.365	0.419	0.055	-0.054	Pass
	Crosstalk										
Detector 9											
5:11 AM	**Efficiency**	9546.78	9670.03	290.10	-123.25	Pass					
	Background										
	Crosstalk	3336.000	3124.225	36.788	211.775	**DOEF**					
5:17 AM	**Efficiency**						33513.20	34247.35	1027.42	-734.15	Pass
	Background										
	Crosstalk						22.812	75.800	62.995	-52.988	Pass
8:50 AM	**Efficiency**										
	Background	0.045	0.055	0.020	-0.010	Pass	0.320	0.390	0.067	-0.070	Pass
	Crosstalk										
Detector 10											
5:11 AM	**Efficiency**	10748.89	10784.38	323.53	-35.49	Pass					
	Background										
	Crosstalk	3668.000	3558.050	39.215	109.950	**WARNING**					
5:17 AM	**Efficiency**						23344.64	23415.88	702.48	-71.24	Pass
	Background										
	Crosstalk						18.568	38.475	31.652	-19.907	Pass

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
8:50 AM	**Efficiency**										
	Background	0.060	0.056	0.020	0.004	Pass	0.325	0.351	0.056	-0.026	Pass
	Crosstalk										
Detector 11											
5:11 AM	**Efficiency**	10021.44	9770.30	293.11	251.14	Pass					
	Background										
	Crosstalk	4102.000	3775.100	96.080	326.900	**DOEF**					
5:17 AM	**Efficiency**						28392.49	28486.48	854.59	-93.99	Pass
	Background										
	Crosstalk						8.563	10.925	2.750	-2.362	Pass
8:50 AM	**Efficiency**										
	Background	0.110	0.149	0.029	-0.039	Pass	0.445	0.537	0.062	-0.092	Pass
	Crosstalk										
Detector 12											
5:11 AM	**Efficiency**	10083.27	10252.78	307.58	-169.50	Pass					
	Background										
	Crosstalk	3500.000	3495.200	40.804	4.800	Pass					
5:17 AM	**Efficiency**						26026.29	26591.88	797.76	-565.58	Pass
	Background										
	Crosstalk						19.098	42.225	35.724	-23.127	Pass
8:50 AM	**Efficiency**										
	Background	0.085	0.060	0.020	0.026	Pass	0.380	0.405	0.066	-0.025	Pass
	Crosstalk										
Detector 13											
5:11 AM	**Efficiency**	10579.73	10829.75	324.89	-250.02	Pass					
	Background										
	Crosstalk	3665.000	3492.900	47.285	172.100	**DOEF**					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
5:17 AM	**Efficiency**						21871.26	22324.83	669.74	-453.57	Pass
	Background										
	Crosstalk						13.793	16.300	12.882	-2.507	Pass
8:51 AM	**Efficiency**										
	Background	0.095	0.041	0.013	0.055	**FAIL**	0.260	0.315	0.057	-0.055	Pass
	Crosstalk										
12:14 PM	**Efficiency**										
	Background	0.070	0.041	0.013	0.030	Pass	0.265	0.315	0.057	-0.050	Pass
	Crosstalk										
Detector 14											
5:11 AM	**Efficiency**	10845.47	10855.80	325.67	-10.33	Pass					
	Background										
	Crosstalk	3689.500	3620.725	43.943	68.775	Pass					
5:17 AM	**Efficiency**						29061.86	29408.13	882.24	-346.26	Pass
	Background										
	Crosstalk						16.976	22.150	21.746	-5.174	Pass
8:51 AM	**Efficiency**										
	Background	0.090	0.051	0.016	0.039	Pass	0.335	0.333	0.055	0.002	Pass
	Crosstalk										
Detector 15											
5:12 AM	**Efficiency**	11403.99	11478.80	344.36	-74.81	Pass					
	Background										
	Crosstalk	3861.000	3555.075	51.248	305.925	**DOEF**					
5:17 AM	**Efficiency**						27385.23	27482.45	824.47	-97.22	Pass
	Background										
	Crosstalk						16.976	18.375	19.603	-1.399	Pass
8:51 AM	**Efficiency**										
	Background	0.065	0.053	0.016	0.012	Pass	0.315	0.389	0.046	-0.074	Pass
	Crosstalk										

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
Detector 16											
5:09 AM	**Efficiency**						33382.76	33567.73	1007.03	-184.97	Pass
	Background										
	Crosstalk						37.136	56.975	44.714	-19.839	Pass
5:15 AM	**Efficiency**	9417.66	9600.13	288.00	-182.47	Pass					
	Background										
	Crosstalk	3005.500	2846.175	43.443	159.325	**DOEF**					
8:51 AM	**Efficiency**										
	Background	0.045	0.048	0.017	-0.003	Pass	0.370	0.405	0.045	-0.035	Pass
	Crosstalk										
Detector 17											
5:09 AM	**Efficiency**						30235.83	30110.88	903.33	124.96	Pass
	Background										
	Crosstalk						1189.766	1349.100	149.637	-159.334	Pass
5:16 AM	**Efficiency**	9851.56	9953.80	298.61	-102.24	Pass					
	Background										
	Crosstalk	2922.500	2863.425	42.996	59.075	Pass					
8:51 AM	**Efficiency**										
	Background	0.110	0.098	0.025	0.012	Pass	0.255	0.325	0.049	-0.070	Pass
	Crosstalk										
Detector 18											
5:10 AM	**Efficiency**						22980.82	23091.80	692.75	-110.98	Pass
	Background										
	Crosstalk						9.549	17.925	3.718	-8.376	**WARNING**
5:16 AM	**Efficiency**	10516.17	10713.95	321.42	-197.78	Pass					
	Background										
	Crosstalk	3754.500	3550.150	52.219	204.350	**DOEF**					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
8:51 AM	**Efficiency**										
	Background	0.050	0.047	0.019	0.004	Pass	0.460	0.360	0.063	0.101	Pass
	Crosstalk										
Detector 19											
5:10 AM	**Efficiency**						30846.52	30702.48	921.07	144.05	Pass
	Background										
	Crosstalk						45.093	59.600	14.515	-14.507	Pass
5:16 AM	**Efficiency**	10934.55	10850.55	325.52	84.00	Pass					
	Background										
	Crosstalk	3684.500	3409.575	46.485	274.925	**DOEF**					
8:51 AM	**Efficiency**										
	Background	0.030	0.056	0.021	-0.026	Pass	0.415	0.499	0.062	-0.084	Pass
	Crosstalk										
Detector 20											
5:10 AM	**Efficiency**						25933.30	26367.68	791.03	-434.38	Pass
	Background										
	Crosstalk						35.544	48.250	11.450	-12.706	Pass
5:15 AM	**Efficiency**	10157.84	10288.40	308.65	-130.56	Pass					
	Background										
	Crosstalk	3314.500	3315.300	23.698	-0.800	Pass					
8:51 AM	**Efficiency**										
	Background	0.070	0.067	0.019	0.004	Pass	0.365	0.451	0.075	-0.086	Pass
	Crosstalk										
Detector 21											
5:10 AM	**Efficiency**						21489.96	22324.13	669.72	-834.16	**FAIL**
	Background										
	Crosstalk						19.629	20.175	6.313	-0.546	Pass

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
5:22 AM	**Efficiency**	10486.64	10631.70	318.95	-145.06	Pass					
	Background										
	Crosstalk	3804.500	3640.175	45.122	164.325	**DOEF**					
5:31 AM	**Efficiency**						21735.27	22324.13	669.72	-588.86	Pass
	Background										
	Crosstalk						27.586	20.175	6.313	7.411	Pass
8:51 AM	**Efficiency**										
	Background	0.055	0.068	0.017	-0.013	Pass	0.380	0.359	0.067	0.022	Pass
	Crosstalk										
Detector 22											
5:10 AM	**Efficiency**						29087.07	29286.25	878.59	-199.18	Pass
	Background										
	Crosstalk						18.565	73.425	20.588	-54.860	**WARNING**
5:16 AM	**Efficiency**	10675.82	10768.75	323.06	-92.93	Pass					
	Background										
	Crosstalk	3591.000	3430.650	61.341	160.350	**WARNING**					
8:51 AM	**Efficiency**										
	Background	0.070	0.048	0.017	0.022	Pass	0.450	0.324	0.042	0.126	**FAIL**
	Crosstalk										
12:14 PM	**Efficiency**										
	Background	0.080	0.048	0.017	0.032	Pass	0.270	0.324	0.042	-0.054	Pass
	Crosstalk										
Detector 23											
5:10 AM	**Efficiency**						27527.58	27656.06	829.68	-128.48	Pass
	Background										
	Crosstalk						3.714	703.441	581.762	-699.728	Pass
5:16 AM	**Efficiency**	11251.34	11416.23	342.49	-164.88	Pass					
	Background										
	Crosstalk	4326.000	4120.500	59.149	205.500	**DOEF**					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Wednesday, August 17, 2016

Instrument: ***Purple***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
8:51 AM	**Efficiency**										
	Background	0.085	0.050	0.020	0.035	Pass	0.540	0.714	0.082	-0.174	Pass
	Crosstalk										

The Alpha and Beta +/- limit are based upon initial 20-point population.

The Alpha and Beta +/- limit for Efficiency is stated at 3%. Flags are "FAIL" > 3%.

The Alpha and Beta +/- limit for Background is stated at 1 StDev. Flags are "FAIL" > 3 StDev.

The Alpha and Beta +/- limit for Crosstalk is stated at 1 StDev. Flags are "Warning > 2 StDev and "DOEF" > 3 StDev.

Times shown reflect the end of the count duration.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

APPROVED
By Amanda Leigh Dick at 7:21 am, Aug 11, 2016

Thursday, August 11, 2016

Instrument: ***Orange***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
Detector 0											
3:58 AM	**Efficiency**										
	Background	0.110	0.088	0.022	0.022	Pass	0.500	0.421	0.062	0.080	Pass
	Crosstalk										
6:03 AM	**Efficiency**	9319.30	9633.03	288.99	-313.73	FAIL					
	Background										
	Crosstalk	3140.500	3020.975	74.255	119.525	Pass					
6:11 AM	**Efficiency**						32941.99	33739.55	1012.19	-797.56	Pass
	Background										
	Crosstalk						29.687	237.400	143.963	-207.713	Pass
6:31 AM	**Efficiency**	9286.28	9633.03	288.99	-346.75	FAIL					
	Background										
	Crosstalk	3182.500	3020.975	74.255	161.525	WARNING					
Detector 1											
3:58 AM	**Efficiency**										
	Background	0.085	0.105	0.031	-0.020	Pass	0.405	0.385	0.056	0.021	Pass
	Crosstalk										
6:03 AM	**Efficiency**	9327.28	9636.18	289.09	-308.90	FAIL					
	Background										
	Crosstalk	2940.500	2837.500	103.877	103.000	Pass					
6:11 AM	**Efficiency**						32782.45	33478.80	1004.36	-696.35	Pass
	Background										
	Crosstalk						9.545	42.975	30.711	-33.430	Pass
6:32 AM	**Efficiency**	9256.23	9636.18	289.09	-379.95	FAIL					
	Background										
	Crosstalk	2972.000	2837.500	103.877	134.500	Pass					
Detector 2											

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Thursday, August 11, 2016

Instrument: ***Orange***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
3:58 AM	**Efficiency**										
	Background	0.095	0.089	0.022	0.006	Pass	0.225	0.360	0.060	-0.135	Pass
	Crosstalk										
6:03 AM	**Efficiency**	10649.20	10842.95	325.29	-193.75	Pass					
	Background										
	Crosstalk	3533.000	3374.450	77.654	158.550	**WARNING**					
6:11 AM	**Efficiency**						22978.38	23193.20	695.80	-214.82	Pass
	Background										
	Crosstalk						12.197	37.375	27.717	-25.178	Pass
Detector 3											
3:58 AM	**Efficiency**										
	Background	0.080	0.115	0.034	-0.035	Pass	0.425	0.565	0.075	-0.140	Pass
	Crosstalk										
6:03 AM	**Efficiency**	10428.24	10497.75	314.93	-69.51	Pass					
	Background										
	Crosstalk	3482.000	3373.750	92.222	108.250	Pass					
6:11 AM	**Efficiency**						30298.73	30620.69	918.62	-321.96	Pass
	Background										
	Crosstalk						9.015	43.524	34.997	-34.509	Pass
Detector 4											
3:58 AM	**Efficiency**										
	Background	0.045	0.069	0.020	-0.024	Pass	0.325	0.348	0.052	-0.023	Pass
	Crosstalk										
6:03 AM	**Efficiency**	9583.28	9816.08	294.48	-232.80	Pass					
	Background										
	Crosstalk	3936.500	3960.100	56.260	-23.600	Pass					
6:11 AM	**Efficiency**						25806.00	26048.10	781.44	-242.10	Pass
	Background										
	Crosstalk						4.242	8.525	2.042	-4.283	**WARNING**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Thursday, August 11, 2016

Instrument: ***Orange***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
Detector 5											
3:58 AM	**Efficiency**										
	Background	0.045	0.083	0.042	-0.038	Pass	0.235	0.384	0.073	-0.149	Pass
	Crosstalk										
6:03 AM	**Efficiency**	10180.62	10261.50	307.85	-80.88	Pass					
	Background										
	Crosstalk	3955.500	3959.800	64.708	-4.300	Pass					
6:11 AM	**Efficiency**						21277.18	21843.90	655.32	-566.73	Pass
	Background										
	Crosstalk						5.303	5.095	1.480	0.208	Pass
Detector 6											
3:58 AM	**Efficiency**										
	Background	0.095	0.071	0.028	0.024	Pass	0.295	0.395	0.073	-0.100	Pass
	Crosstalk										
6:04 AM	**Efficiency**	10189.62	10408.90	312.27	-219.28	Pass					
	Background										
	Crosstalk	4075.500	4013.025	50.632	62.475	Pass					
6:11 AM	**Efficiency**						28791.01	29157.55	874.73	-366.54	Pass
	Background										
	Crosstalk						5.303	5.750	1.400	-0.447	Pass
Detector 7											
3:58 AM	**Efficiency**										
	Background	0.140	0.129	0.027	0.012	Pass	0.405	0.495	0.070	-0.090	Pass
	Crosstalk										
6:04 AM	**Efficiency**	11301.82	11400.15	342.00	-98.33	Pass					
	Background										
	Crosstalk	4140.500	4121.100	84.904	19.400	Pass					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Thursday, August 11, 2016

Instrument: ***Orange***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
6:11 AM	**Efficiency**						27403.45	27782.35	833.47	-378.90	Pass
	Background										
	Crosstalk						4.773	4.600	1.392	0.173	Pass
Detector 8											
3:58 AM	**Efficiency**										
	Background	0.055	0.061	0.039	-0.006	Pass	0.305	0.382	0.072	-0.077	Pass
	Crosstalk										
6:03 AM	**Efficiency**						33715.85	33564.38	1006.93	151.48	Pass
	Background										
	Crosstalk						13.257	16.400	3.440	-3.143	Pass
6:07 AM	**Efficiency**	9334.13	9478.25	284.35	-144.12	Pass					
	Background										
	Crosstalk	3231.500	3232.575	48.852	-1.075	Pass					
Detector 9											
3:58 AM	**Efficiency**										
	Background	0.055	0.057	0.019	-0.001	Pass	0.320	0.747	1.058	-0.427	Pass
	Crosstalk										
6:03 AM	**Efficiency**						33957.63	33894.25	1016.83	63.38	Pass
	Background										
	Crosstalk						19.091	14.000	4.085	5.091	Pass
6:07 AM	**Efficiency**	9445.72	9643.90	289.32	-198.18	Pass					
	Background										
	Crosstalk	3255.000	3276.675	53.798	-21.675	Pass					
Detector 10											
3:58 AM	**Efficiency**										
	Background	0.065	0.066	0.021	-0.001	Pass	0.380	0.438	0.070	-0.058	Pass
	Crosstalk										

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Thursday, August 11, 2016

Instrument: ***Orange***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
6:03 AM	**Efficiency**						23331.02	23268.15	698.04	62.87	Pass
	Background										
	Crosstalk						4.773	5.525	1.626	-0.752	Pass
6:07 AM	**Efficiency**	8661.82	9061.80	271.85	-399.98	**FAIL**					
	Background										
	Crosstalk	5712.500	5377.250	138.587	335.250	**WARNING**					
6:32 AM	**Efficiency**	8587.76	9061.80	271.85	-474.04	**FAIL**					
	Background										
	Crosstalk	5812.500	5377.250	138.587	435.250	**DOEF**					
Detector 11											
3:58 AM	**Efficiency**										
	Background	0.080	0.060	0.017	0.020	Pass	0.415	0.497	0.074	-0.082	Pass
	Crosstalk										
6:03 AM	**Efficiency**						30723.49	29987.20	899.62	736.29	Pass
	Background										
	Crosstalk						9.015	15.700	2.687	-6.685	**WARNING**
6:07 AM	**Efficiency**	10453.15	10677.43	320.32	-224.27	Pass					
	Background										
	Crosstalk	3459.000	3406.975	91.442	52.025	Pass					
Detector 12											
3:58 AM	**Efficiency**										
	Background	0.110	0.069	0.015	0.041	Pass	0.400	0.454	0.060	-0.053	Pass
	Crosstalk										
6:03 AM	**Efficiency**						25912.73	25927.73	777.83	-14.99	Pass
	Background										
	Crosstalk						12.727	12.950	1.629	-0.223	Pass
6:07 AM	**Efficiency**	9962.26	10198.25	305.95	-235.99	Pass					
	Background										
	Crosstalk	3593.000	3532.250	43.254	60.750	Pass					

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Thursday, August 11, 2016

Instrument: ***Orange***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
Detector 13											
3:58 AM	**Efficiency**										
	Background	0.060	0.056	0.021	0.005	Pass	0.450	0.434	0.066	0.016	Pass
	Crosstalk										
6:03 AM	**Efficiency**						21748.40	22266.53	668.00	-518.12	Pass
	Background										
	Crosstalk						21.212	14.975	3.432	6.237	Pass
6:07 AM	**Efficiency**	10677.74	10766.90	323.01	-89.16	Pass					
	Background										
	Crosstalk	3493.500	3493.575	84.240	-0.075	Pass					
Detector 14											
3:59 AM	**Efficiency**										
	Background	0.135	0.150	0.028	-0.015	Pass	0.370	0.455	0.063	-0.085	Pass
	Crosstalk										
6:03 AM	**Efficiency**						28770.97	29008.58	870.26	-237.61	Pass
	Background										
	Crosstalk						54.091	36.750	9.105	17.341	Pass
6:08 AM	**Efficiency**	10613.21	10745.55	322.37	-132.34	Pass					
	Background										
	Crosstalk	3666.000	3643.800	50.901	22.200	Pass					
Detector 15											
3:59 AM	**Efficiency**										
	Background	0.045	0.054	0.022	-0.009	Pass	0.390	0.393	0.061	-0.003	Pass
	Crosstalk										
6:03 AM	**Efficiency**						27404.51	27467.78	824.03	-63.26	Pass
	Background										
	Crosstalk						16.970	21.400	5.218	-4.430	Pass

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Thursday, August 11, 2016

Instrument: ***Orange***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
6:08 AM	**Efficiency**	11388.69	11518.40	345.55	-129.71	Pass					
	Background										
	Crosstalk	3528.000	3619.075	51.719	-91.075	Pass					
Detector 16											
3:59 AM	**Efficiency**										
	Background	0.130	0.128	0.019	0.002	Pass	0.465	0.525	0.065	-0.060	Pass
	Crosstalk										
6:06 AM	**Efficiency**						33517.58	33491.33	1004.74	26.26	Pass
	Background										
	Crosstalk						33.409	32.800	8.069	0.609	Pass
6:11 AM	**Efficiency**	9220.47	9425.85	282.78	-205.38	Pass					
	Background										
	Crosstalk	3035.500	3046.175	44.460	-10.675	Pass					
Detector 17											
3:59 AM	**Efficiency**										
	Background	0.165	0.139	0.029	0.026	Pass	0.390	0.431	0.065	-0.041	Pass
	Crosstalk										
6:07 AM	**Efficiency**						33264.31	33457.18	1003.72	-192.86	Pass
	Background										
	Crosstalk						10.076	13.975	2.967	-3.899	Pass
6:11 AM	**Efficiency**	9177.98	9376.73	281.30	-198.75	Pass					
	Background										
	Crosstalk	3182.500	3157.400	62.056	25.100	Pass					
Detector 18											
3:59 AM	**Efficiency**										
	Background	0.130	0.100	0.020	0.031	Pass	0.445	0.420	0.047	0.025	Pass
	Crosstalk										

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Thursday, August 11, 2016

Instrument: ***Orange***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
6:07 AM	**Efficiency**						22959.70	23209.68	696.29	-249.97	Pass
	Background										
	Crosstalk						16.439	16.100	4.093	0.339	Pass
6:12 AM	**Efficiency**	10606.78	10638.68	319.16	-31.89	Pass					
	Background										
	Crosstalk	3502.500	3445.475	54.348	57.025	Pass					
Detector 19											
3:59 AM	**Efficiency**										
	Background	0.105	0.088	0.019	0.017	Pass	0.480	0.443	0.064	0.037	Pass
	Crosstalk										
6:07 AM	**Efficiency**						30923.75	30982.63	929.48	-58.87	Pass
	Background										
	Crosstalk						16.439	16.650	4.107	-0.211	Pass
6:12 AM	**Efficiency**	10609.26	10743.60	322.31	-134.34	Pass					
	Background										
	Crosstalk	3560.500	3582.975	67.603	-22.475	Pass					
Detector 20											
3:59 AM	**Efficiency**										
	Background	0.150	0.116	0.029	0.035	Pass	0.340	0.390	0.053	-0.050	Pass
	Crosstalk										
6:07 AM	**Efficiency**						25333.12	25820.98	774.63	-487.85	Pass
	Background										
	Crosstalk						13.257	20.300	5.444	-7.043	Pass
6:12 AM	**Efficiency**	9768.89	9924.60	297.74	-155.71	Pass					
	Background										
	Crosstalk	3323.000	3242.675	57.944	80.325	Pass					
Detector 21											

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Thursday, August 11, 2016

Instrument: ***Orange***

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
3:59 AM	**Efficiency**										
	Background	0.080	0.069	0.021	0.011	Pass	0.320	0.318	0.051	0.003	Pass
	Crosstalk										
6:07 AM	**Efficiency**						21531.15	22199.20	665.98	-668.05	**FAIL**
	Background										
	Crosstalk						9.015	13.000	2.763	-3.985	Pass
6:12 AM	**Efficiency**	10626.41	10653.43	319.60	-27.02	Pass					
	Background										
	Crosstalk	3731.000	3662.550	43.378	68.450	Pass					
6:33 AM	**Efficiency**						22010.87	22199.20	665.98	-188.33	Pass
	Background										
	Crosstalk						5.833	13.000	2.763	-7.167	**WARNING**
Detector 22											
3:59 AM	**Efficiency**										
	Background	0.105	0.060	0.018	0.046	Pass	0.350	0.406	0.081	-0.056	Pass
	Crosstalk										
6:07 AM	**Efficiency**						29252.85	29331.13	879.93	-78.27	Pass
	Background										
	Crosstalk						5.303	13.075	3.867	-7.772	**WARNING**
6:12 AM	**Efficiency**	10570.38	10669.25	320.08	-98.87	Pass					
	Background										
	Crosstalk	3842.500	3825.525	48.498	16.975	Pass					
Detector 23											
3:59 AM	**Efficiency**										
	Background	0.045	0.063	0.023	-0.018	Pass	0.345	0.377	0.054	-0.032	Pass
	Crosstalk										
6:07 AM	**Efficiency**						27717.63	27644.68	829.34	72.96	Pass
	Background										
	Crosstalk						6.364	13.125	3.128	-6.761	**WARNING**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Gas Proportional Counter Daily Quality Control Checks

Thursday, August 11, 2016

Instrument: Orange

Detector ID	Check Type	Alpha CPM	Alpha Mean	Alpha +/- limit	Alpha Deviation	Alpha Flag	Beta CPM	Beta Mean	Beta +/- limit	Beta Deviation	Beta Flag
6:12 AM	**Efficiency**	11273.80	11433.58	343.01	-159.77	Pass					
	Background										
	Crosstalk	3999.000	3982.700	47.626	16.300	Pass					

The Alpha and Beta +/- limit are based upon initial 20-point population.

The Alpha and Beta +/- limit for Efficiency is stated at 3%. Flags are "FAIL" > 3%.

The Alpha and Beta +/- limit for Background is stated at 1 StDev. Flags are "FAIL" > 3 StDev.

The Alpha and Beta +/- limit for Crosstalk is stated at 1 StDev. Flags are "Warning > 2 StDev and "DOEF" > 3 StDev.

Times shown reflect the end of the count duration.

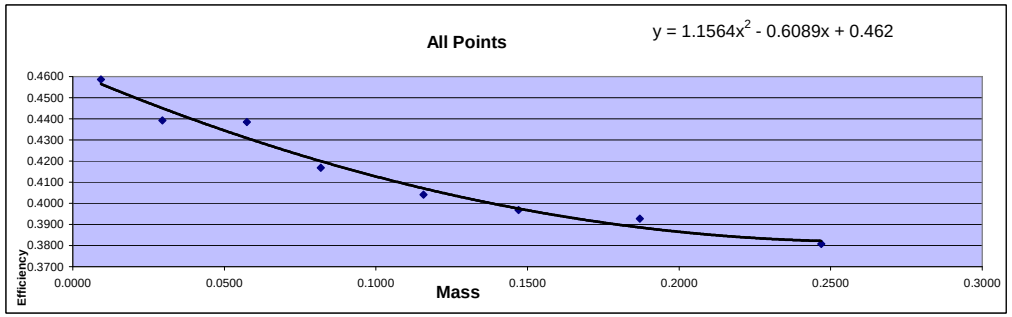
Alpha Beta Calibrations

Curve is for Gross Beta
Strontium 90
and
Total Strontium

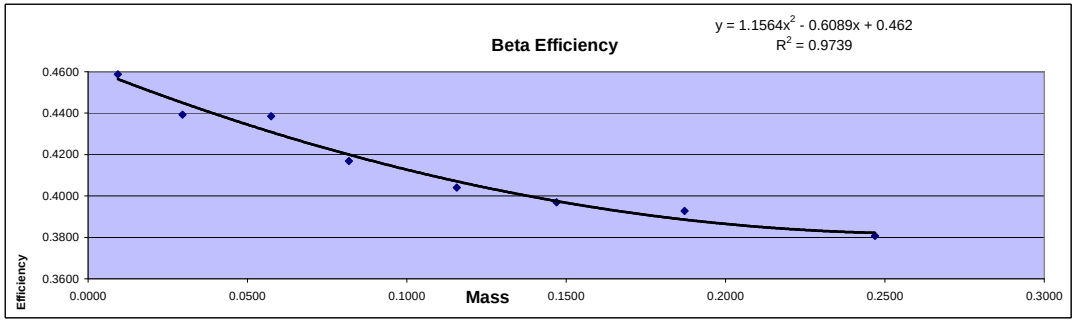
Purple 0

Detector ID	Std ID	Count Date	Sample Wt	Count Time	Beta Counts	DPM 41558.018 CPM	Sr-90 Eff	Standard Aliquot
0	B1	2/3/2013 15:26	0.0093	5	95312	19062.400	0.4587	1mL
0	B2	2/3/2013 17:14	0.0296	5	91281	18256.200	0.4393	1mL
0	B3	2/3/2013 17:05	0.0574	5	91120	18224.000	0.4385	1mL
0	B4	2/3/2013 16:48	0.0818	5	86609	17321.800	0.4168	1mL
0	B5	2/3/2013 16:41	0.1157	5	83957	16791.400	0.4040	1mL
0	B6	2/3/2013 16:34	0.1470	5	82467	16493.400	0.3969	1mL
0	B7	2/3/2013 16:23	0.1871	5	81608	16321.600	0.3927	1mL
0	B8	2/3/2013 16:02	0.2469	5	79105	15821.000	0.3807	1mL

Mass	Measured Efficiency	Theoretical Efficiency	Percent Δ Efficiency
0.0093	0.4587	0.4564	0.49%
0.0296	0.4393	0.4450	-1.28%
0.0574	0.4385	0.4309	1.78%
0.0818	0.4168	0.4199	-0.74%
0.1157	0.4040	0.4070	-0.73%
0.1470	0.3969	0.3975	-0.15%
0.1871	0.3927	0.3886	1.08%
0.2469	0.3807	0.3822	-0.38%



Mass	Efficiency
0.0093	0.4587
0.0296	0.4393
0.0574	0.4385
0.0818	0.4168
0.1157	0.4040
0.1470	0.3969
0.1871	0.3927
0.2469	0.3807



Standard ID
Strontium 90
Sr-90_00004 #6322
Cert# 80573-334 Ref. date 9/172009

Initial Activity:	22560	dpm/mL
Reference Date:	9/17/2009	
Count Date:	2/3/2013	
Elapsed Time:	1235.000	days
Half Life:	10409.625	days
Exponential Term:	0.92105537	
Corrected Activity:	20779.0092	dpm/mL
Decay Activity (Sr/Y-90)	41558.0185	dpm

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-6322;B1

Repeat 28

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 3:26:56 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 3:32:07 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	1,085	217.000	216.913
sd	0.000			0.009	32.939	6.588	6.588
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	95,312	19,062.400	19,061.995
sd	0.000			0.020	308.726	61.745	61.745

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-6322;B8

Repeat 28

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 2/3/2013 4:02:02 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 4:07:11 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	821	164.200	164.113
sd	0.000			0.009	28.653	5.731	5.731
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	79,105	15,821.000	15,820.595
sd	0.000			0.020	281.256	56.251	56.251

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-6322;B7

Repeat 29

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 4:23:17 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 4:28:26 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	891	178.200	178.113
sd	0.000			0.009	29.850	5.970	5.970
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	81,608	16,321.600	16,321.195
sd	0.000			0.020	285.671	57.134	57.134

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-6322;B6

Repeat 30

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 4:34:26 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 4:39:36 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	898	179.600	179.513
sd	0.000			0.009	29.967	5.993	5.993
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	82,467	16,493.400	16,492.995
sd	0.000			0.020	287.171	57.434	57.434

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-6322;B5

Repeat 31

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 4:41:38 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 4:46:48 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	890	178.000	177.913
sd	0.000			0.009	29.833	5.967	5.967
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	83,957	16,791.400	16,790.995
sd	0.000			0.020	289.753	57.951	57.951

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-6322;B4

Repeat 33

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 4:48:03 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 4:53:12 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	986	197.200	197.113
sd	0.000			0.009	31.401	6.280	6.280
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	86,609	17,321.800	17,321.395
sd	0.000			0.020	294.294	58.859	58.859

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-6322;B3

Repeat 34

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:05:20 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:10:29 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	1,116	223.200	223.113
sd	0.000			0.009	33.407	6.681	6.681
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	91,120	18,224.000	18,223.595
sd	0.000			0.020	301.861	60.372	60.372

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-6322;B2

Repeat 35

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:14:13 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:19:23 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	1,106	221.200	221.113
sd	0.000			0.009	33.257	6.651	6.651
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	91,281	18,256.200	18,255.795
sd	0.000			0.020	302.127	60.425	60.425

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

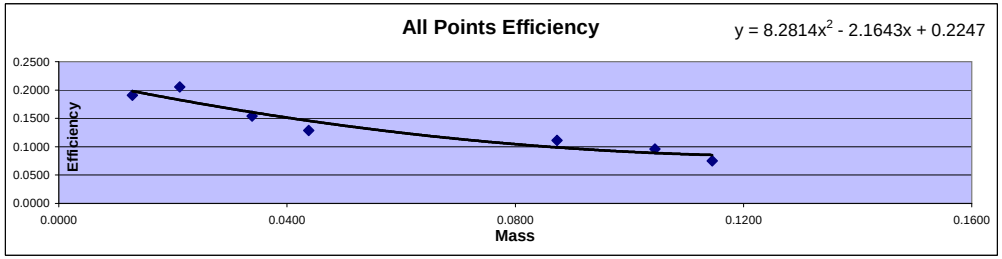
*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Curve is for Gross Alpha

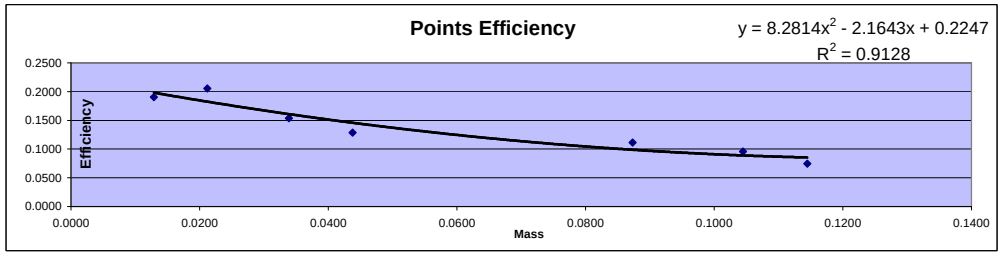
Purple 0

Detector ID	Sample ID	Count Date	Count Time	Alpha Counts	Net CPM	DPM	Th-230 Efficiency	Standard Aliquot	Mass
0	ICABT-51465;A1	1/16/2016 10:15	40	18103	452.575	2374.5	0.1906	1mL	0.0129
0	ICABT-51465;A2	1/16/2016 15:15	40	19498	487.450	2374.5	0.2053	1mL	0.0212
0	ICABT-51465;A3	1/16/2016 14:32	40	14616	365.400	2374.5	0.1539	1mL	0.0339
0	ICABT-51465;A4	1/16/2016 13:49	40	12219	305.475	2374.5	0.1286	1mL	0.0438
0	ICABT-51465;A6	1/16/2016 12:25	40	21130	528.250	4749.0	0.1112	2mL	0.0873
0	ICABT-51465;A7	1/16/2016 11:43	40	18214	455.350	4749.0	0.0959	2mL	0.1045
0	ICABT-51465;A8	1/16/2016 11:01	40	14219	355.475	4749.0	0.0749	2mL	0.1145

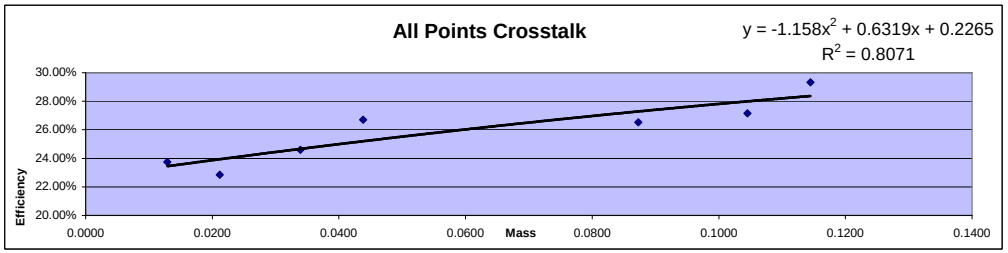
Mass	Measured Efficiency	Theoretical Efficiency	Percent Δ Efficiency
0.0129	0.1906	0.1982	-3.82%
0.0212	0.2053	0.1825	12.46%
0.0339	0.1539	0.1608	-4.33%
0.0438	0.1286	0.1458	-11.76%
0.0873	0.1112	0.0989	12.50%
0.1045	0.0959	0.0890	7.78%
0.1145	0.0749	0.0855	-12.41%



Mass	Efficiency
0.0129	0.1906
0.0212	0.2053
0.0339	0.1539
0.0438	0.1286
0.0873	0.1112
0.1045	0.0959
0.1145	0.0749



Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
0	ICABT-51465;A1	0.0129	40.00	18103	5640	452.58	141.00	23.75%	Min
0	ICABT-51465;A2	0.0212	40.00	19498	5772	487.45	144.30	22.84%	22.84%
0	ICABT-51465;A3	0.0339	40.00	14616	4765	365.40	119.13	24.59%	
0	ICABT-51465;A4	0.0438	40.00	12219	4453	305.48	111.33	26.71%	Max
0	ICABT-51465;A6	0.0873	40.00	21130	7624	528.25	190.60	26.51%	
0	ICABT-51465;A7	0.1045	40.00	18214	6792	455.35	169.80	27.16%	Mean
0	ICABT-51465;A8	0.1145	40.00	14219	5901	355.48	147.53	29.33%	25.84%



Standard ID
Thorium-230
Th-230_00016
Container#: 51465
Cert #: 92523 Ref. date 11/29/2012
Activity 2374.5 dpm/mL

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-51465;A1

Repeat 49

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/16/2016 10:15:12 AM

Count Ended 1/16/2016 10:55:18 AM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	18,103	452.575	452.430
sd	0.000			0.012	134.547	3.364	3.364
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	5,640	141.000	140.491
sd	0.000			0.023	75.100	1.877	1.878

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-51465;A8

Repeat 50

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/16/2016 11:01:41 AM

Count Ended 1/16/2016 11:41:47 AM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	14,219	355.475	355.330
sd	0.000			0.012	119.243	2.981	2.981
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	5,901	147.525	147.016
sd	0.000			0.023	76.818	1.920	1.921

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-51465;A7

Repeat 51

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/16/2016 11:43:26 AM

Count Ended 1/16/2016 12:23:33 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	18,214	455.350	455.205
sd	0.000			0.012	134.959	3.374	3.374
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	6,792	169.800	169.291
sd	0.000			0.023	82.414	2.060	2.060

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-51465;A6

Repeat 129

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/16/2016 12:25:26 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/16/2016 1:05:32 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	21,130	528.250	528.105
sd	0.000			0.012	145.362	3.634	3.634
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	7,624	190.600	190.091
sd	0.000			0.023	87.316	2.183	2.183

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-51465;A5

Repeat 53

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/16/2016 1:06:35 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/16/2016 1:46:40 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	17,802	445.050	444.905
sd	0.000			0.012	133.424	3.336	3.336
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	7,096	177.400	176.891
sd	0.000			0.023	84.238	2.106	2.106

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-51465;A4

Repeat 54

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/16/2016 1:49:23 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/16/2016 2:29:29 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	12,219	305.475	305.330
sd	0.000			0.012	110.540	2.763	2.764
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	4,453	111.325	110.816
sd	0.000			0.023	66.731	1.668	1.668

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-51465;A3

Repeat 55

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/16/2016 2:32:20 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/16/2016 3:12:24 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	14,616	365.400	365.255
sd	0.000			0.012	120.897	3.022	3.022
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	4,765	119.125	118.616
sd	0.000			0.023	69.029	1.726	1.726

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICABT-51465;A2

Repeat 56

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/16/2016 3:15:17 PM

Count Ended 1/16/2016 3:55:22 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	19,498	487.450	487.305
sd	0.000			0.012	139.635	3.491	3.491
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	5,772	144.300	143.791
sd	0.000			0.023	75.974	1.899	1.899

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

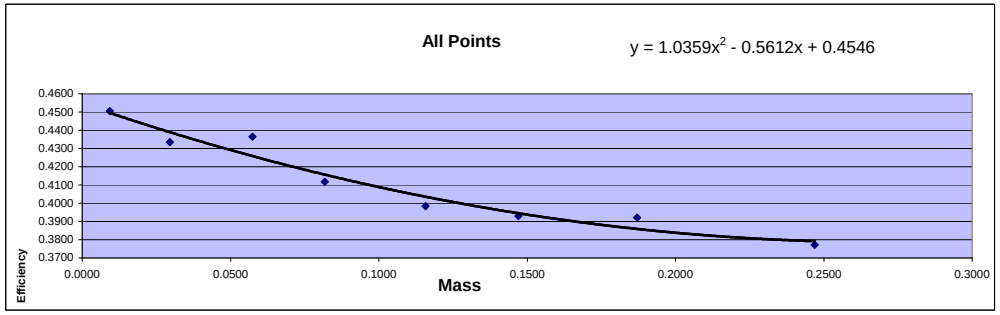
Error = .00 **x sd**

Curve is for Gross Beta
Strontium 90
and
Total Strontium

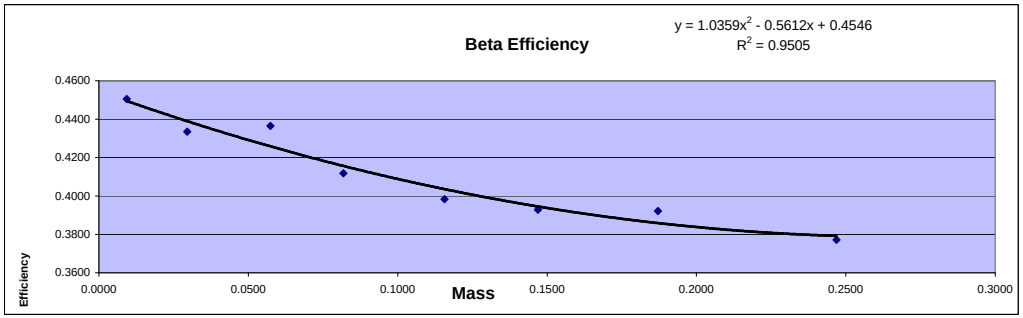
Purple 4

Detector ID	Std ID	Count Date	Sample Wt	Count Time	Beta Counts	DPM 41558.018 CPM	Sr-90 Eff	Standard Aliquot
4	B1	2/3/2013 16:41	0.0093	5	93625	18725.000	0.4506	1mL
4	B2	2/3/2013 16:35	0.0296	5	90075	18015.000	0.4335	1mL
4	B3	2/3/2013 16:23	0.0574	5	90705	18141.000	0.4365	1mL
4	B4	2/3/2013 16:02	0.0818	5	85575	17115.000	0.4118	1mL
4	B5	2/3/2013 15:27	0.1157	5	82782	16556.400	0.3984	1mL
4	B6	2/3/2013 17:14	0.1470	5	81643	16328.600	0.3929	1mL
4	B7	2/3/2013 17:05	0.1871	5	81492	16298.400	0.3922	1mL
4	B8	2/3/2013 16:48	0.2469	5	78386	15677.200	0.3772	1mL

Mass	Measured Efficiency	Theoretical Efficiency	Percent Δ Efficiency
0.0093	0.4506	0.4495	0.25%
0.0296	0.4335	0.4389	-1.23%
0.0574	0.4365	0.4258	2.52%
0.0818	0.4118	0.4156	-0.91%
0.1157	0.3984	0.4035	-1.27%
0.1470	0.3929	0.3945	-0.40%
0.1871	0.3922	0.3859	1.64%
0.2469	0.3772	0.3792	-0.51%



Mass	Efficiency
0.0093	0.4506
0.0296	0.4335
0.0574	0.4365
0.0818	0.4118
0.1157	0.3984
0.1470	0.3929
0.1871	0.3922
0.2469	0.3772



Standard ID
Strontium 90
Sr-90_00004 #6322
Cert# 80573-334 Ref. date 9/172009

Initial Activity:	22560	dpm/mL
Reference Date:	9/17/2009	
Count Date:	2/3/2013	
Elapsed Time:	1235.000	days
Half Life:	10409.625	days
Exponential Term:	0.921055374	
Corrected Activity:	20779.00924	dpm/mL
Decay Activity (Sr/Y-90)	41558.01848	dpm

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-6322;B5

Repeat 27

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 3:27:18 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 3:32:26 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	4	0.800	0.747
sd	0.000			0.007	2.000	0.400	0.400
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	82,782	16,556.400	16,555.966
sd	0.000			0.021	287.719	57.544	57.544

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-6322;B4

Repeat 29

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 4:02:23 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 4:07:32 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	9	1.800	1.747
sd	0.000			0.007	3.000	0.600	0.600
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	85,575	17,115.000	17,114.566
sd	0.000			0.021	292.532	58.506	58.506

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-6322;B3

Repeat 30

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 2/3/2013 4:23:35 PM

Count Ended 2/3/2013 4:28:45 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 5.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	6	1.200	1.147
sd	0.000			0.007	2.449	0.490	0.490
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	90,705	18,141.000	18,140.566
sd	0.000			0.021	301.173	60.235	60.235

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-6322;B2

Repeat 31

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 4:35:05 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 4:40:14 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	14	2.800	2.747
sd	0.000			0.007	3.742	0.748	0.748
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	90,075	18,015.000	18,014.566
sd	0.000			0.021	300.125	60.025	60.025

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-6322;B1

Repeat 32

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 4:41:56 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 4:47:07 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	12	2.400	2.347
sd	0.000			0.007	3.464	0.693	0.693
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	93,625	18,725.000	18,724.566
sd	0.000			0.021	305.982	61.196	61.196

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-6322;B8

Repeat 32

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *Sample* **sd** 0 *Sample*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 2/3/2013 4:48:24 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 2/3/2013 4:53:33 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	8	1.600	1.547
sd	0.000			0.007	2.828	0.566	0.566
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	78,386	15,677.200	15,676.766
sd	0.000			0.021	279.975	55.995	55.995

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-6322;B7

Repeat 33

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:05:43 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:10:53 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	6	1.200	1.147
sd	0.000			0.007	2.449	0.490	0.490
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	81,492	16,298.400	16,297.966
sd	0.000			0.021	285.468	57.094	57.094

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-6322;B6

Repeat 34

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:14:31 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:19:40 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	4	0.800	0.747
sd	0.000			0.007	2.000	0.400	0.400
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	81,643	16,328.600	16,328.166
sd	0.000			0.021	285.732	57.146	57.146

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

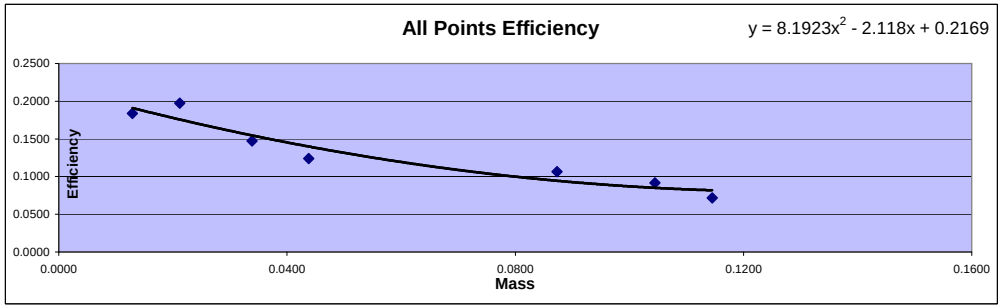
*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Curve is for Gross Alpha

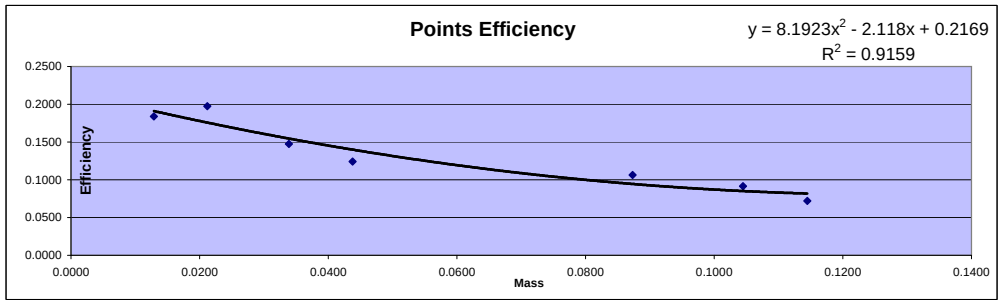
Purple 4

Detector ID	Sample ID	Count Date	Count Time	Alpha Counts	Net CPM	DPM	Th-230 Efficiency	Standard Aliquot	Mass
4	ICABT-51465;A1	1/16/2016 13:06	40	17469	436.725	2374.5	0.1839	1mL	0.0129
4	ICABT-51465;A2	1/16/2016 12:25	40	18761	469.025	2374.5	0.1975	1mL	0.0212
4	ICABT-51465;A3	1/16/2016 11:43	40	13990	349.750	2374.5	0.1473	1mL	0.0339
4	ICABT-51465;A4	1/16/2016 11:01	40	11786	294.650	2374.5	0.1241	1mL	0.0438
4	ICABT-51465;A6	1/16/2016 15:15	40	20207	505.175	4749.0	0.1064	2mL	0.0873
4	ICABT-51465;A7	1/16/2016 14:32	40	17384	434.600	4749.0	0.0915	2mL	0.1045
4	ICABT-51465;A8	1/16/2016 13:49	40	13651	341.275	4749.0	0.0719	2mL	0.1145

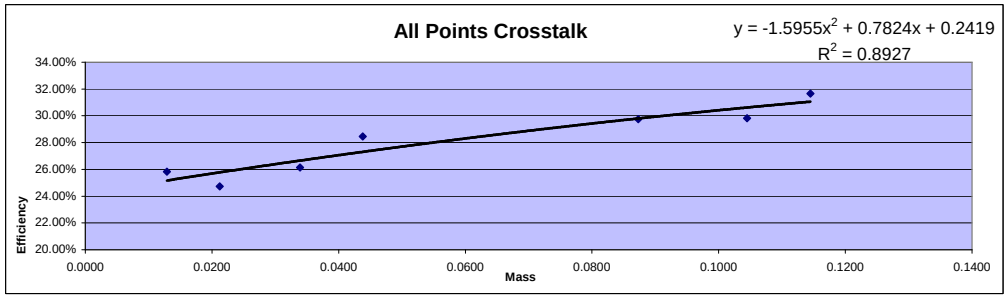
Mass	Measured Efficiency	Theoretical Efficiency	Percent Δ Efficiency
0.0129	0.1839	0.1909	-3.68%
0.0212	0.1975	0.1757	12.43%
0.0339	0.1473	0.1545	-4.67%
0.0438	0.1241	0.1398	-11.27%
0.0873	0.1064	0.0944	12.64%
0.1045	0.0915	0.0850	7.62%
0.1145	0.0719	0.0818	-12.14%



Mass	Efficiency
0.0129	0.1839
0.0212	0.1975
0.0339	0.1473
0.0438	0.1241
0.0873	0.1064
0.1045	0.0915
0.1145	0.0719



Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
4	ICABT-51465;A1	0.0129	40.00	17469	6086	436.73	152.15	25.84%	Min
4	ICABT-51465;A2	0.0212	40.00	18761	6161	469.03	154.03	24.72%	24.72%
4	ICABT-51465;A3	0.0339	40.00	13990	4950	349.75	123.75	26.14%	
4	ICABT-51465;A4	0.0438	40.00	11786	4690	294.65	117.25	28.47%	Max
4	ICABT-51465;A6	0.0873	40.00	20207	8559	505.18	213.98	29.75%	
4	ICABT-51465;A7	0.1045	40.00	17384	7387	434.60	184.68	29.82%	Mean
4	ICABT-51465;A8	0.1145	40.00	13651	6322	341.28	158.05	31.65%	28.06%



Standard ID
Thorium-230
Th-230_00016
Container#: 51465
Cert #: 92523 Ref. date 11/29/2012
Activity 2374.5 dpm/mL

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-51465;A5

Repeat 49

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/16/2016 10:15:29 AM

Collection Date 1 1/1/1900

Half Life 0.00 ***days***

Count Ended 1/16/2016 10:55:35 AM

Collection Date 2 1/1/1900

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	16,431	410.775	410.687
sd	0.000			0.009	128.183	3.205	3.205
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	7,640	191.000	190.484
sd	0.000			0.023	87.407	2.185	2.185

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-51465;A4

Repeat 50

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/16/2016 11:01:59 AM

Count Ended 1/16/2016 11:42:04 AM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	11,786	294.650	294.562
sd	0.000			0.009	108.563	2.714	2.714
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	4,690	117.250	116.734
sd	0.000			0.023	68.484	1.712	1.712

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-51465;A3

Repeat 51

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/16/2016 11:43:45 AM

Count Ended 1/16/2016 12:23:51 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	13,990	349.750	349.662
sd	0.000			0.009	118.279	2.957	2.957
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	4,950	123.750	123.234
sd	0.000			0.023	70.356	1.759	1.759

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-51465;A2

Repeat 52

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/16/2016 12:25:45 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/16/2016 1:05:50 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	18,761	469.025	468.937
sd	0.000			0.009	136.971	3.424	3.424
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	6,161	154.025	153.509
sd	0.000			0.023	78.492	1.962	1.962

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-51465;A1

Repeat 53

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/16/2016 1:06:52 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/16/2016 1:46:57 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	17,469	436.725	436.637
sd	0.000			0.009	132.170	3.304	3.304
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	6,086	152.150	151.634
sd	0.000			0.023	78.013	1.950	1.950

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-51465;A8

Repeat 54

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/16/2016 1:49:38 PM

Count Ended 1/16/2016 2:29:43 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	13,651	341.275	341.187
sd	0.000			0.009	116.837	2.921	2.921
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	6,322	158.050	157.534
sd	0.000			0.023	79.511	1.988	1.988

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-51465;A7

Repeat 55

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/16/2016 2:32:36 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/16/2016 3:12:42 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	17,384	434.600	434.512
sd	0.000			0.009	131.848	3.296	3.296
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	7,387	184.675	184.159
sd	0.000			0.023	85.948	2.149	2.149

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICABT-51465;A6

Repeat 133

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/16/2016 3:15:34 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/16/2016 3:55:41 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	20,207	505.175	505.087
sd	0.000			0.009	142.151	3.554	3.554
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	8,559	213.975	213.459
sd	0.000			0.023	92.515	2.313	2.313

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

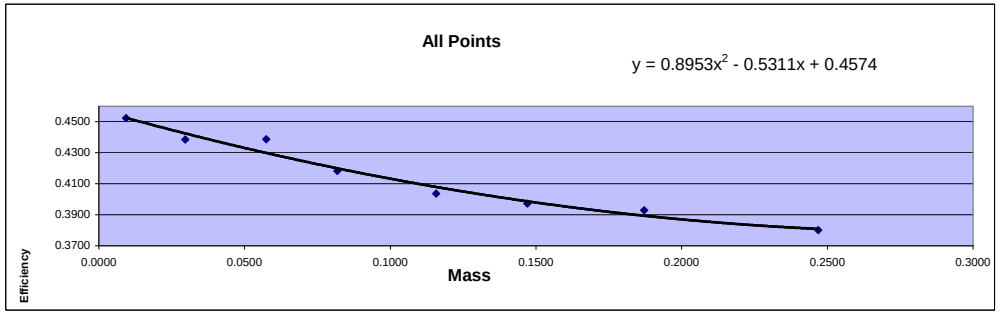
*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Curve is for Gross Beta
Strontium 90
and
Total Strontium

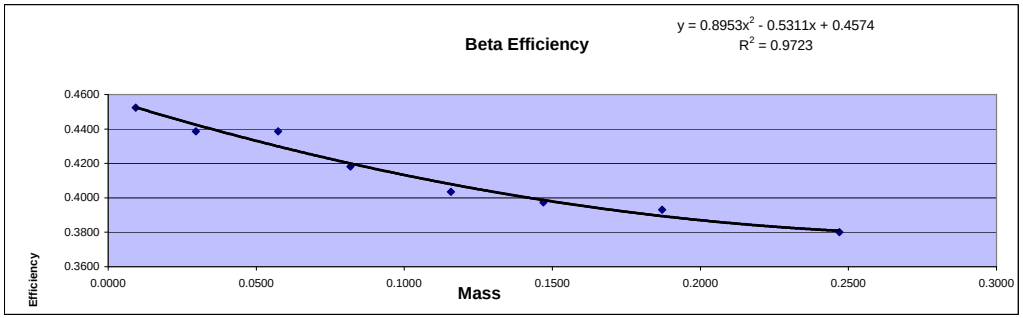
Purple 9

Detector ID	Std ID	Count Date	Sample Wt	Count Time	Beta Counts	DPM 41558.018 CPM	Sr-90 Eff	Standard Aliquot
9	B1	2/3/2013 17:29	0.0093	5	94012	18802.400	0.4524	1mL
9	B2	2/3/2013 17:22	0.0296	5	91138	18227.600	0.4386	1mL
9	B3	2/3/2013 18:51	0.0574	5	91147	18229.400	0.4386	1mL
9	B4	2/3/2013 18:32	0.0818	5	86910	17382.000	0.4183	1mL
9	B5	2/3/2013 18:19	0.1157	5	83860	16772.000	0.4036	1mL
9	B6	2/3/2013 18:07	0.1470	5	82560	16512.000	0.3973	1mL
9	B7	2/3/2013 17:51	0.1871	5	81660	16332.000	0.3930	1mL
9	B8	2/3/2013 17:43	0.2469	5	78969	15793.800	0.3800	1mL

Mass	Measured Efficiency	Theoretical Efficiency	Percent Δ Efficiency
0.0093	0.4524	0.4525	-0.02%
0.0296	0.4386	0.4425	-0.87%
0.0574	0.4386	0.4299	2.04%
0.0818	0.4183	0.4199	-0.40%
0.1157	0.4036	0.4079	-1.07%
0.1470	0.3973	0.3987	-0.34%
0.1871	0.3930	0.3894	0.93%
0.2469	0.3800	0.3808	-0.21%



Mass	Efficiency
0.0093	0.4524
0.0296	0.4386
0.0574	0.4386
0.0818	0.4183
0.1157	0.4036
0.1470	0.3973
0.1871	0.3930
0.2469	0.3800



Standard ID
Strontium 90
Sr-90_00004 #6322
Cert# 80573-334 Ref. date 9/172009

Initial Activity:	22560	dpm/mL
Reference Date:	9/17/2009	
Count Date:	2/3/2013	
Elapsed Time:	1235.000	days
Half Life:	10409.625	days
Exponential Term:	0.921055374	
Corrected Activity:	20779.00924	dpm/mL
Decay Activity (Sr/Y-90)	41558.01848	dpm

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-6322;B2

Repeat 36

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:22:31 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:27:41 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	242	48.400	48.336
sd	0.000			0.008	15.556	3.111	3.111
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	91,138	18,227.600	18,227.238
sd	0.000			0.019	301.891	60.378	60.378

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-6322;B1

Repeat 37

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:29:25 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:34:35 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	270	54.000	53.936
sd	0.000			0.008	16.432	3.286	3.286
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	94,012	18,802.400	18,802.038
sd	0.000			0.019	306.614	61.323	61.323

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-6322;B8

Repeat 37

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:43:33 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:48:41 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	193	38.600	38.536
sd	0.000			0.008	13.892	2.778	2.779
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	78,969	15,793.800	15,793.438
sd	0.000			0.019	281.014	56.203	56.203

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-6322;B7

Repeat 38

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:51:31 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:56:40 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	220	44.000	43.936
sd	0.000			0.008	14.832	2.966	2.966
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	81,660	16,332.000	16,331.638
sd	0.000			0.019	285.762	57.152	57.152

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-6322;B6

Repeat 39

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 6:07:05 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 6:12:14 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	189	37.800	37.736
sd	0.000			0.008	13.748	2.750	2.750
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	82,560	16,512.000	16,511.638
sd	0.000			0.019	287.333	57.467	57.467

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-6322;B5

Repeat 40

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 6:19:50 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 6:24:59 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	229	45.800	45.736
sd	0.000			0.008	15.133	3.027	3.027
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	83,860	16,772.000	16,771.638
sd	0.000			0.019	289.586	57.917	57.917

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-6322;B4

Repeat 42

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 2/3/2013 6:32:21 PM

Count Ended 2/3/2013 6:37:31 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 5.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	208	41.600	41.536
sd	0.000			0.008	14.422	2.884	2.884
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	86,910	17,382.000	17,381.638
sd	0.000			0.019	294.805	58.961	58.961

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-6322;B3

Repeat 43

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 6:51:05 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 6:56:15 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	232	46.400	46.336
sd	0.000			0.008	15.232	3.046	3.046
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	91,147	18,229.400	18,229.038
sd	0.000			0.019	301.906	60.381	60.381

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

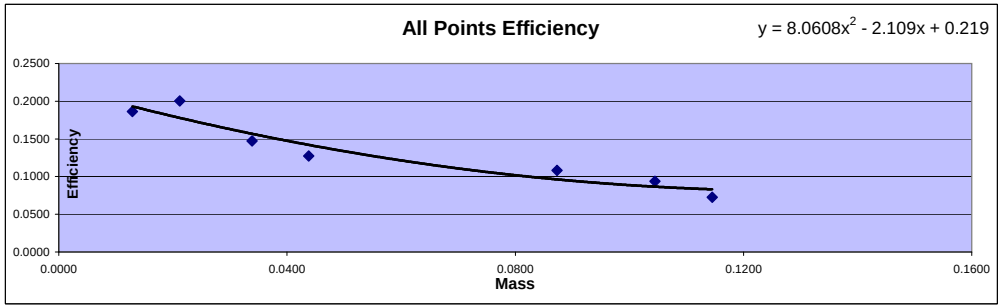
*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Curve is for Gross Alpha

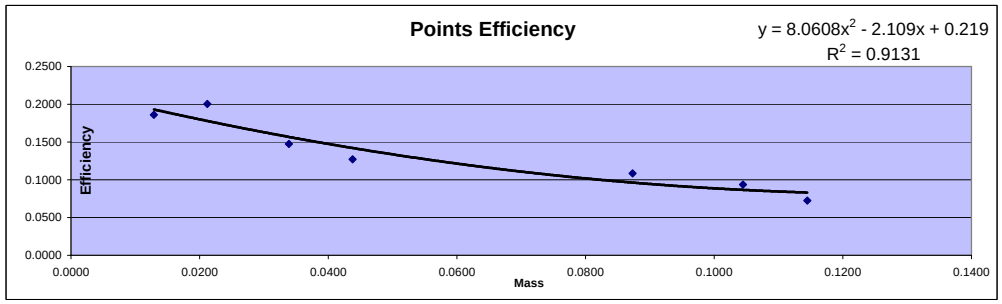
Purple 9

Detector ID	Sample ID	Count Date	Count Time	Alpha Counts	Net CPM	DPM	Th-230 Efficiency	Standard Aliquot	Mass
9	ICABT-51465;A1	1/17/2016 18:09	40	17685	442.125	2374.5	0.1862	1mL	0.0129
9	ICABT-51465;A2	1/17/2016 17:25	40	19039	475.975	2374.5	0.2005	1mL	0.0212
9	ICABT-51465;A3	1/17/2016 23:37	40	13997	349.925	2374.5	0.1474	1mL	0.0339
9	ICABT-51465;A4	1/17/2016 22:54	40	12089	302.225	2374.5	0.1273	1mL	0.0438
9	ICABT-51465;A6	1/17/2016 20:45	40	20567	514.175	4749.0	0.1083	2mL	0.0873
9	ICABT-51465;A7	1/17/2016 19:57	40	17783	444.575	4749.0	0.0936	2mL	0.1045
9	ICABT-51465;A8	1/17/2016 19:03	40	13803	345.075	4749.0	0.0727	2mL	0.1145

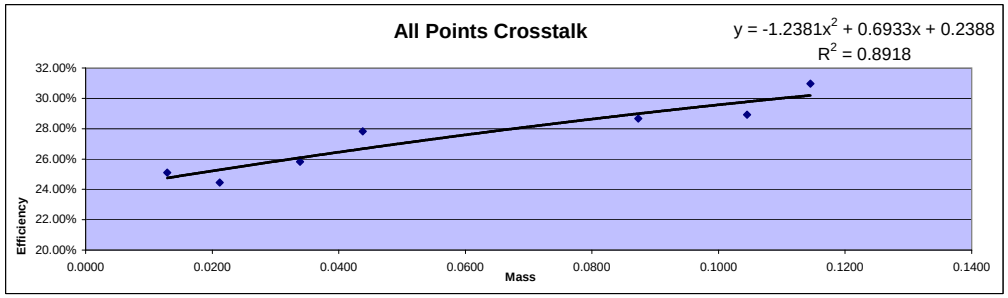
Mass	Measured Efficiency	Theoretical Efficiency	Percent Δ Efficiency
0.0129	0.1862	0.1931	-3.59%
0.0212	0.2005	0.1779	12.67%
0.0339	0.1474	0.1568	-6.00%
0.0438	0.1273	0.1421	-10.42%
0.0873	0.1083	0.0963	12.41%
0.1045	0.0936	0.0866	8.06%
0.1145	0.0727	0.0832	-12.66%



Mass	Efficiency
0.0129	0.1862
0.0212	0.2005
0.0339	0.1474
0.0438	0.1273
0.0873	0.1083
0.1045	0.0936
0.1145	0.0727



Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
9	ICABT-51465;A1	0.0129	40.00	17685	5925	442.13	148.13	25.10%	Min
9	ICABT-51465;A2	0.0212	40.00	19039	6164	475.98	154.10	24.46%	24.46%
9	ICABT-51465;A3	0.0339	40.00	13997	4874	349.93	121.85	25.83%	
9	ICABT-51465;A4	0.0438	40.00	12089	4660	302.23	116.50	27.82%	Max
9	ICABT-51465;A6	0.0873	40.00	20567	8266	514.18	206.65	28.67%	
9	ICABT-51465;A7	0.1045	40.00	17783	7238	444.58	180.95	28.93%	Mean
9	ICABT-51465;A8	0.1145	40.00	13803	6190	345.08	154.75	30.96%	27.39%



Standard ID
Thorium-230
Th-230_00016
Container#: 51465
Cert #: 92523 Ref. date 11/29/2012
Activity 2374.5 dpm/mL

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-51465;A2

Repeat 57

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/17/2016 5:25:38 PM

Count Ended 1/17/2016 6:05:44 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	19,039	475.975	475.913
sd	0.000			0.008	137.982	3.450	3.450
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	6,164	154.100	153.715
sd	0.000			0.020	78.511	1.963	1.963

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-51465;A1

Repeat 58

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 6:09:44 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 6:49:49 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	17,685	442.125	442.063
sd	0.000			0.008	132.985	3.325	3.325
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	5,925	148.125	147.740
sd	0.000			0.020	76.974	1.924	1.924

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-51465;A8

Repeat 59

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 7:03:24 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 7:43:28 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	13,803	345.075	345.013
sd	0.000			0.008	117.486	2.937	2.937
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	6,190	154.750	154.365
sd	0.000			0.020	78.677	1.967	1.967

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-51465;A7

Repeat 60

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 7:57:54 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 8:38:00 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	17,783	444.575	444.513
sd	0.000			0.008	133.353	3.334	3.334
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	7,238	180.950	180.565
sd	0.000			0.020	85.076	2.127	2.127

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-51465;A6

Repeat 138

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/17/2016 8:45:41 PM

Count Ended 1/17/2016 9:25:46 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	20,567	514.175	514.113
sd	0.000			0.008	143.412	3.585	3.585
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	8,266	206.650	206.265
sd	0.000			0.020	90.918	2.273	2.273

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-51465;A5

Repeat 62

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 9:41:44 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 10:21:50 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	17,136	428.400	428.338
sd	0.000			0.008	130.905	3.273	3.273
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	7,323	183.075	182.690
sd	0.000			0.020	85.575	2.139	2.139

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-51465;A4

Repeat 63

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/17/2016 10:54:04 PM

Collection Date 1 1/1/1900

Half Life 0.00 ***days***

Count Ended 1/17/2016 11:34:09 PM

Collection Date 2 1/1/1900

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	12,089	302.225	302.163
sd	0.000			0.008	109.950	2.749	2.749
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	4,660	116.500	116.115
sd	0.000			0.020	68.264	1.707	1.707

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICABT-51465;A3

Repeat 64

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 11:37:07 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/18/2016 12:17:12 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	13,997	349.925	349.863
sd	0.000			0.008	118.309	2.958	2.958
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	4,874	121.850	121.465
sd	0.000			0.020	69.814	1.745	1.745

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

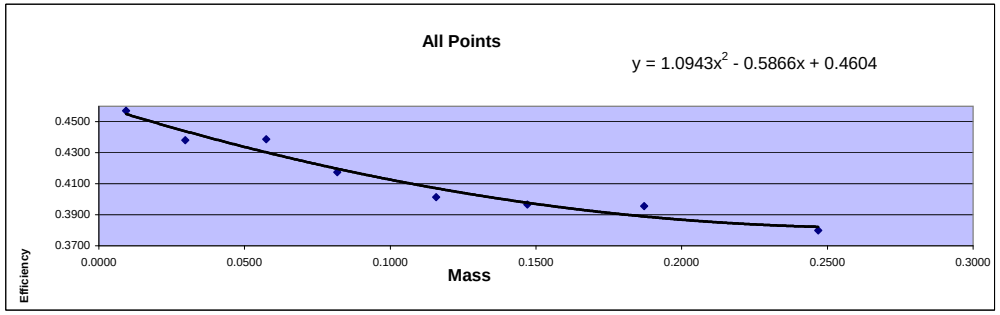
*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Curve is for Gross Beta
Strontium 90
and
Total Strontium

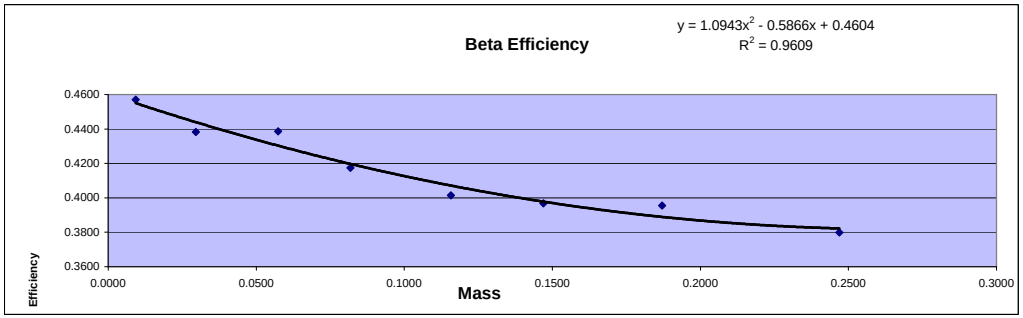
Purple 10

Detector ID	Std ID	Count Date	Sample Wt	Count Time	Beta Counts	DPM 41558.018 CPM	Sr-90 Eff	Standard Aliquot
10	B1	2/3/2013 17:43	0.0093	5	94979	18995.800	0.4571	1mL
10	B2	2/3/2013 17:29	0.0296	5	91052	18210.400	0.4382	1mL
10	B3	2/3/2013 17:22	0.0574	5	91150	18230.000	0.4387	1mL
10	B4	2/3/2013 18:51	0.0818	5	86754	17350.800	0.4175	1mL
10	B5	2/3/2013 18:32	0.1157	5	83407	16681.400	0.4014	1mL
10	B6	2/3/2013 18:19	0.1470	5	82434	16486.800	0.3967	1mL
10	B7	2/3/2013 18:07	0.1871	5	82188	16437.600	0.3955	1mL
10	B8	2/3/2013 17:51	0.2469	5	78950	15790.000	0.3800	1mL

Mass	Measured Efficiency	Theoretical Efficiency	Percent Δ Efficiency
0.0093	0.4571	0.4550	0.45%
0.0296	0.4382	0.4440	-1.31%
0.0574	0.4387	0.4303	1.94%
0.0818	0.4175	0.4197	-0.53%
0.1157	0.4014	0.4072	-1.42%
0.1470	0.3967	0.3978	-0.28%
0.1871	0.3955	0.3890	1.69%
0.2469	0.3800	0.3823	-0.61%



Mass	Efficiency
0.0093	0.4571
0.0296	0.4382
0.0574	0.4387
0.0818	0.4175
0.1157	0.4014
0.1470	0.3967
0.1871	0.3955
0.2469	0.3800



Standard ID
Strontium 90
Sr-90_00004 #6322
Cert# 80573-334 Ref. date 9/172009

Initial Activity:	22560	dpm/mL
Reference Date:	9/17/2009	
Count Date:	2/3/2013	
Elapsed Time:	1235.000	days
Half Life:	10409.625	days
Exponential Term:	0.921055374	
Corrected Activity:	20779.00924	dpm/mL
Decay Activity (Sr/Y-90)	41558.01848	dpm

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-6322;B3

Repeat 36

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:22:36 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:27:45 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	141	28.200	28.142
sd	0.000			0.008	11.874	2.375	2.375
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	91,150	18,230.000	18,229.703
sd	0.000			0.017	301.911	60.382	60.382

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-6322;B2

Repeat 37

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:29:32 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:34:42 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	160	32.000	31.942
sd	0.000			0.008	12.649	2.530	2.530
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	91,052	18,210.400	18,210.103
sd	0.000			0.017	301.748	60.350	60.350

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-6322;B1

Repeat 38

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:43:37 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:48:46 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	182	36.400	36.342
sd	0.000			0.008	13.491	2.698	2.698
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	94,979	18,995.800	18,995.503
sd	0.000			0.017	308.187	61.637	61.637

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-6322;B8

Repeat 38

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 5:51:36 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 5:56:45 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	117	23.400	23.342
sd	0.000			0.008	10.817	2.163	2.163
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	78,950	15,790.000	15,789.703
sd	0.000			0.017	280.980	56.196	56.196

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-6322;B7

Repeat 39

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 6:07:09 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 6:12:19 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	154	30.800	30.742
sd	0.000			0.008	12.410	2.482	2.482
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	82,188	16,437.600	16,437.303
sd	0.000			0.017	286.684	57.337	57.337

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-6322;B6

Repeat 40

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 6:19:54 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 6:25:04 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	143	28.600	28.542
sd	0.000			0.008	11.958	2.392	2.392
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	82,434	16,486.800	16,486.503
sd	0.000			0.017	287.113	57.423	57.423

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-6322;B5

Repeat 41

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 6:32:25 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 6:37:34 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	126	25.200	25.142
sd	0.000			0.008	11.225	2.245	2.245
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	83,407	16,681.400	16,681.103
sd	0.000			0.017	288.803	57.761	57.761

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-6322;B4

Repeat 43

Carrier No. 0

Batch ID M122627

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/3/2013 6:51:10 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/3/2013 6:56:19 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	129	25.800	25.742
sd	0.000			0.008	11.358	2.272	2.272
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	86,754	17,350.800	17,350.503
sd	0.000			0.017	294.540	58.908	58.908

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

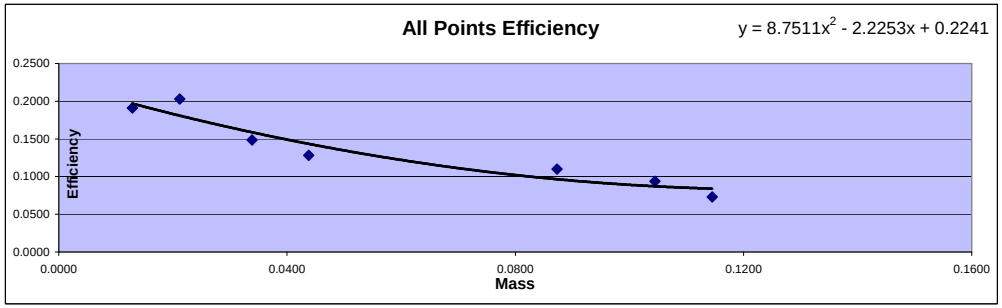
*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Curve is for Gross Alpha

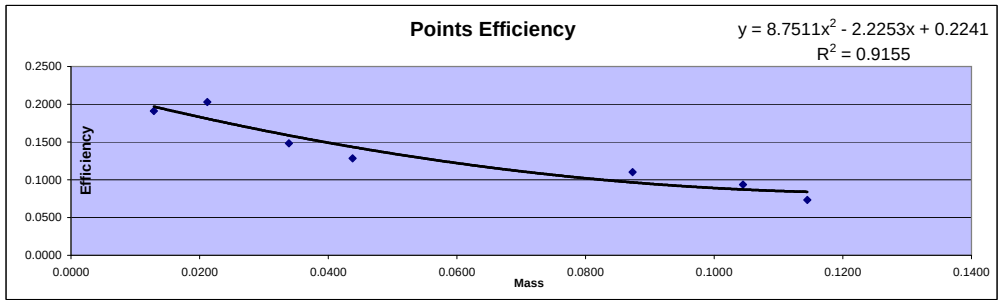
Purple 10

Detector ID	Sample ID	Count Date	Count Time	Alpha Counts	Net CPM	DPM	Th-230 Efficiency	Standard Aliquot	Mass
10	ICABT-51465;A1	1/17/2016 19:02	40	18150	453.750	2374.5	0.1911	1mL	0.0129
10	ICABT-51465;A2	1/17/2016 18:09	40	19262	481.550	2374.5	0.2028	1mL	0.0212
10	ICABT-51465;A3	1/17/2016 17:25	40	14102	352.550	2374.5	0.1485	1mL	0.0339
10	ICABT-51465;A4	1/17/2016 23:37	40	12188	304.700	2374.5	0.1283	1mL	0.0438
10	ICABT-51465;A6	1/17/2016 21:41	40	20898	522.450	4749.0	0.1100	2mL	0.0873
10	ICABT-51465;A7	1/17/2016 20:45	40	17813	445.325	4749.0	0.0938	2mL	0.1045
10	ICABT-51465;A8	1/17/2016 19:57	40	13886	347.150	4749.0	0.0731	2mL	0.1145

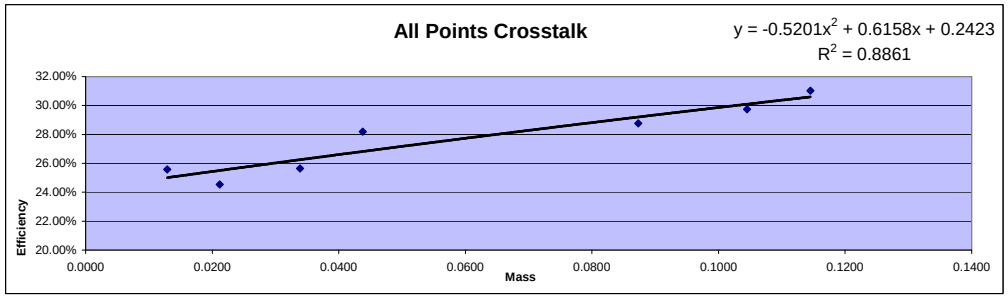
Mass	Measured Efficiency	Theoretical Efficiency	Percent Δ Efficiency
0.0129	0.1911	0.1968	-2.92%
0.0212	0.2028	0.1809	12.13%
0.0339	0.1485	0.1587	-6.46%
0.0438	0.1283	0.1434	-10.53%
0.0873	0.1100	0.0965	13.97%
0.1045	0.0938	0.0871	7.64%
0.1145	0.0731	0.0840	-13.01%



Mass	Efficiency
0.0129	0.1911
0.0212	0.2028
0.0339	0.1485
0.0438	0.1283
0.0873	0.1100
0.1045	0.0938
0.1145	0.0731



Detector ID	Sample ID	Mass	Count Time	Alpha Counts	Beta Counts	Alpha CPM	Beta CPM	% α into β	
10	ICABT-51465;A1	0.0129	40.00	18150	6242	453.75	156.05	25.59%	Min
10	ICABT-51465;A2	0.0212	40.00	19262	6260	481.55	156.50	24.53%	24.53%
10	ICABT-51465;A3	0.0339	40.00	14102	4866	352.55	121.65	25.65%	
10	ICABT-51465;A4	0.0438	40.00	12188	4784	304.70	119.60	28.19%	Max
10	ICABT-51465;A6	0.0873	40.00	20898	8442	522.45	211.05	28.77%	
10	ICABT-51465;A7	0.1045	40.00	17813	7538	445.33	188.45	29.73%	Mean
10	ICABT-51465;A8	0.1145	40.00	13886	6246	347.15	156.15	31.03%	27.64%



Standard ID
Thorium-230
Th-230_00016
Container#: 51465
Cert #: 92523 Ref. date 11/29/2012
Activity 2374.5 dpm/mL

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-51465;A3

Repeat 57

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 5:25:43 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 6:05:47 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	14,102	352.550	352.492
sd	0.000			0.008	118.752	2.969	2.969
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	4,866	121.650	121.301
sd	0.000			0.019	69.757	1.744	1.744

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-51465;A2

Repeat 58

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 6:09:47 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 6:49:52 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	19,262	481.550	481.492
sd	0.000			0.008	138.788	3.470	3.470
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	6,260	156.500	156.151
sd	0.000			0.019	79.120	1.978	1.978

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-51465;A1

Repeat 59

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 7:02:53 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 7:42:59 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	18,150	453.750	453.692
sd	0.000			0.008	134.722	3.368	3.368
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	6,242	156.050	155.701
sd	0.000			0.019	79.006	1.975	1.975

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-51465;A8

Repeat 60

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 7:57:57 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 8:38:02 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	13,886	347.150	347.092
sd	0.000			0.008	117.839	2.946	2.946
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	6,246	156.150	155.801
sd	0.000			0.019	79.032	1.976	1.976

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-51465;A7

Repeat 61

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 8:45:46 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 9:25:52 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	17,813	445.325	445.267
sd	0.000			0.008	133.465	3.337	3.337
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	7,538	188.450	188.101
sd	0.000			0.019	86.822	2.171	2.171

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-51465;A6

Repeat 139

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 9:41:47 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 10:21:53 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	20,898	522.450	522.392
sd	0.000			0.008	144.561	3.614	3.614
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	8,442	211.050	210.701
sd	0.000			0.019	91.880	2.297	2.297

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-51465;A5

Repeat 63

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 10:54:07 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 11:34:20 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 40.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	17,134	428.350	428.292
sd	0.000			0.008	130.897	3.272	3.272
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	7,597	189.925	189.576
sd	0.000			0.019	87.161	2.179	2.179

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICABT-51465;A4

Repeat 64

Carrier No. 0

Batch ID m153000

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/17/2016 11:37:10 PM

Count Ended 1/18/2016 12:17:15 AM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 40.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	12,188	304.700	304.642
sd	0.000			0.008	110.399	2.760	2.760
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	4,784	119.600	119.251
sd	0.000			0.019	69.166	1.729	1.729

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Neptunium Calibrations

Orange - Np Calculations 2013

Detector	Sample ID	Count Start Time	Time Counted Minutes	Decay Time - Decimal Format Hours	Beta	Beta BKG CPM	Net CPM	Total Net Counts	DPM	Decay Correction	Corrected Counts	Known Counts	Chemical Recovery	Detector Efficiency
2	ICNP-29730;NP01	1/29/2013 12:30	10	4.598	11549	0.286	1154.614	11546.14	2219.8	0.9452	12215.43	22198	0.8646	0.636
2	ICNP-29730;NP02	1/29/2013 12:17	10	4.374	11418	0.286	1141.514	11415.14	2219.8	0.9478	12043.73	22198	0.8754	0.620
2	ICNP-29730;NP03	1/29/2013 12:01	10	4.113	11181	0.286	1117.814	11178.14	2219.8	0.9508	11756.02	22198	0.9276	0.571
2	ICNP-29730;NP04	1/29/2013 12:42	10	4.791	11482	0.286	1147.914	11479.14	2219.8	0.9430	12173.31	22198	0.942	0.582

Detector	AVERAGE EFFICENCY
2	0.602

Am-243
Cert.# 85737-334
Std # Am-243_Cal NP_00001
Ref. date: 9/19/2011
Ref. activity: 2219.8 dpm/mL
Volume: 1.0mL

NP-237
Cert.# 84458-334
Std # NP-237_00007 #11026
Ref. date: 4/21/2011
Ref. activity: 69.22 dpm/mL
Volume: 0.5mL

The decay time of the Np-239 is determined from the separation time to halfway through the count time.
The separation time is the time at which the load solution completely runs through the Teva cartridge.
For the calibration the separation time was 8:00am on 1/29/2013
The half life of Np-239 is 56.56 hours.
For the calibration the Total net counts is the count time times the net counts.
For the calibration the Decay factor is the net time from separation to the middle of the count time in hours, divided by the half life of Np-239 which is 56.56 hours multiplied by -0.693. This result is then typed in as the x value for ex.
The known counts for the calibration is the count time times the Np-239 activity.
The detector efficiency is the Corrected counts divided by the Known counts.
For the samples the Tracer DPM times the volume used times the count time times the detector efficiencey gives the Known counts.
The total counts are determined from the sample count time times the net counts divided by the decay corrrection.
The percent recovery is determined from the Corrected counts divided by the Known counts.

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - C

Addr: 2

Sample ID ICNP-29730;NP03

Repeat 4

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 12:01:48 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 12:11:51 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 10.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.070	304	30.400	30.330
sd	0.000			0.008	17.436	1.744	1.744
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.286	11,181	1,118.100	1,117.814
sd	0.000			0.017	105.740	10.574	10.574

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - C

Addr: 2

Sample ID ICNP-29730;NP02

Repeat 5

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 12:17:28 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 12:27:30 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 10.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.070	299	29.900	29.830
sd	0.000			0.008	17.292	1.729	1.729
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.286	11,418	1,141.800	1,141.514
sd	0.000			0.017	106.855	10.686	10.686

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - C

Addr: 2

Sample ID ICNP-29730;NP01

Repeat 5

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 12:30:52 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 12:40:54 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 10.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.070	316	31.600	31.530
sd	0.000			0.008	17.776	1.778	1.778
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.286	11,549	1,154.900	1,154.614
sd	0.000			0.017	107.466	10.747	10.747

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - C

Addr: 2

Sample ID ICNP-29730;NP04

Repeat 6

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 12:42:29 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 12:52:32 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 10.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.070	266	26.600	26.530
sd	0.000			0.008	16.310	1.631	1.631
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.286	11,482	1,148.200	1,147.914
sd	0.000			0.017	107.154	10.715	10.715

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Orange - Np Calculations 2013

Detector	Sample ID	Count Start Time	Time Counted Minutes	Decay Time - Decimal Format Hours	Beta	Beta BKG CPM	Net CPM	Total Net Counts	DPM	Decay Correction	Corrected Counts	Known Counts	Chemical Recovery	Detector Efficiency
3	ICNP-29730;NP01	1/29/2013 12:42	10	4.792	11866	0.356	1186.244	11862.44	2219.8	0.9430	12579.94	22198	0.8646	0.655
3	ICNP-29730;NP02	1/29/2013 12:30	10	4.599	11327	0.356	1132.344	11323.44	2219.8	0.9452	11979.97	22198	0.8754	0.617
3	ICNP-29730;NP03	1/29/2013 12:17	10	4.376	11524	0.356	1152.044	11520.44	2219.8	0.9478	12155.13	22198	0.9276	0.590
3	ICNP-29730;NP04	1/29/2013 12:01	10	4.114	11518	0.356	1151.444	11514.44	2219.8	0.9508	12109.85	22198	0.942	0.579

Detector	AVERAGE EFFICENCY
3	0.610

Am-243
Cert.# 85737-334
Std # Am-243_Cal NP_00001
Ref. date: 9/19/2011
Ref. activity: 2219.8 dpm/mL
Volume: 1.0mL

NP-237
Cert.# 84458-334
Std # NP-237_00007 #11026
Ref. date: 4/21/2011
Ref. activity: 69.22 dpm/mL
Volume: 0.5mL

The decay time of the Np-239 is determined from the separation time to halfway through the count time.
The separation time is the time at which the load solution completely runs through the Teva cartridge.
For the calibration the separation time was 8:00am on 1/29/2013
The half life of Np-239 is 56.56 hours.
For the calibration the Total net counts is the count time times the net counts.
For the calibration the Decay factor is the net time from separation to the middle of the count time in hours, divided by the half life of Np-239 which is 56.56 hours multiplied by -0.693. This result is then typed in as the x value for ex.
The known counts for the calibration is the count time times the Np-239 activity.
The detector efficiency is the Corrected counts divided by the Known counts.
For the samples the Tracer DPM times the volume used times the count time times the detector efficiencey gives the Known counts.
The total counts are determined from the sample count time times the net counts divided by the decay corrrection.
The percent recovery is determined from the Corrected counts divided by the Known counts.

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - D

Addr: 3

Sample ID ICNP-29730;NP04

Repeat 3

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 12:01:51 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 12:11:54 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 10.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.065	297	29.700	29.635
sd	0.000			0.008	17.234	1.723	1.723
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.356	11,518	1,151.800	1,151.444
sd	0.000			0.019	107.322	10.732	10.732

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - D

Addr: 3

Sample ID ICNP-29730;NP03

Repeat 5

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 12:17:32 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 12:27:34 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 10.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.065	314	31.400	31.335
sd	0.000			0.008	17.720	1.772	1.772
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.356	11,524	1,152.400	1,152.044
sd	0.000			0.019	107.350	10.735	10.735

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - D

Addr: 3

Sample ID ICNP-29730;NP02

Repeat 6

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 12:30:55 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 12:40:58 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 10.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.065	321	32.100	32.035
sd	0.000			0.008	17.916	1.792	1.792
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.356	11,327	1,132.700	1,132.344
sd	0.000			0.019	106.428	10.643	10.643

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - D

Addr: 3

Sample ID ICNP-29730;NP01

Repeat 6

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***l***	**sd**	0 ***l***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 1/29/2013 12:42:32 PM

Count Ended 1/29/2013 12:52:36 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 10.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.065	315	31.500	31.435
sd	0.000			0.008	17.748	1.775	1.775
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.356	11,866	1,186.600	1,186.244
sd	0.000			0.019	108.931	10.893	10.893

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Tb = Ts < 10

Error = .00 **x sd**

Orange - Np Calculations 2013

Detector	Sample ID	Count Start Time	Time Counted Minutes	Decay Time - Decimal Format Hours	Beta	Beta BKG CPM	Net CPM	Total Net Counts	DPM	Decay Correction	Corrected Counts	Known Counts	Chemical Recovery	Detector Efficiency
5	ICNP-29730;NP01	1/29/2013 13:28	12	5.576	13637	0.346	1136.07067	13632.85	2219.8	0.9339	14597.01	26638	0.8646	0.634
5	ICNP-29730;NP02	1/29/2013 12:58	12	5.077	14104	0.346	1174.98733	14099.85	2219.8	0.9397	15004.99	26638	0.8754	0.643
5	ICNP-29730;NP03	1/29/2013 14:12	12	6.305	13813	0.346	1150.73733	13808.85	2219.8	0.9256	14918.14	26638	0.9276	0.604
5	ICNP-29730;NP04	1/29/2013 13:57	12	6.066	13751	0.346	1145.57067	13746.85	2219.8	0.9284	14807.72	26638	0.942	0.590

Detector	AVERAGE EFFICENCY
5	0.618

Am-243
Cert.# 85737-334
Std # Am-243_Cal NP_00001
Ref. date: 9/19/2011
Ref. activity: 2219.8 dpm/mL
Volume: 1.0mL

NP-237
Cert.# 84458-334
Std # NP-237_00007 #11026
Ref. date: 4/21/2011
Ref. activity: 69.22 dpm/mL
Volume: 0.5mL

The decay time of the Np-239 is determined from the separation time to halfway through the count time.
The separation time is the time at which the load solution completely runs through the Teva cartridge.
For the calibration the separation time was 8:00am on 1/29/2013
The half life of Np-239 is 56.56 hours.
For the calibration the Total net counts is the count time times the net counts.
For the calibration the Decay factor is the net time from separation to the middle of the count time in hours, divided by the half life of Np-239 which is 56.56 hours multiplied by -0.693. This result is then typed in as the x value for ex.
The known counts for the calibration is the count time times the Np-239 activity.
The detector efficiency is the Corrected counts divided by the Known counts.
For the samples the Tracer DPM times the volume used times the count time times the detector efficiencey gives the Known counts.
The total counts are determined from the sample count time times the net counts divided by the decay corrrection.
The percent recovery is determined from the Corrected counts divided by the Known counts.

Alpha/Beta Count Results

Sample Activity Report

Orange 4-7 - B

Addr: 5

Sample ID ICNP-29730;NP02

Repeat 8

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 12:58:36 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 1:10:40 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 12.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.080	123	10.250	10.170
sd	0.000			0.009	11.091	0.924	0.924
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.346	14,104	1,175.333	1,174.987
sd	0.000			0.019	118.760	9.897	9.897

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 4-7 - B

Addr: 5

Sample ID ICNP-29730;NP01

Repeat 8

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 1:28:32 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 1:40:34 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 12.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.080	153	12.750	12.670
sd	0.000			0.009	12.369	1.031	1.031
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.346	13,637	1,136.417	1,136.071
sd	0.000			0.019	116.778	9.731	9.731

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 4-7 - B

Addr: 5

Sample ID ICNP-29730;NP04

Repeat 9

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 1:57:59 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 2:10:02 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 12.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.080	136	11.333	11.253
sd	0.000			0.009	11.662	0.972	0.972
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.346	13,751	1,145.917	1,145.571
sd	0.000			0.019	117.265	9.772	9.772

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Orange 4-7 - B

Addr: 5

Sample ID ICNP-29730;NP03

Repeat 11

Carrier No. 0

Batch ID M122648

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/29/2013 2:12:19 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/29/2013 2:24:21 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 12.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.080	163	13.583	13.503
sd	0.000			0.009	12.767	1.064	1.064
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.346	13,813	1,151.083	1,150.737
sd	0.000			0.019	117.529	9.794	9.794

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha Beta Calibration Verifications

ICV is for Gross Beta
Strontium 90
and
Total Strontium

Purple Beta ICV 2013				
Detector	Low Mass Recovery	Medium Mass Recovery	High Mass Recovery	Mean Recovery
0	97.22%	100.50%	100.16%	99.29%

Beta Activity 2007.869 pCi

Standard ID

Strontium 90
Sr-90_00018 #51512
Cert# 92352 Ref. date 11/29/12

Initial Activity:	2238.7	dpm	
Reference Date:	11/29/2012		
Count Date:	2/4/2013		(or date at which you wish to determine activity)
Elapsed Time:	67.000	days	
Half Life:	10409.625	days	
Exponential Term:	0.995548598		
Corrected Activity:	2228.734647	dpm	
Decay Activity (Sr/Y-90)	4457.469295	dpm	2007.869 pCi

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICVABT-51512;Beta 1

Repeat 19

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 10:27:35 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 10:32:38 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	107	21.400	21.313
sd	0.000			0.009	10.344	2.069	2.069
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	9,402	1,880.400	1,879.995
sd	0.000			0.020	96.964	19.393	19.393

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICVABT-51512;Beta 3

Repeat 43

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 11:10:35 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 11:15:40 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	104	20.800	20.713
sd	0.000			0.009	10.198	2.040	2.040
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	8,700	1,740.000	1,739.595
sd	0.000			0.020	93.274	18.655	18.655

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICVABT-51512;Beta 2

Repeat 26

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 11:19:39 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 11:24:41 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.087	90	18.000	17.913
sd	0.000			0.009	9.487	1.897	1.897
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.405	9,154	1,830.800	1,830.395
sd	0.000			0.020	95.677	19.135	19.135

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

ICV is for Gross Alpha

Purple Alpha ICV 2016				
	Low Mass	Medium Mass	High Mass	Mean
Detector	Recovery	Recovery	Recovery	Recovery
0	96.20%	96.68%	95.70%	102.24%

Standard ID

Thorium-230
Th-230_00019
Container#: 181198
Ref. date 08/08/2013
Activity: 5.0185 pCi/mL

Prep Batch: M163021
Date counted: 1/17/16

	Low Mass	Medium Mass	High Mass
	0.161g	0.0552g	0.0777g
Detector	Activity (pCi/mL)	Activity (pCi/mL)	Activity (pCi/mL)
0	5.22E+00	5.19E+00	5.24E+00

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICVABT-181198;A1

Repeat 1

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 5:23:51 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 5:53:56 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	13,346	444.867	444.722
sd	0.000			0.012	115.525	3.851	3.851
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	4,118	137.267	136.758
sd	0.000			0.023	64.172	2.139	2.139

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICVABT-181198;A3

Repeat 7

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 10:54:54 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 11:24:57 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	7,446	248.200	248.055
sd	0.000			0.012	86.290	2.876	2.876
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	2,702	90.067	89.558
sd	0.000			0.023	51.981	1.733	1.733

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ICVABT-181198;A2

Repeat 8

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 11:37:46 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/18/2016 12:07:49 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	9,026	300.867	300.722
sd	0.000			0.012	95.005	3.167	3.167
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	3,022	100.733	100.224
sd	0.000			0.023	54.973	1.832	1.833

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

ICV is for Gross Beta
Strontium 90
and
Total Strontium

Purple Beta ICV 2013				
Detector	Low Mass Recovery	Medium Mass Recovery	High Mass Recovery	Mean Recovery
4	98.36%	99.21%	99.46%	99.01%

Beta Activity 2007.869 pCi

Standard ID

Strontium 90
Sr-90_00018 #51512
Cert# 92352 Ref. date 11/29/12

Initial Activity:	2238.7	dpm	
Reference Date:	11/29/2012		
Current Date:	2/4/2013		(or date at which you wish to determine activity)
Elapsed Time:	67.000	days	
Half Life:	10409.625	days	
Exponential Term:	0.995548598		
Corrected Activity:	2228.734647	dpm	
Decay Activity (Sr/Y-90)	4457.469295	dpm	2007.869 pCi

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICVABT-51512;Beta 3

Repeat 39

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 10:42:47 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 10:47:50 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	1	0.200	0.147
sd	0.000			0.007	1.000	0.200	0.200
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	8,578	1,715.600	1,715.166
sd	0.000			0.021	92.617	18.523	18.524

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICVABT-51512;Beta 2

Repeat 22

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 10:50:11 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 10:55:13 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	1	0.200	0.147
sd	0.000			0.007	1.000	0.200	0.200
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	8,957	1,791.400	1,790.966
sd	0.000			0.021	94.641	18.928	18.928

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICVABT-51512;Beta 1

Repeat 23

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 10:57:17 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 11:02:19 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.053	2	0.400	0.347
sd	0.000			0.007	1.414	0.283	0.283
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.434	9,396	1,879.200	1,878.766
sd	0.000			0.021	96.933	19.387	19.387

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

ICV is for Gross Alpha

Purple Alpha ICV 2016				
	Low Mass	Medium Mass	High Mass	Mean
Detector	Recovery	Recovery	Recovery	Recovery
4	95.65%	98.32%	98.42%	102.24%

Standard ID

Thorium-230
Th-230_00019
Container#: 181198
Ref. date 08/08/2013
Activity: 5.0185 pCi/mL

Prep Batch: M163021
Date counted: 1/17/16

	Low Mass	Medium Mass	High Mass
	0.161g	0.0552g	0.0777g
Detector	Activity (pCi/mL)	Activity (pCi/mL)	Activity (pCi/mL)
4	5.25E+00	5.10E+00	5.10E+00

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICVABT-181198;A3

Repeat 3

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 7:01:51 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 7:31:55 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	6,916	230.533	230.445
sd	0.000			0.009	83.162	2.772	2.772
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	3,010	100.333	99.817
sd	0.000			0.023	54.863	1.829	1.829

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICVABT-181198;A2

Repeat 4

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 7:56:18 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 8:26:23 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	8,497	283.233	283.145
sd	0.000			0.009	92.179	3.073	3.073
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	3,397	113.233	112.717
sd	0.000			0.023	58.284	1.943	1.943

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ICVABT-181198;A1

Repeat 5

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/17/2016 8:44:17 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/17/2016 9:14:21 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.088	12,928	430.933	430.845
sd	0.000			0.009	113.701	3.790	3.790
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.516	4,400	146.667	146.151
sd	0.000			0.023	66.332	2.211	2.211

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

ICV is for Gross Beta
Strontium 90
and
Total Strontium

Purple Beta ICV 2013				
Detector	Low Mass Recovery	Medium Mass Recovery	High Mass Recovery	Mean Recovery
9	98.16%	99.16%	96.37%	97.90%

Beta Activity 2007.869 pCi

Standard ID

Strontium 90
Sr-90_00018 #51512
Cert# 92352 Ref. date 11/29/12

Initial Activity:	2238.7	dpm	
Reference Date:	11/29/2012		
Current Date:	2/4/2013		(or date at which you wish to determine activity)
Elapsed Time:	67.000	days	
Half Life:	10409.625	days	
Exponential Term:	0.995548598		
Corrected Activity:	2228.734647	dpm	
Decay Activity (Sr/Y-90)	4457.469295	dpm	2007.869 pCi

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICVABT-51512;Beta 2

Repeat 3

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 6:35:05 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 6:40:08 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	14	2.800	2.736
sd	0.000			0.008	3.742	0.748	0.748
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	9,048	1,809.600	1,809.238
sd	0.000			0.019	95.121	19.024	19.024

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICVABT-51512;Beta 1

Repeat 4

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 6:57:03 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 7:02:06 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	28	5.600	5.536
sd	0.000			0.008	5.292	1.058	1.058
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	9,465	1,893.000	1,892.638
sd	0.000			0.019	97.288	19.458	19.458

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICVABT-51512;Beta 3

Repeat 28

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 8:33:02 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 8:38:04 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.064	21	4.200	4.136
sd	0.000			0.008	4.583	0.917	0.917
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.362	8,390	1,678.000	1,677.638
sd	0.000			0.019	91.597	18.319	18.319

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

ICV is for Gross Alpha

Purple Alpha ICV 2016				
	Low Mass	Medium Mass	High Mass	Mean
Detector	Recovery	Recovery	Recovery	Recovery
9	95.59%	94.51%	97.83%	102.24%

Standard ID

Thorium-230
Th-230_00019
Container#: 181198
Ref. date 08/08/2013
Activity: 5.0185 pCi/mL

Prep Batch: M163021
Date counted: 1/18/16

	Low Mass	Medium Mass	High Mass
	0.161g	0.0552g	0.0777g
Detector	Activity (pCi/mL)	Activity (pCi/mL)	Activity (pCi/mL)
9	5.25E+00	5.31E+00	5.13E+00

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICVABT-181198;A2

Repeat 9

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/18/2016 9:07:24 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/18/2016 9:37:28 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	8,994	299.800	299.738
sd	0.000			0.008	94.837	3.161	3.161
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	3,195	106.500	106.115
sd	0.000			0.020	56.524	1.884	1.884

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICVABT-181198;A1

Repeat 10

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/19/2016 12:27:01 AM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/19/2016 12:57:05 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	13,087	436.233	436.171
sd	0.000			0.008	114.398	3.813	3.813
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	4,254	141.800	141.415
sd	0.000			0.020	65.223	2.174	2.174

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ICVABT-181198;A3

Repeat 16

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/19/2016 8:55:50 AM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/19/2016 9:25:53 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.062	7,094	236.467	236.405
sd	0.000			0.008	84.226	2.808	2.808
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.385	2,803	93.433	93.048
sd	0.000			0.020	52.943	1.765	1.765

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

ICV is for Gross Beta
Strontium 90
and
Total Strontium

Purple Beta ICV 2013				
Detector	Low Mass Recovery	Medium Mass Recovery	High Mass Recovery	Mean Recovery
10	98.06%	98.56%	98.06%	98.23%

Beta Activity 2007.869 pCi

Standard ID

Strontium 90
Sr-90_00018 #51512
Cert# 92352 Ref. date 11/29/12

Initial Activity:	2238.7	dpm	
Reference Date:	11/29/2012		
Current Date:	2/4/2013		(or date at which you wish to determine activity)
Elapsed Time:	67.000	days	
Half Life:	10409.625	days	
Exponential Term:	0.995548598		
Corrected Activity:	2228.734647	dpm	
Decay Activity (Sr/Y-90)	4457.469295	dpm	2007.869 pCi

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICVABT-51512;Beta 3

Repeat 21

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 6:35:10 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 6:40:12 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	19	3.800	3.742
sd	0.000			0.008	4.359	0.872	0.872
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	8,525	1,705.000	1,704.703
sd	0.000			0.017	92.331	18.466	18.466

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICVABT-51512;Beta 2

Repeat 4

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 6:57:08 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 7:02:09 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	17	3.400	3.342
sd	0.000			0.008	4.123	0.825	0.825
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	8,978	1,795.600	1,795.303
sd	0.000			0.017	94.752	18.950	18.950

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICVABT-51512;Beta 1

Repeat 5

Carrier No. 0

Batch ID m122640

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 2/4/2013 7:02:55 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 2/4/2013 7:07:57 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	22	4.400	4.342
sd	0.000			0.008	4.690	0.938	0.938
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.297	9,468	1,893.600	1,893.303
sd	0.000			0.017	97.304	19.461	19.461

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

ICV is for Gross Alpha

Purple Alpha ICV 2016				
	Low Mass	Medium Mass	High Mass	Mean
Detector	Recovery	Recovery	Recovery	Recovery
10	96.47%	95.12%	97.28%	102.24%

Standard ID

Thorium-230
Th-230_00019
Container#: 181198
Ref. date 08/08/2013
Activity: 5.0185 pCi/mL

Prep Batch: M163021
Date counted: 1/18/16

	Low Mass	Medium Mass	High Mass
	0.161g	0.0552g	0.0777g
Detector	Activity (pCi/mL)	Activity (pCi/mL)	Activity (pCi/mL)
10	5.20E+00	5.28E+00	5.16E+00

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICVABT-181198;A3

Repeat 9

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/18/2016 9:07:28 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/18/2016 9:37:32 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	7,150	238.333	238.275
sd	0.000			0.008	84.558	2.819	2.819
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	2,820	94.000	93.651
sd	0.000			0.019	53.104	1.770	1.770

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICVABT-181198;A2

Repeat 10

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/19/2016 12:27:04 AM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/19/2016 12:57:08 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	8,992	299.733	299.675
sd	0.000			0.008	94.826	3.161	3.161
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	3,314	110.467	110.118
sd	0.000			0.019	57.567	1.919	1.919

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ICVABT-181198;A1

Repeat 11

Carrier No. 0

Batch ID m163021

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 1/19/2016 1:35:59 AM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 1/19/2016 2:06:03 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 30.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.058	13,205	440.167	440.109
sd	0.000			0.008	114.913	3.830	3.830
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.349	4,412	147.067	146.718
sd	0.000			0.019	66.423	2.214	2.214

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Neptunium Calibration Verifications

Orange - Np ICV 2013

Detector I.D.	Tracer DPM	Tracer Used	Count Time Minutes	1/2 Count Time Hours	Sample ID	Detector Eff.	Known Counts	Sample Counts	BKG CPM	Net CPM	Total Counts	Separation Start Time	Analysis Time	Time to Midpoint	Midpoint Decimal	Decay Correction	Average Chemical Recovery	Corrected Counts	Recovery
2	66.688	3	60	0:30:00	ICVNP-59448;NP03	0.602	7226.31168	6702	0.286	111.41	6684.8	1/30/2013 6:44	1/30/2013 11:57	5:43:58	5.73	0.9322	90.24%	7947.0	109.97%

Standards
Am-243
Cert.# 80973-334
Std # Am-243_00007
Ref. date: 11/3/2009
Ref. activity: 66.688 dpm/mL
Volume: 3mL

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - C

Addr: 2

Sample ID ICVNP-59448;NP03

Repeat 1

Carrier No. 0

Batch ID M132669

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/30/2013 11:57:58 AM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/30/2013 12:58:03 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.070	123	2.050	1.980
sd	0.000			0.008	11.091	0.185	0.185
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.286	6,702	111.700	111.414
sd	0.000			0.017	81.866	1.364	1.365

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Orange - Np ICV 2013

Detector I.D.	Tracer DPM	Tracer Used	Count Time Minutes	1/2 Count Time Hours	Sample ID	Detector Eff.	Known Counts	Sample Counts	BKG CPM	Net CPM	Total Counts	Separation Start Time	Analysis Time	Time to Midpoint	Midpoint Decimal	Decay Correction	Average Chemical Recovery	Corrected Counts	Recovery
3	66.688	3	60	0:30:00	ICVNP-59448;NP04	0.610	7322.3424	6686	0.356	111.08	6664.6	1/30/2013 6:44	1/30/2013 11:58	5:44:04	5.73	0.9321	90.24%	7923.2	108.21%

Standards
Am-243
Cert.# 80973-334
Std # Am-243_00007
Ref. date: 11/3/2009
Ref. activity: 66.688 dpm/mL
Volume: 3mL

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - D

Addr: 3

Sample ID ICVNP-59448;NP04

Repeat 1

Carrier No. 0

Batch ID M132669

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/30/2013 11:58:04 AM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/30/2013 12:58:09 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.065	127	2.117	2.052
sd	0.000			0.008	11.269	0.188	0.188
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.356	6,686	111.433	111.077
sd	0.000			0.019	81.768	1.363	1.363

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Orange - Np ICV 2013

Detector I.D.	Tracer DPM	Tracer Used	Count Time Minutes	1/2 Count Time Hours	Sample ID	Detector Eff.	Known Counts	Sample Counts	BKG CPM	Net CPM	Total Counts	Separation Start Time	Analysis Time	Time to Midpoint	Midpoint Decimal	Decay Correction	Average Chemical Recovery	Corrected Counts	Recovery
5	66.688	3	60	0:30:00	ICVNP-59448;NP06	0.618	7418.37312	6793	0.346	112.87	6772.2	1/30/2013 6:44	1/30/2013 11:58	5:44:20	5.74	0.9321	90.24%	8051.5	108.53%

Standards
Am-243
Cert.# 80973-334
Std # Am-243_00007
Ref. date: 11/3/2009
Ref. activity: 66.688 dpm/mL
Volume: 3mL

Alpha/Beta Count Results

Sample Activity Report

Orange 4-7 - B

Addr: 5

Sample ID ICVNP-59448;NP06

Repeat 1

Carrier No. 0

Batch ID M132669

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 1/30/2013 11:58:20 AM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 1/30/2013 12:58:26 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.080	13	0.217	0.137
sd	0.000			0.009	3.606	0.060	0.061
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.346	6,793	113.217	112.871
sd	0.000			0.019	82.420	1.374	1.374

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Alpha Beta Annual Calibration Verifications

Purple Beta ACV 2016				
Detector	Low Mass Recovery	Medium Mass Recovery	High Mass Recovery	Mean Recovery
0	94.52%	95.17%	96.24%	95.31%

Standard ID

Strontium 90

Sr-90_00018 #51512

Cert# 92352 Ref. date 11/29/12

Initial Activity:	2238.7	dpm	
Reference Date:	11/29/2012		
Count Date:	3/21/2016		(or date at which you wish to determine activity)
Elapsed Time:	1208.000	days	
Half Life:	10409.625	days	
Exponential Term:	0.922712786		
Corrected Activity:	2065.677113	dpm	
Beta Decay Activity (Sr/Y-90)	4131.354226	dpm	1860.97 pCi/mL

Prep Batch: 239589

Detector	Beta 1	Activity	Units
0	Low Mass	1.759E+03	pCi/mL

Beta 2	Activity	Units
Medium Mass	1.771E+03	pCi/mL

Beta 3	Activity	Units
High Mass	1.791E+03	pCi/mL

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ACVABT-51512;B1

Repeat 53

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 1:14:50 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 1:19:53 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.145	51	10.200	10.055
sd	0.000			0.012	7.141	1.428	1.428
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.509	8,471	1,694.200	1,693.691
sd	0.000			0.023	92.038	18.408	18.408

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ACVABT-51512;B3

Repeat 55

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 3:29:49 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 3:34:50 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.092	44	8.800	8.708
sd	0.000			0.010	6.633	1.327	1.327
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.448	7,746	1,549.200	1,548.752
sd	0.000			0.021	88.011	17.602	17.602

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 0-3 - A

Addr: 0

Sample ID ACVABT-51512;B2

Repeat 56

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 4:02:19 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 4:07:22 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.092	57	11.400	11.308
sd	0.000			0.010	7.550	1.510	1.510
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.448	8,034	1,606.800	1,606.352
sd	0.000			0.021	89.633	17.927	17.927

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Purple Beta ACV 2016				
Detector	Low Mass Recovery	Medium Mass Recovery	High Mass Recovery	Mean Recovery
4	98.23%	95.00%	96.51%	96.58%

Standard ID

Strontium 90

Sr-90_00018 #51512

Cert# 92352 Ref. date 11/29/12

Initial Activity:	2238.7	dpm	
Reference Date:	11/29/2012		
Current Date:	3/21/2016		(or date at which you wish to determine activity)
Elapsed Time:	1208.000	days	
Half Life:	10409.625	days	
Exponential Term:	0.922712786		
Corrected Activity:	2065.677113	dpm	
Beta Decay Activity (Sr/Y-90)	4131.354226	dpm	1860.97 pCi/mL

Prep Batch: 239589

Detector	Beta 1	Activity	Units
4	Low Mass	1.828E+03	pCi/mL

Beta 2	Activity	Units
Medium Mass	1.768E+03	pCi/mL

Beta 3	Activity	Units
High Mass	1.796E+03	pCi/mL

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ACVABT-51512;B1

Repeat 57

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 4:43:16 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 4:48:17 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.089	1	0.200	0.111
sd	0.000			0.009	1.000	0.200	0.200
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.445	8,697	1,739.400	1,738.955
sd	0.000			0.021	93.258	18.652	18.652

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ACVABT-51512;B3

Repeat 59

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 5:56:37 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 6:01:40 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.089	0	0.000	-0.089
sd	0.000			0.009	0.000	0.000	0.189
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.445	7,717	1,543.400	1,542.955
sd	0.000			0.021	87.846	17.569	17.569

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 4-7 - A

Addr: 4

Sample ID ACVABT-51512;B2

Repeat 60

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty	0 ***Sample***	**sd**	0 ***Sample***
Residual Wt	0 ***mg***	**sd**	0 ***mg***

Count Began 3/21/2016 8:30:29 PM

Count Ended 3/21/2016 8:35:31 PM

Collection Date 1 1/1/1900

Collection Date 2 1/1/1900

Half Life 0.00 ***days***

Decay Factor 1.000

Sample Count Time 5.00 ***mins***

Background Count Time 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.089	2	0.400	0.311
sd	0.000			0.009	1.414	0.283	0.283
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.445	7,948	1,589.600	1,589.155
sd	0.000			0.021	89.152	17.830	17.830

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected**

MDC Method Currie

Error = .00 **x sd**

Purple Beta ACV 2016				
Detector	Low Mass Recovery	Medium Mass Recovery	High Mass Recovery	Mean Recovery
9	97.91%	94.74%	94.53%	95.72%

Standard ID

Strontium 90

Sr-90_00018 #51512

Cert# 92352 Ref. date 11/29/12

Initial Activity:	2238.7	dpm	
Reference Date:	11/29/2012		
Current Date:	3/21/2016		(or date at which you wish to determine activity)
Elapsed Time:	1208.000	days	
Half Life:	10409.625	days	
Exponential Term:	0.922712786		
Corrected Activity:	2065.677113	dpm	
Beta Decay Activity (Sr/Y-90)	4131.354226	dpm	1860.97 pCi/mL

Standard ID

Strontium 90

Cert# 92352 Ref. date 11/29/12

Initial Activity:	2238.7	dpm	
Reference Date:	11/29/2012		
Current Date:	3/22/2016		(or date at which you wish to determine activity)
Elapsed Time:	1209.000	days	
Half Life:	10409.625	days	
Exponential Term:	0.922651347		
Corrected Activity:	2065.53957	dpm	
Beta Decay Activity (Sr/Y-90)	4131.07914	dpm	1860.846 pCi/mL

Prep Batch: 239589

Detector	Beta 1	Activity	Units
9	Low Mass	1.822E+03	pCi/mL

Beta 2	Activity	Units
Medium Mass	1.763E+03	pCi/mL

Beta 3	Activity	Units
High Mass	1.759E+03	pCi/mL

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ACVABT-51512;B2

Repeat 61

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 9:32:43 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 9:37:44 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.056	11	2.200	2.144
sd	0.000			0.007	3.317	0.663	0.663
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.307	8,012	1,602.400	1,602.093
sd	0.000			0.018	89.510	17.902	17.902

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ACVABT-51512;B1

Repeat 62

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 9:45:08 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 9:50:10 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.056	9	1.800	1.744
sd	0.000			0.007	3.000	0.600	0.600
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.307	8,749	1,749.800	1,749.493
sd	0.000			0.018	93.536	18.707	18.707

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - B

Addr: 9

Sample ID ACVABT-51512;B3

Repeat 68

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/22/2016 12:44:36 AM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/22/2016 12:49:41 AM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.056	11	2.200	2.144
sd	0.000			0.007	3.317	0.663	0.663
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.307	7,628	1,525.600	1,525.293
sd	0.000			0.018	87.338	17.468	17.468

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Purple Beta ACV 2016				
Detector	Low Mass Recovery	Medium Mass Recovery	High Mass Recovery	Mean Recovery
10	97.42%	93.98%	95.70%	95.70%

Standard ID

Strontium 90

Sr-90_00018 #51512

Cert# 92352 Ref. date 11/29/12

Initial Activity:	2238.7	dpm	
Reference Date:	11/29/2012		
Current Date:	3/21/2016		(or date at which you wish to determine activity)
Elapsed Time:	1208.000	days	
Half Life:	10409.625	days	
Exponential Term:	0.922712786		
Corrected Activity:	2065.677113	dpm	
Beta Decay Activity (Sr/Y-90)	4131.354226	dpm	1860.97 pCi/mL

Prep Batch: 239589

Detector	Beta 1	Activity	Units
10	Low Mass	1.813E+03	pCi/mL

Beta 2	Activity	Units
Medium Mass	1.749E+03	pCi/mL

Beta 3	Activity	Units
High Mass	1.781E+03	pCi/mL

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ACVABT-51512;B3

Repeat 61

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 9:32:49 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 9:37:51 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.037	8	1.600	1.563
sd	0.000			0.006	2.828	0.566	0.566
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.342	7,712	1,542.400	1,542.058
sd	0.000			0.018	87.818	17.564	17.564

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ACVABT-51512;B2

Repeat 62

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 9:45:11 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 9:50:13 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.037	7	1.400	1.363
sd	0.000			0.006	2.646	0.529	0.529
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.342	7,935	1,587.000	1,586.658
sd	0.000			0.018	89.079	17.816	17.816

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Alpha/Beta Count Results

Sample Activity Report

Purple 8-11 - C

Addr: 10

Sample ID ACVABT-51512;B1

Repeat 63

Carrier No. 0

Batch ID 239589

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 ***Sample*** **sd** 0 ***Sample***

Residual Wt 0 ***mg*** **sd** 0 ***mg***

Count Began 3/21/2016 11:42:26 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 ***days***

Count Ended 3/21/2016 11:47:36 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 5.00 ***mins*** **Background Count Time** 1,000.00 ***mins***

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.037	8	1.600	1.563
sd	0.000			0.006	2.828	0.566	0.566
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.342	8,719	1,743.800	1,743.458
sd	0.000			0.018	93.376	18.675	18.675

	Net Activity dpm	LLD dpm	MDC DPM	MPC DPM	Net Concentration * DPM	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	0.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Currie **Error =** .00 **x sd**

Neptunium Annual Calibration Verifications

Orange Np ACV 2016

Detector	Am-243 Yield
2	102.76%

Standard ID

Am-243
Am-243_00014
Cert # 80973-334 Ref. Date 11/03/2009
Activity 66.688 dpm/mL
Expected (3mL) 200.064 dpm/mL

Prep Batch: 239982
Date counted: 3/10/2016

Detector	Results of Activity (dpm/mL)
2	205.586

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - C

Addr: 2

Sample ID ACVNP-783093;NP3

Repeat 1

Carrier No. 0

Batch ID 239982

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 3/10/2016 2:25:47 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 3/10/2016 3:25:52 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.081	114	1.900	1.819
sd	0.000			0.009	10.677	0.178	0.178
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.361	6,843	114.050	113.689
sd	0.000			0.019	82.722	1.379	1.379

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Orange Np ACV 2016

Detector	Am-243 Yield
3	98.76%

Standard ID

Am-243
Am-243_00014
Cert # 80973-334 Ref. Date 11/03/2009
Activity 66.688 dpm/mL
Expected (3mL) 200.064 dpm/mL

Prep Batch: 239982
Date counted: 3/10/2016

Detector	Results of Activity (dpm/mL)
3	197.58

Alpha/Beta Count Results

Sample Activity Report

Orange 0-3 - D

Addr: 3

Sample ID ACVNP-783093;NP4

Repeat 1

Carrier No. 0

Batch ID 239982

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 3/10/2016 2:25:52 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 3/10/2016 3:25:57 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.096	118	1.967	1.871
sd	0.000			0.010	10.863	0.181	0.181
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.580	6,677	111.283	110.703
sd	0.000			0.024	81.713	1.362	1.362

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Orange Np ACV 2016

Detector	Am-243 Yield
5	99.49%

Standard ID

Am-243
Am-243_00014
Cert # 80973-334 Ref. Date 11/03/2009
Activity 66.688 dpm/mL
Expected (3mL) 200.064 dpm/mL

Prep Batch: 239982
Date counted: 3/10/2016

Detector	Results of Activity (dpm/mL)
5	199.04

Alpha/Beta Count Results

Sample Activity Report

Orange 4-7 - B

Addr: 5

Sample ID ACVNP-783093;NP1

Repeat 2

Carrier No. 0

Batch ID 239982

Count Method Gross Alpha Beta

Detector Volts 1515

Sample Qty 0 *l* **sd** 0 *l*

Residual Wt 0 *mg* **sd** 0 *mg*

Count Began 3/10/2016 3:45:35 PM **Collection Date 1** 1/1/1900 **Half Life** 0.00 *days*

Count Ended 3/10/2016 4:45:40 PM **Collection Date 2** 1/1/1900 **Decay Factor** 1.000

Sample Count Time 60.00 *mins* **Background Count Time** 1,000.00 *mins*

	Efficiency %	Attenuation Factor	Activity Divisor	Background cpm	Gross counts	Gross cpm	Net cpm
Alpha	0.000	1.000	1.000	0.066	6	0.100	0.034
sd	0.000			0.008	2.449	0.041	0.042
A to B	0.000	1.000				0.000	
sd	0.000					0.000	
Beta	0.000	1.000	1.000	0.289	6,687	111.450	111.161
sd	0.000			0.017	81.774	1.363	1.363

	Net Activity dpm	LLD dpm	MDC pCi/l	MPC pCi/l	Net Concentration * pCi/l	Conc / MPC Ratio
Alpha	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	
Beta	0.000	0.000	0.000	1.000	0.000 ± 0.000	0.000
sd	0.000				0.000	

*** Note: Decay Corrected** **MDC Method** Tb = Ts < 10 **Error =** .00 **x sd**

Monthly Backgrounds

Alpha/Beta Count Results

Source Count Report

Orange 0-3 - C

Addr: 2

Sample ID ICB
ICB;Monthly Background Check

Repeat 1391
Carrier No. 0

Batch ID ICB;Monthly Background

Detector Volts 1515

Residual Wt 0 *mg*
Half Life 0.00 *Years*
Count Began 8/6/2016 5:29:33 PM
Calibration Date 8/4/2012 9:20:16 AM
Decay Factor 1.000
Count Ended 8/7/2016 10:09:56 AM
Backgrounds From

Sample Count Time 1,000.00 *mins*
Background Count Time 0.00

	Gross counts	Gross cpm	Background cpm	Net cpm
Alpha	57	0.057	0.000	0.057
sd	7.550	0.008	0.000	0.008
Beta	277	0.277	0.000	0.277
sd	16.643	0.017	0.000	0.017

	Uncorrected DPM	Corrected DPM	Corrected dpm	Efficiency %
Alpha	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000
Alpha to Beta				0.000
sd				0.000
Beta	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000

Alpha/Beta Count Results

Source Count Report

Orange 0-3 - D

Addr: 3

Sample ID ICB
ICB;Monthly Background Check

Repeat 1392
Carrier No. 0

Batch ID ICB;Monthly Background

Detector Volts 1515

Residual Wt 0 *mg*
Half Life 0.00 *Years*
Count Began 8/6/2016 5:30:35 PM
Calibration Date 8/4/2012 9:20:16 AM
Decay Factor 1.000
Count Ended 8/7/2016 10:10:02 AM
Backgrounds From

Sample Count Time 1,000.00 *mins*
Background Count Time 0.00

	Gross counts	Gross cpm	Background cpm	Net cpm
Alpha	95	0.095	0.000	0.095
sd	9.747	0.010	0.000	0.010
Beta	555	0.555	0.000	0.555
sd	23.558	0.024	0.000	0.024

	Uncorrected DPM	Corrected DPM	Corrected dpm	Efficiency %
Alpha	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000
Alpha to Beta				0.000
sd				0.000
Beta	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000

Alpha/Beta Count Results

Source Count Report

Orange 4-7 - B

Addr: 5

Sample ID ICB
ICB;Monthly Background Check

Repeat 1388
Carrier No. 0

Batch ID ICB;Monthly Background

Detector Volts 1515

Residual Wt 0 *mg*
Half Life 0.00 *Years*
Count Began 8/6/2016 4:25:10 PM
Calibration Date 8/4/2012 9:20:16 AM
Decay Factor 1.000
Count Ended 8/7/2016 9:05:09 AM
Backgrounds From

Sample Count Time 1,000.00 *mins*
Background Count Time 0.00

	Gross counts	Gross cpm	Background cpm	Net cpm
Alpha	135	0.135	0.000	0.135
sd	11.619	0.012	0.000	0.012
Beta	421	0.421	0.000	0.421
sd	20.518	0.021	0.000	0.021

	Uncorrected DPM	Corrected DPM	Corrected dpm	Efficiency %
Alpha	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000
Alpha to Beta				0.000
sd				0.000
Beta	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000

Alpha/Beta Count Results

Source Count Report

Purple 0-3 - A

Addr: 0

Sample ID ICB
ICB;Monthly Background

Repeat 1336
Carrier No. 0

Batch ID ICB;Monthly Background

Detector Volts 1515

Residual Wt 0 *mg*
Half Life 0.00 *Years*
Count Began 8/6/2016 3:33:02 PM
Calibration Date 8/3/2012 9:00:25 PM
Decay Factor 1.000
Count Ended 8/7/2016 8:13:59 AM
Backgrounds From

Sample Count Time 1,000.00 *mins*
Background Count Time 0.00

	Gross counts	Gross cpm	Background cpm	Net cpm
Alpha	118	0.118	0.000	0.118
sd	10.863	0.011	0.000	0.011
Beta	519	0.519	0.000	0.519
sd	22.782	0.023	0.000	0.023

	Uncorrected DPM	Corrected DPM	Corrected dpm	Efficiency %
Alpha	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000
Alpha to Beta				0.000
sd				0.000
Beta	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000

Alpha/Beta Count Results

Source Count Report

Purple 4-7 - A

Addr: 4

Sample ID ICB
ICB;Monthly Background

Repeat 1340
Carrier No. 0

Batch ID ICB;Monthly Background

Detector Volts 1515

Residual Wt 0 *mg*
Half Life 0.00 *Years*
Count Began 8/6/2016 3:37:13 PM
Calibration Date 8/3/2012 9:00:25 PM
Decay Factor 1.000
Count Ended 8/7/2016 8:17:10 AM
Backgrounds From

Sample Count Time 1,000.00 *mins*
Background Count Time 0.00

	Gross counts	Gross cpm	Background cpm	Net cpm
Alpha	93	0.093	0.000	0.093
sd	9.644	0.010	0.000	0.010
Beta	490	0.490	0.000	0.490
sd	22.136	0.022	0.000	0.022

	Uncorrected DPM	Corrected DPM	Corrected dpm	Efficiency %
Alpha	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000
Alpha to Beta				0.000
sd				0.000
Beta	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000

Alpha/Beta Count Results

Source Count Report

Purple 8-11 - B

Addr: 9

Sample ID ICB
ICB;Monthly Background

Repeat 1347
Carrier No. 0

Batch ID ICB;Monthly Background

Detector Volts 1515

Residual Wt 0 *mg*
Half Life 0.00 *Years*
Count Began 8/6/2016 3:42:30 PM
Calibration Date 8/3/2012 9:00:25 PM
Decay Factor 1.000
Count Ended 8/7/2016 8:22:28 AM
Backgrounds From

Sample Count Time 1,000.00 *mins*
Background Count Time 0.00

	Gross counts	Gross cpm	Background cpm	Net cpm
Alpha	53	0.053	0.000	0.053
sd	7.280	0.007	0.000	0.007
Beta	321	0.321	0.000	0.321
sd	17.916	0.018	0.000	0.018

	Uncorrected DPM	Corrected DPM	Corrected dpm	Efficiency %
Alpha	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000
Alpha to Beta				0.000
sd				0.000
Beta	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000

Alpha/Beta Count Results

Source Count Report

Purple 8-11 - C

Addr: 10

Sample ID ICB
ICB;Monthly Background

Repeat 1344
Carrier No. 0

Batch ID ICB;Monthly Background

Detector Volts 1515

Residual Wt 0 *mg*
Half Life 0.00 *Years*
Count Began 8/6/2016 3:43:30 PM
Calibration Date 8/3/2012 9:00:25 PM
Decay Factor 1.000
Count Ended 8/7/2016 8:23:26 AM
Backgrounds From

Sample Count Time 1,000.00 *mins*
Background Count Time 0.00

	Gross counts	Gross cpm	Background cpm	Net cpm
Alpha	54	0.054	0.000	0.054
sd	7.348	0.007	0.000	0.007
Beta	301	0.301	0.000	0.301
sd	17.349	0.017	0.000	0.017

	Uncorrected DPM	Corrected DPM	Corrected dpm	Efficiency %
Alpha	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000
Alpha to Beta				0.000
sd				0.000
Beta	0.000	0.000	0.000	0.000
sd	0.000	0.000	0.000	0.000

Run Logs

Gas Flow Proportional Counter Run Log

Detector: Orange2

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
01/29/13 12:01	10	ICNP 160-30633/1		30633			PS
01/29/13 12:17	10	ICNP 160-30633/2		30633			PS
01/29/13 12:30	10	ICNP 160-30633/3		30633			PS
01/29/13 12:42	10	ICNP 160-30633/4		30633			PS
01/30/13 11:57	60	ICVNP 160-30633/5		30633			PS
03/10/16 14:25	60	ACVNP 160-240593/1		240593			RTM
08/06/16 17:29	1000	ICB 160-263702/7		263702			PS
08/11/16 00:38	200	CCB 160-264480/3		264480			ALS
08/11/16 06:01	2	CCVA 160-264480/33		264480			ALS
08/11/16 06:09	2	CCVB 160-264480/57		264480			ALS
08/11/16 07:11	200	ZZZZZ		264480			
08/11/16 13:51	60	MB 160-264040/1-A		264480	264040	A-01-R	ALS
08/11/16 15:33	60	160-18521-1	YMTFA74SE001	264480	264040	A-01-R	ALS
08/11/16 18:09	200	ZZZZZ		264480			

Detector: Orange3

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
01/29/13 12:01	10	ICNP 160-30634/1		30634			PS
01/29/13 12:17	10	ICNP 160-30634/2		30634			PS
01/29/13 12:30	10	ICNP 160-30634/3		30634			PS
01/29/13 12:42	10	ICNP 160-30634/4		30634			PS
01/30/13 11:58	60	ICVNP 160-30634/5		30634			PS
03/10/16 14:25	60	ACVNP 160-240897/1		240897			PS
08/06/16 17:30	1000	ICB 160-263702/8		263702			PS
08/11/16 00:38	200	CCB 160-264480/4		264480			ALS
08/11/16 06:01	2	CCVA 160-264480/34		264480			ALS
08/11/16 06:09	2	CCVB 160-264480/58		264480			ALS
08/11/16 07:11	200	ZZZZZ		264480			
08/11/16 13:51	60	LCS 160-264040/2-A		264480	264040	A-01-R	ALS
08/11/16 15:34	60	160-18521-2	YMTFA75SE001	264480	264040	A-01-R	ALS
08/11/16 18:09	200	ZZZZZ		264480			

Detector: Orange5

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
01/29/13 12:58	12	ICNP 160-30636/1		30636			PS
01/29/13 13:28	12	ICNP 160-30636/2		30636			PS
01/29/13 13:57	12	ICNP 160-30636/3		30636			PS
01/29/13 14:12	12	ICNP 160-30636/4		30636			PS
01/30/13 11:58	60	ICVNP 160-30636/5		30636			PS
03/10/16 15:45	60	ACVNP 160-240596/1		240596			RTM
08/06/16 16:25	1000	ICB 160-263702/3		263702			PS
08/11/16 00:38	200	CCB 160-264480/6		264480			ALS
08/11/16 06:01	2	CCVA 160-264480/36		264480			ALS
08/11/16 06:09	2	CCVB 160-264480/60		264480			ALS
08/11/16 07:11	200	ZZZZZ		264480			
08/11/16 13:51	60	160-18504-F-1-D DU		264480	264040	A-01-R	ALS
08/11/16 18:09	200	ZZZZZ		264480			

Gas Flow Proportional Counter Run Log

Detector: Purple0

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
02/03/13 15:26	5	ICABT 160-233497/12		233497			JLW
02/03/13 16:02	5	ICABT 160-233497/13		233497			JLW
02/03/13 16:23	5	ICABT 160-233497/14		233497			JLW
02/03/13 16:34	5	ICABT 160-233497/15		233497			JLW
02/03/13 16:41	5	ICABT 160-233497/16		233497			JLW
02/03/13 16:48	5	ICABT 160-233497/17		233497			JLW
02/03/13 17:05	5	ICABT 160-233497/18		233497			JLW
02/03/13 17:14	5	ICABT 160-233497/19		233497			JLW
02/04/13 22:27	5	ICVABT 160-233497/20		233497			JLW
02/04/13 23:10	5	ICVABT 160-233497/21		233497			JLW
02/04/13 23:19	5	ICVABT 160-233497/22		233497			JLW
01/16/16 10:15	40	ICABT 160-233497/1		233497			JLW
01/16/16 11:01	40	ICABT 160-233497/2		233497			JLW
01/16/16 11:43	40	ICABT 160-233497/3		233497			JLW
01/16/16 12:25	40	ICABT 160-233497/4		233497			JLW
01/16/16 13:06	40	ICABT 160-233497/5		233497			JLW
01/16/16 13:49	40	ICABT 160-233497/6		233497			JLW
01/16/16 14:32	40	ICABT 160-233497/7		233497			JLW
01/16/16 15:15	40	ICABT 160-233497/8		233497			JLW
01/17/16 17:23	30	ICVABT 160-233497/9		233497			JLW
01/17/16 22:54	30	ICVABT 160-233497/10		233497			JLW
01/17/16 23:37	30	ICVABT 160-233497/11		233497			JLW
03/21/16 13:14	5	ACVABT 160-242210/1		242210			PS
03/21/16 15:29	5	ACVABT 160-242210/2		242210			PS
03/21/16 16:02	5	ACVABT 160-242210/3		242210			PS
08/06/16 15:33	1000	ICB 160-263703/1		263703			PS
08/15/16 00:12	2	CCVA 160-264773/5		264773			JLW
08/15/16 00:16	2	CCVB 160-264773/17		264773			JLW
08/15/16 01:12	200	CCB 160-264773/55		264773			JLW
08/15/16 06:13	200	ZZZZZ		264773			
08/15/16 12:31	200	ZZZZZ		264773			
08/15/16 17:08	200	ZZZZZ		264773			
08/15/16 20:49	200	MB 160-264358/1-A		264773	264358	SR-03-RC	JLW

Detector: Purple4

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
02/03/13 15:27	5	ICABT 160-233501/12		233501			PS
02/03/13 16:02	5	ICABT 160-233501/13		233501			PS
02/03/13 16:23	5	ICABT 160-233501/14		233501			PS
02/03/13 16:35	5	ICABT 160-233501/15		233501			PS
02/03/13 16:41	5	ICABT 160-233501/16		233501			PS
02/03/13 16:48	5	ICABT 160-233501/17		233501			PS
02/03/13 17:05	5	ICABT 160-233501/18		233501			PS
02/03/13 17:14	5	ICABT 160-233501/19		233501			PS
02/04/13 22:42	5	ICVABT 160-233501/20		233501			PS
02/04/13 22:50	5	ICVABT 160-233501/21		233501			PS
02/04/13 22:57	5	ICVABT 160-233501/22		233501			PS
01/16/16 10:15	40	ICABT 160-233501/1		233501			PS
01/16/16 11:01	40	ICABT 160-233501/2		233501			PS
01/16/16 11:43	40	ICABT 160-233501/3		233501			PS
01/16/16 12:25	40	ICABT 160-233501/4		233501			PS
01/16/16 13:06	40	ICABT 160-233501/5		233501			PS

Gas Flow Proportional Counter Run Log

Detector: Purple4 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
01/16/16 13:49	40	ICABT 160-233501/6		233501			PS
01/16/16 14:32	40	ICABT 160-233501/7		233501			PS
01/16/16 15:15	40	ICABT 160-233501/8		233501			PS
01/17/16 19:01	30	ICVABT 160-233501/9		233501			PS
01/17/16 19:56	30	ICVABT 160-233501/10		233501			PS
01/17/16 20:44	30	ICVABT 160-233501/11		233501			PS
03/21/16 16:43	5	ACVABT 160-242214/1		242214			PS
03/21/16 17:56	5	ACVABT 160-242214/2		242214			PS
03/21/16 20:30	5	ACVABT 160-242214/3		242214			PS
08/06/16 15:37	1000	ICB 160-263703/5		263703			PS
08/15/16 00:12	2	CCVA 160-264773/2		264773			JLW
08/15/16 00:16	2	CCVB 160-264773/21		264773			JLW
08/15/16 01:12	200	CCB 160-264773/59		264773			JLW
08/15/16 06:14	200	ZZZZZ		264773			
08/15/16 12:31	200	ZZZZZ		264773			
08/15/16 17:08	200	ZZZZZ		264773			
08/15/16 20:49	200	160-18504-F-1-N DU		264773	264358	SR-03-RC	JLW

Detector: Purple9

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
02/03/13 17:22	5	ICABT 160-233508/12		233508			PS
02/03/13 17:29	5	ICABT 160-233508/13		233508			PS
02/03/13 17:43	5	ICABT 160-233508/14		233508			PS
02/03/13 17:51	5	ICABT 160-233508/15		233508			PS
02/03/13 18:07	5	ICABT 160-233508/16		233508			PS
02/03/13 18:19	5	ICABT 160-233508/17		233508			PS
02/03/13 18:32	5	ICABT 160-233508/18		233508			PS
02/03/13 18:51	5	ICABT 160-233508/19		233508			PS
02/04/13 18:35	5	ICVABT 160-233508/20		233508			PS
02/04/13 18:57	5	ICVABT 160-233508/21		233508			PS
02/04/13 20:33	5	ICVABT 160-233508/22		233508			PS
01/17/16 17:25	40	ICABT 160-233508/1		233508			PS
01/17/16 18:09	40	ICABT 160-233508/2		233508			PS
01/17/16 19:03	40	ICABT 160-233508/3		233508			PS
01/17/16 19:57	40	ICABT 160-233508/4		233508			PS
01/17/16 20:45	40	ICABT 160-233508/5		233508			PS
01/17/16 21:41	40	ICABT 160-233508/6		233508			PS
01/17/16 22:54	40	ICABT 160-233508/7		233508			PS
01/17/16 23:37	40	ICABT 160-233508/8		233508			PS
01/18/16 21:07	30	ICVABT 160-233508/9		233508			PS
01/19/16 00:27	30	ICVABT 160-233508/10		233508			PS
01/19/16 08:55	30	ICVABT 160-233508/11		233508			PS
03/21/16 21:32	5	ACVABT 160-242221/1		242221			PS
03/21/16 21:45	5	ACVABT 160-242221/2		242221			PS
03/22/16 00:44	5	ACVABT 160-242221/3		242221			PS
08/06/16 15:42	1000	ICB 160-263703/10		263703			PS
08/15/16 00:15	2	CCVA 160-264773/10		264773			JLW
08/15/16 00:25	2	CCVB 160-264773/34		264773			JLW
08/15/16 01:13	200	CCB 160-264773/63		264773			JLW
08/15/16 06:15	200	ZZZZZ		264773			
08/15/16 12:32	200	ZZZZZ		264773			
08/15/16 17:09	200	ZZZZZ		264773			

Gas Flow Proportional Counter Run Log

Detector: Purple9 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
08/15/16 20:49	200	160-18521-1	YMTFA74SE001	264773	264358	SR-03-RC	JLW

Detector: Purple10

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
02/03/13 17:22	5	ICABT 160-233506/12		233506			PS
02/03/13 17:29	5	ICABT 160-233506/13		233506			PS
02/03/13 17:43	5	ICABT 160-233506/14		233506			PS
02/03/13 17:51	5	ICABT 160-233506/15		233506			PS
02/03/13 18:07	5	ICABT 160-233506/16		233506			PS
02/03/13 18:19	5	ICABT 160-233506/17		233506			PS
02/03/13 18:32	5	ICABT 160-233506/18		233506			PS
02/03/13 18:51	5	ICABT 160-233506/19		233506			PS
02/04/13 18:35	5	ICVABT 160-233506/20		233506			PS
02/04/13 18:57	5	ICVABT 160-233506/21		233506			PS
02/04/13 19:02	5	ICVABT 160-233506/22		233506			PS
01/17/16 17:25	40	ICABT 160-233506/1		233506			PS
01/17/16 18:09	40	ICABT 160-233506/2		233506			PS
01/17/16 19:02	40	ICABT 160-233506/3		233506			PS
01/17/16 19:57	40	ICABT 160-233506/4		233506			PS
01/17/16 20:45	40	ICABT 160-233506/5		233506			PS
01/17/16 21:41	40	ICABT 160-233506/6		233506			PS
01/17/16 22:54	40	ICABT 160-233506/7		233506			PS
01/17/16 23:37	40	ICABT 160-233506/8		233506			PS
01/18/16 21:07	30	ICVABT 160-233506/9		233506			PS
01/19/16 00:27	30	ICVABT 160-233506/10		233506			PS
01/19/16 01:35	30	ICVABT 160-233506/11		233506			PS
03/21/16 21:32	5	ACVABT 160-242218/1		242218			PS
03/21/16 21:45	5	ACVABT 160-242218/2		242218			PS
03/21/16 23:42	5	ACVABT 160-242218/3		242218			PS
08/06/16 15:43	1000	ICB 160-263703/11		263703			PS
08/15/16 00:15	2	CCVA 160-264773/11		264773			JLW
08/15/16 00:25	2	CCVB 160-264773/35		264773			JLW
08/15/16 01:13	200	CCB 160-264773/63		264773			JLW
08/15/16 06:15	200	ZZZZZ		264773			
08/15/16 12:32	200	ZZZZZ		264773			
08/15/16 17:09	200	ZZZZZ		264773			
08/15/16 20:49	200	160-18521-2	YMTFA75SE001	264773	264358	SR-03-RC	JLW
08/17/16 05:09	2	CCVA 160-265358/19		265358			RTM
08/17/16 05:14	2	CCVB 160-265358/42		265358			RTM
08/17/16 05:30	200	CCB 160-265358/55		265358			RTM
08/17/16 09:04	200	LCS 160-264358/2-A		265358	264358	SR-03-RC	RTM
08/17/16 13:35	200	ZZZZZ		265358			
08/17/16 20:04	400	ZZZZZ		265358			

LIQUID SCINTILLATION COUNTER

Method H3-04-RC

Tritium (LSC) by Method H3-04-RC

Prep Batch: 265449

Distillation and Suspension (LSC)

Liquid Scintillation Counter Analysis Detail Report
Prep Batch: 265449

Lab ID: MB 160-265449/1-A Analyzed: 08/19/16 13:23 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: Detector: LSCAqua Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Tritium	-0.04562	0.203	0.203	U	pCi/g	1.00	0.376	41.4	46	2.070	2.300	0.27600	0.27900	265808

Lab ID: LCS 160-265449/2-A Analyzed: 08/19/16 13:46 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: Detector: LSCAqua Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Tritium	9.231	0.649	1.04		pCi/g	1.00	0.356	944	46	47.200	2.300	0.29100	0.27900	265808

Lab ID: 160-18521-1 Analyzed: 08/19/16 14:08 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: YMTFA74SE001 Detector: LSCAqua Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Tritium	-0.0829	0.217	0.217	U	pCi/g	1.00	0.406	39.4	46	1.970	2.300	0.28200	0.27900	265808

Lab ID: 160-18521-1 DU Analyzed: 08/19/16 14:31 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: YMTFA74SE001 Detector: LSCAqua Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Tritium	-0.1258	0.210	0.210	U	pCi/g	1.00	0.399	36.6	46	1.830	2.300	0.28800	0.27900	265808

Lab ID: 160-18521-2 Analyzed: 08/19/16 14:54 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: YMTFA75SE001 Detector: LSCAqua Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Tritium	-0.0886	0.210	0.210	U	pCi/g	1.00	0.391	40	46	2.000	2.300	0.29000	0.27900	265808

Lab ID: 160-18521-2 MS Analyzed: 08/19/16 15:16 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: YMTFA75SE001 Detector: LSCAqua Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	MS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Tritium	9.555	0.718	1.11		pCi/g	1.00	0.418	836	46	41.800	2.300	0.27100	0.27900	265808

Liquid Scintillation Counter Analysis Detail Report
Prep Batch: 265449

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-265449/1-A	Tritium			-0.04562	U	pCi/g							-.4486548

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-265449/2-A	Tritium		10.1	9.231		pCi/g	91	80 - 114					-1.160026978

Matrix Spike ID:	Analyte	Parent Result	Spike Added	MS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18521-2	Tritium	-0.0886	10.1	9.555		pCi/g	94	78 - 122					-.5818436086

Duplicate ID:	Analyte	Parent Result	Spike Added	DU Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18521-1	Tritium	-0.0829		-0.1258	U	pCi/g			41	0.10	0.28	1	

Glossary:

Ts = Count Duration, Sample
Tb = Count Duration, Background
Cs = Total Counts, Sample
Cb = Total Counts, Background
CPMs = Counts Per Minute, Sample
CPMb = Counts Per Minute, Background
EFFs = Efficiency, Sample
EFFb = Efficiency, Background

LIQUID SCINTILLATION COUNTER BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 265449 Batch Start Date: 08/18/16 13:26 Batch Analyst: Lockhart, Justin D

Batch Method: LSC_Dist_Susp Batch End Date: 08/19/16 11:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	DiluentAdded	VolumeCounted	H-3 00023		
MB 160-265449/1		LSC_Dist_Susp, H3-04-RC		30.02 g	40 mL	10 mL			
LCS 160-265449/2		LSC_Dist_Susp, H3-04-RC		30.01 g	40 mL	10 mL	0.5 mL		
160-18521-D-1	YMTFA74SE001	LSC_Dist_Susp, H3-04-RC	T	30.05 g	40 mL	10 mL			
160-18521-D-1 DU	YMTFA74SE001	LSC_Dist_Susp, H3-04-RC	T	29.92 g	40 mL	10 mL			
160-18521-B-2	YMTFA75SE001	LSC_Dist_Susp, H3-04-RC	T	30.02 g	40 mL	10 mL			
160-18521-B-2 MS	YMTFA75SE001	LSC_Dist_Susp, H3-04-RC	T	30.04 g	40 mL	10 mL	0.5 mL		

Batch Notes	
Balance ID	1125353055
Background Water Batch	918047
Pipette ID	RAD 101
Analyst ID - Reagent Drop Witness	RJS per JDL
Analyst ID - Reagent Drop	JDL
SOP Number	st-rc-0030

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

H3_2016 Protocol 2

Assay Definition

Assay Description:

Assay Type: DPM (Single)
Report Name: H3_Protocol 2
Output Data Path: Z:\
Raw Results Path: C:\Packard\Tricarb\Results\Default\H3_2016 Protocol 2\20160819_1300\20160819_1300.results
Assay File Name: C:\Packard\TriCarb\Assays\H3_2016 Protocol 2.lsa

Additional Data Files Generated with this Protocol:
2H3
[Auto] 2H3.001

Count Conditions

Nuclide: H3_2016
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 15 sec
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H3_2016
Count Time (min): 20.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	2.0	18.6	1.50
B	0.0	18.6	0.00
C	18.7	100.0	0.00

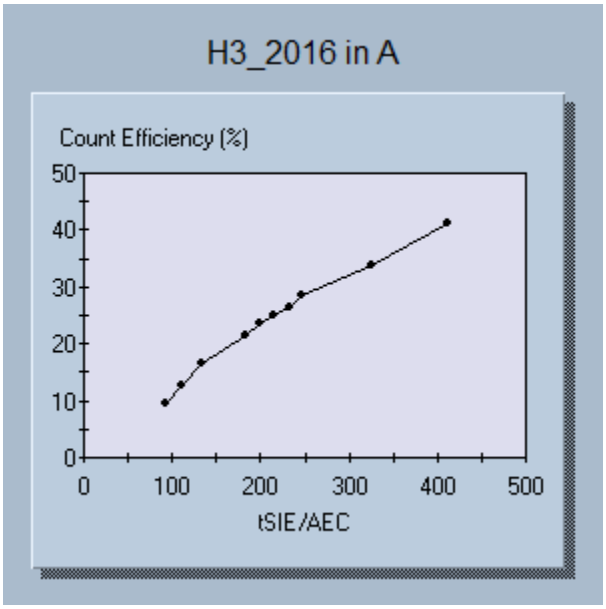
Count Corrections

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Cycle 1 Results

Quench Curve Block Data

H3_2016 Protocol 2

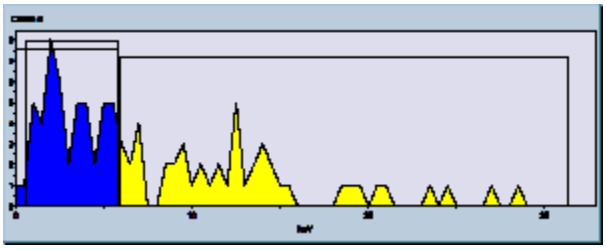


Date Acquired: 08/04/2016
Date Modified:
H3_2016 in A

tSIE/AEC	Count Efficiency (%)
412.66	41.04
325.51	33.96
246.96	28.39
233.41	26.58
215.69	24.99
199.83	23.76
183.01	21.53
133.12	16.58
109.86	12.53
91.93	9.52

S#	Count Time	CPMA	CPMB	DPM1	tSIE	MESSAGES	EFF
CPMC	LUM	DATE	TIME	SMPL_ID			
1	20.00	2.30e+000	2.36e+000	8.25e+000	243.20		0.279
2.42e+000	13	8/19/2016	1:00:51 PM		BKG		

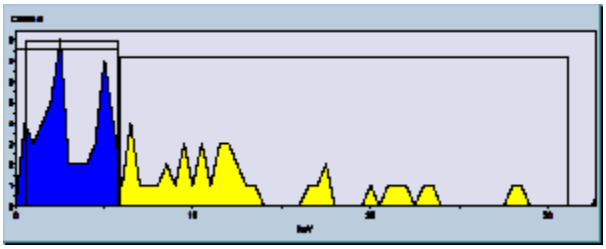
SpectraView Block Data



2	20.00	2.07e+000	2.12e+000	7.49e+000	241.22		0.276
2.12e+000	15	8/19/2016	1:23:37 PM	MB 160-265449/1-A			

SpectraView Block Data

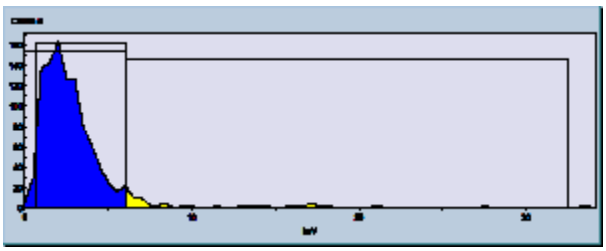
H3_2016 Protocol 2



---

3 20.00 4.72e+001 4.79e+001 1.62e+002 256.36 0.291
4.57e+000 2 8/19/2016 1:46:15 PM LCS 160-265449/2-A

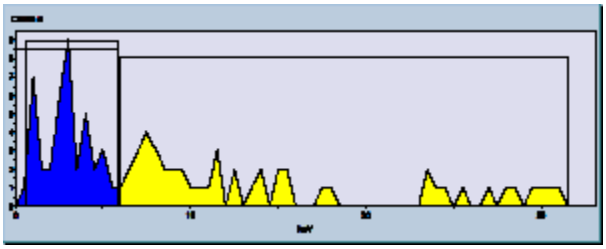
SpectraView Block Data



---

4 20.00 1.97e+000 1.99e+000 7.00e+000 245.56 0.282
2.41e+000 14 8/19/2016 2:08:53 PM 160-18521-D-1-C

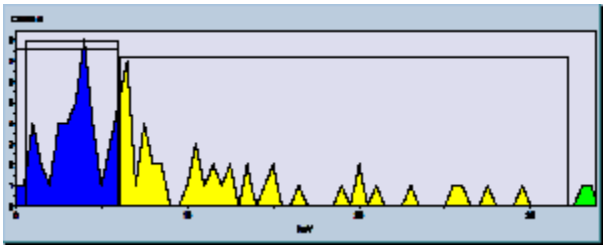
SpectraView Block Data



---

5 20.00 1.83e+000 1.90e+000 6.36e+000 252.51 0.288
2.29e+000 16 8/19/2016 2:31:32 PM 160-18521-D-1-D DU

SpectraView Block Data

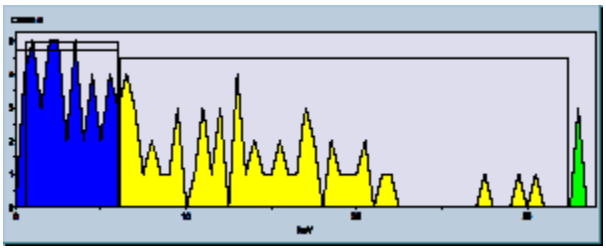


---

6 20.00 2.00e+000 2.06e+000 6.90e+000 254.99 0.290

2.78e+000 14 8/19/2016 2:54:10 PM 160-18521-B-2-D

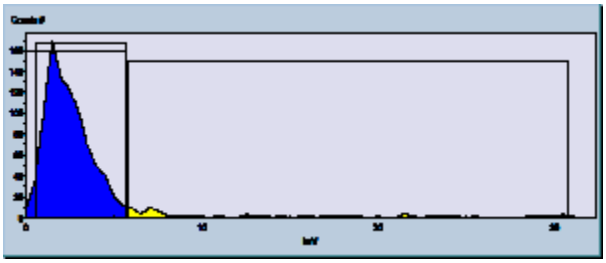
SpectraView Block Data



---

7 20.00 4.18e+001 4.26e+001 1.54e+002 237.15 0.271
4.03e+000 3 8/19/2016 3:16:49 PM 160-18521-B-2-E MS

SpectraView Block Data



Method TC-02-RC

Technetium-99 (LSC) by Method TC-02-RC

Prep Batch: 264549

Preparation, Extraction Chromatography

Liquid Scintillation Counter Analysis Detail Report
Prep Batch: 264549

Lab ID: MB 160-264549/1-A Analyzed: 08/16/16 13:13 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: Detector: LSC3170 Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium-99	-0.06754	0.258	0.258	U	pCi/g	1.00	0.455	129	137	6.450	6.850	0.94800	0.94300	265093

Tracer	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	0.4562				pCi/g		0.462	98.7	30 - 110

Lab ID: LCS 160-264549/2-A Analyzed: 08/16/16 13:34 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: Detector: LSC3170 Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium-99	35.41	1.14	3.59		pCi/g	1.00	0.497	4220	137	211.000	6.850	0.94500	0.94300	265093

Tracer	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	0.4638				pCi/g		0.511	90.7	30 - 110

Lab ID: 160-18504-C-3-C DU Analyzed: 08/16/16 14:57 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: Detector: LSC3170 Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium-99	0.3121	0.206	0.208	U	pCi/g	1.00	0.327	190	137	9.500	6.850	0.93200	0.94300	265093

Tracer	DU Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	0.4438				pCi/g		0.473	93.9	30 - 110

Lab ID: 160-18521-1 Analyzed: 08/16/16 15:39 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: YMTFA74SE001 Detector: LSC3170 Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium-99	0.228	0.206	0.207	U	pCi/g	1.00	0.335	175	137	8.750	6.850	0.93600	0.94300	265093

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	0.465				pCi/g		0.511	91.0	30 - 110

Lab ID: 160-18521-2 Analyzed: 08/16/16 15:59 Sigma: 2 Decay Corrected: No Ts: 20
Client ID: YMTFA75SE001 Detector: LSC3170 Dil Fac: 1 Yield Truncated: No Tb: 20

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium-99	0.235	0.289	0.290	U	pCi/g	1.00	0.478	165	137	8.250	6.850	0.94200	0.94300	265093

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	0.427				pCi/g		0.473	90.3	30 - 110

Liquid Scintillation Counter Analysis Detail Report
Prep Batch: 264549

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-264549/1-A	Technetium-99			-0.06754	U	pCi/g							-.52296564

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-264549/2-A	Technetium-99		33.9	35.41		pCi/g	104	75 - 125					.6063531865

Duplicate ID:	Analyte	Parent Result	Spike Added	DU Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18504-C-3-C DU	Technetium-99	0.261		0.3121	U	pCi/g			18	0.12	0.33	1	

Glossary:

Ts = Count Duration, Sample
Tb = Count Duration, Background
Cs = Total Counts, Sample
Cb = Total Counts, Background
CPMs = Counts Per Minute, Sample
CPMb = Counts Per Minute, Background
EFFs = Efficiency, Sample
EFFb = Efficiency, Background

LIQUID SCINTILLATION COUNTER BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18521-1

SDG No.: Headworks/9720-8

Batch Number: 264549 Batch Start Date: 08/11/16 16:14 Batch Analyst: Minier, Mark F

Batch Method: Ext_Chrom_LSC Batch End Date: 08/12/16 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	Tc (T) Dil #2 00239	Tc-99 00019			
MB 160-264549/1		Ext_Chrom_LSC, TC-02-RC		3.04 g	0.2 mL				
LCS 160-264549/2		Ext_Chrom_LSC, TC-02-RC		3.04 g	0.2 mL	1 mL			
160-18504-C-3 DU		Ext_Chrom_LSC, TC-02-RC	T	4.52 g	0.2 mL				
160-18521-D-1	YMTFA74SE001	Ext_Chrom_LSC, TC-02-RC	T	4.54 g	0.2 mL				
160-18521-B-2	YMTFA75SE001	Ext_Chrom_LSC, TC-02-RC	T	3.18 g	0.2 mL				

Batch Notes	
Balance ID	2735007
Analyst ID - Reagent Drop Witness	Joe McNutt
Analyst ID - Reagent Drop	401513
SOP Number	ST-RC-0125

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Tc99_2016 Protocol 8

Assay Definition-

Assay Description:

Assay Type: DPM (Single)
Report Name: Tc99_Protocol 8
Output Data Path: C:\Packard\Tricarb\Results\Default\Tc99_2016 Protocol 8\20160816_1251\Replay_20160816_165307
Raw Results Path: C:\Packard\Tricarb\Results\Default\Tc99_2016 Protocol 8\20160816_1251\20160816_1251.results
Assay File Name: C:\Packard\TriCarb\Assays\Tc99_2016 Protocol 8.lsa

Count Conditions-

Nuclide: Tc99_2016
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 15 sec
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: Tc99_2016
Count Time (min): 20.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	292.0	1.50
B	2.0	292.0	0.00
C	292.1	450.0	0.00

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

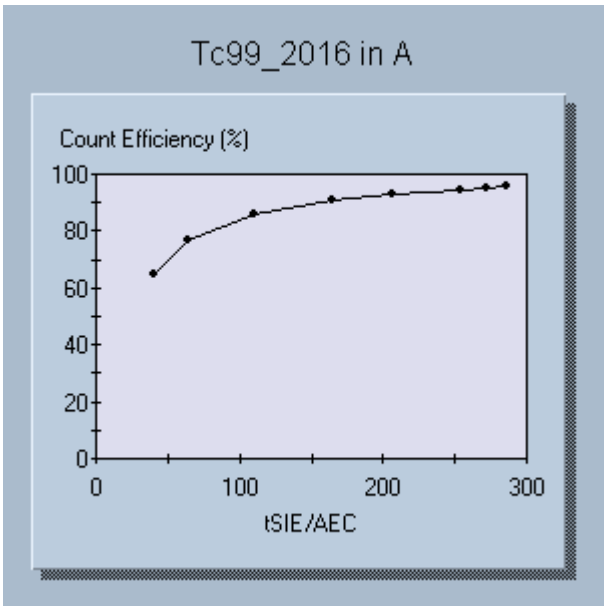
Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results
Quench Curve Block Data

Tc99_2016 Protocol 8

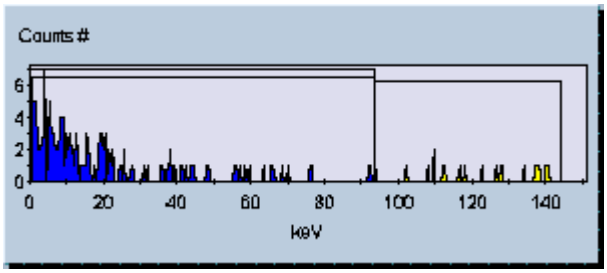


Date Acquired: 06/09/2016
Date Modified:
Tc99_2016 in A

tSIE/AEC	Count Efficiency (%)
285.51	95.61
272.05	95.12
254.47	94.42
207.12	93.11
164.10	91.03
109.60	86.22
63.62	76.43
40.24	64.64

S#	SMPL_ID	Count	Time	CPMA	DPM1	TIME	DATE	EFF	tSIE	LUM	MESSAGES
1	BKG	20.00	6.85e+000	7.26e+000	12:52:26 PM	8/16/2016	1	250.22	100		

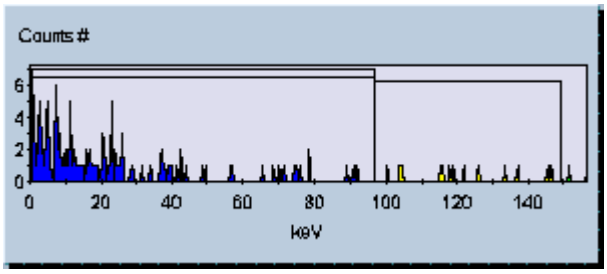
SpectraView Block Data



2	MB 160-264549/1-A	20.00	6.45e+000	6.81e+000	1:13:19 PM	8/16/2016	1	263.01	100	

SpectraView Block Data

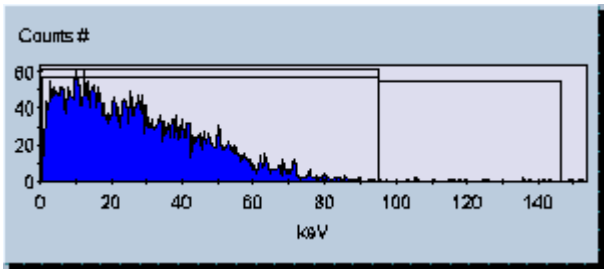
Tc99_2016 Protocol 8



---

3 LCS 160-264549/2-A 20.00 2.11e+002 2.24e+002 1:34:08 PM
8/16/2016 1 256.45 100

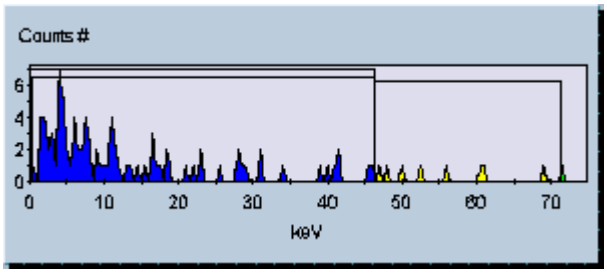
SpectraView Block Data



---

4 160-18504-C-1-B 20.00 4.37e+000 5.59e+000 1:54:58 PM
8/16/2016 1 72.11 100

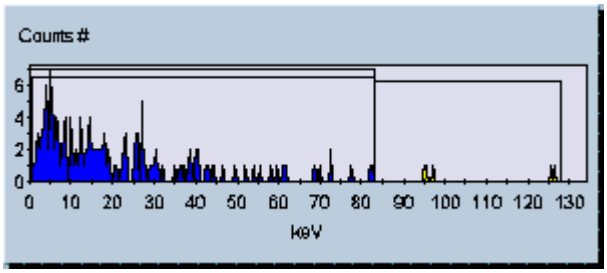
SpectraView Block Data



---

5 160-18504-A-2-A 20.00 7.94e+000 8.52e+000 2:15:48 PM
8/16/2016 1 210.98 100

SpectraView Block Data

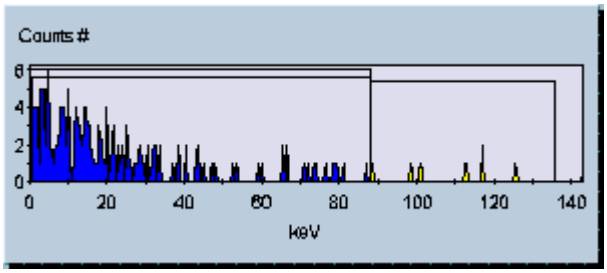


Tc99_2016 Protocol 8

---

6 160-18504-C-3-B 20.00 8.85e+000 9.44e+000 2:36:37 PM
8/16/2016 1 231.13 100

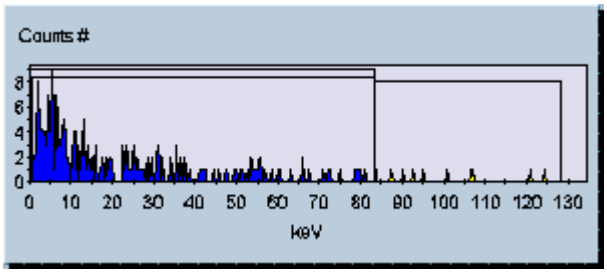
SpectraView Block Data



---

7 160-18504-C-3-C DU 20.00 9.50e+000 1.02e+001 2:57:27 PM
8/16/2016 1 212.00 100

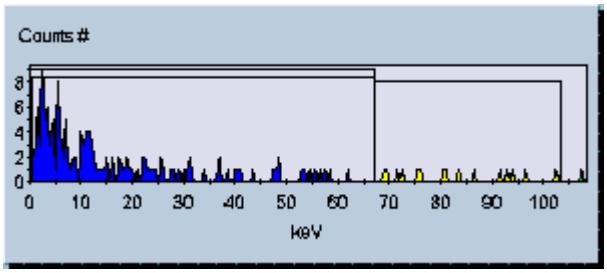
SpectraView Block Data



---

8 160-18504-C-4-B 20.00 7.25e+000 8.07e+000 3:18:17 PM
8/16/2016 1 150.70 100

SpectraView Block Data

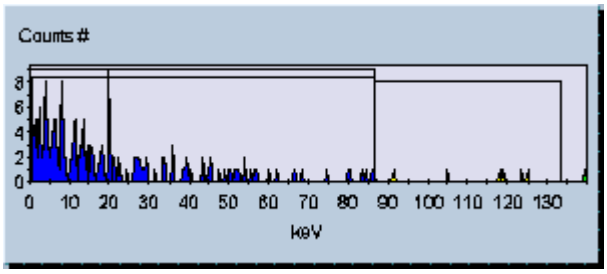


---

9 160-18521-D-1-A 20.00 8.75e+000 9.35e+000 3:39:08 PM
8/16/2016 1 224.40 100

SpectraView Block Data

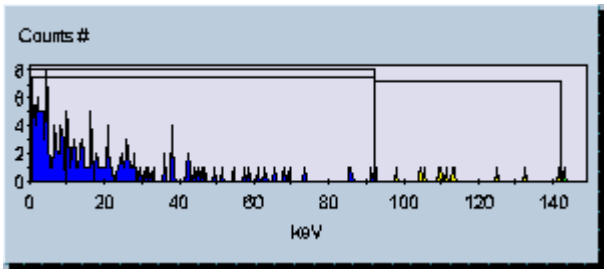
Tc99_2016 Protocol 8



---

10 160-18521-B-2-A 20.00 8.25e+000 8.76e+000 3:59:58 PM
8/16/2016 1 245.39 100

SpectraView Block Data



Daily Checks

SNC Protocol

Calibration Information
Software Version IC: 2.12
Software Version EC: 2.03
Instrument Model: Tri-Carb 3170TR/SL
Instrument Serial Number: 429774
3H Chi Square: 21.09 Date Processed: 8/16/2016 4:39:08 AM
14C Chi Square: 16.74 Date Processed: 8/16/2016 4:39:08 AM
3H E^2/B (1-18.6 keV): 2279.36 Date Processed: 8/16/2016 4:39:08 AM
14C E^2/B (4-156 keV): 11687.24 Date Processed: 8/16/2016 4:39:08 AM
3H Efficiency (0-18.6 keV): 62.43 Date Processed: 8/16/2016 4:39:07 AM
14C Efficiency (0-156 keV): 95.41 Date Processed: 8/16/2016 4:39:07 AM
IPA Background Date Processed: 8/16/2016 4:39:08 AM
3H Background CPM (0-18.6 keV): 1.86 Date Processed: 8/16/2016 4:39:08 AM
14C Background CPM (0-156 keV): 1.94 Date Processed: 8/16/2016 4:39:08 AM
3H Calibration DPM: 286200
3H Reference Date: 2/23/2016
14C Calibration DPM: 112100

SNC Protocol

Calibration Information
Software Version IC: 3.04
Software Version EC: 4.00
Instrument Model: Tri-Carb 3180TR/SL
Instrument Serial Number: 117385
3H Chi Square: 9.02 Date Processed: 8/19/2016 1:55:47 AM
14C Chi Square: 19.86 Date Processed: 8/19/2016 1:55:47 AM
3H E^2/B (1-18.6 keV): 2256.57 Date Processed: 8/19/2016 1:55:47 AM
14C E^2/B (4-156 keV): 11213.40 Date Processed: 8/19/2016 1:55:47 AM
3H Efficiency (1-18.6 keV): 62.84 Date Processed: 8/19/2016 1:55:47 AM
14C Efficiency (4-156 keV): 93.10 Date Processed: 8/19/2016 1:55:47 AM
IPA Background Date Processed: 8/19/2016 1:55:47 AM
3H Background CPM (1-18.6 keV): 1.75 Date Processed: 8/19/2016 1:55:47 AM
14C Background CPM (4-156 keV): 0.77 Date Processed: 8/19/2016 1:55:47 AM
3H Calibration DPM: 276500
3H Reference Date: 8/18/2015
14C Calibration DPM: 108400

Initial Calibrations

Technecium-99 Initial Calibration
2016
LSC 3170

Tc-99 Initial Calibration

STD: Tc-99_00007 (6345)
Activity: 22186dpm/mL
Reference Date: 1/1/2000

Vial #	Insta Gel (mL)	Teva Column	Tc-99_00007 (6345) (mL)	DI Water (mL)	Nitromethane (uL)
1	11	1	0.1	3.9	0
2	10.5	1	0.1	4.4	0
3	10	1	0.1	4.9	0
4	10	1	0.1	4.9	10
5	10	1	0.1	4.9	25
6	10	1	0.1	4.9	50
7	10	1	0.1	4.9	100
8	10	1	0.1	4.9	150

0.25mL of 2M HNO_3 was added to vials to mimic the tracer amount added to counting standards (A, B, C).

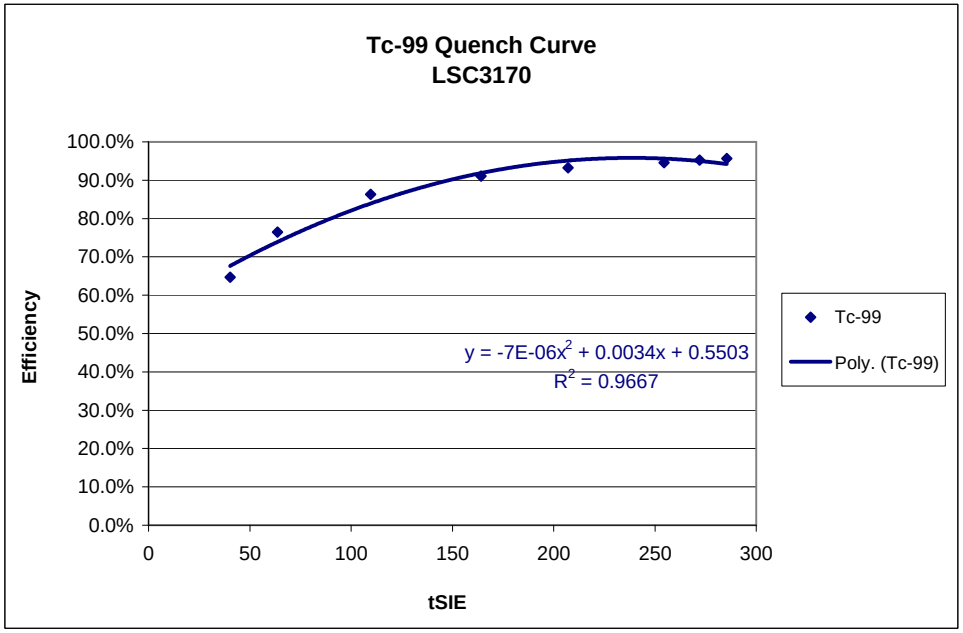
Teva column: conditioned with 5mL 0.01M HNO_3.

Prepared by: Rachel T. Mueller and Amanda L. Dick
Date: 6/8/2016

Tc-99 Quench Curve (IC)
LSC3170

Position	Known (DPM)	CPM	Count (Min)	Counts	Quench (tSIE)	(tSIE)^2	Efficiency
1	2219	2123	60	127380	285.51	81515.96	95.7%
2	2219	2113	60	126780	272.05	74011.2	95.2%
3	2219	2098	60	125880	254.47	64754.98	94.6%
4	2219	2068	60	124080	207.12	42898.69	93.2%
5	2219	2021	60	121260	164.1	26928.81	91.1%
6	2219	1915	60	114900	109.6	12012.16	86.3%
7	2219	1697	60	101820	63.62	4047.504	76.5%
8	2219	1435	60	86100	40.24	1619.258	64.7%
9							

Count Date: 6/9/2016
Standard used: Tc-99_00007 (6345); 22186 dpm/



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.983207228
R Square	0.966696454
Adjusted R Squ	0.953375035
Standard Error	0.024001586
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	0.083608326	0.041804	72.567081	0.000202407
Residual	5	0.002880381	0.000576		
Total	7	0.086488707			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.550337873	0.034789363	15.81914	1.836E-05	0.460908969	0.63976678
X Variable 1	0.003421527	0.000515783	6.633656	0.0011728	0.002095665	0.00474739
X Variable 2	-7.1761E-06	1.53674E-06	-4.66969	0.0054841	-1.11264E-05	-3.226E-06

RESIDUAL OUTPUT

Observation	*Predicted Y*	*Residuals*	*%Diff*
1	0.942252227	0.014657536	1.6%
2	0.95005329	0.002349126	0.2%
3	0.956326324	-0.010684929	-1.1%
4	0.951159698	-0.019040344	-2.0%
5	0.91856693	-0.007632106	-0.8%
6	0.839136922	0.024020024	2.9%
7	0.738970185	0.025926597	3.5%
8	0.676400195	-0.029595904	-4.4%

1st Level Reviewed: ALD 07/08/2016

2nd Level Reviewed: RM 07/08/2016

FORM: Tc99_3170_2016_Quench Curve.xls Revised: 6/7/2016

Tc99_2016 Quench Curve

Assay Definition-

Assay Description:

Assay Type: Quench Standards
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\
Raw Results Path: C:\Packard\Tricarb\Results\Default\Tc99_2016 Quench Curve\20160609_1054\20160609_1054.results
Assay File Name: C:\Packard\TriCarb\Assays\Tc99_2016 Quench Curve.lsa

Count Conditions-

Nuclide: Tc99_2016
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 60.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: n/a
#Vials/Sample: n/a Calculate % Reference: n/a

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	2000.0	0.50

Count Corrections-

Static Controller: On Luminescence Correction: n/a
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

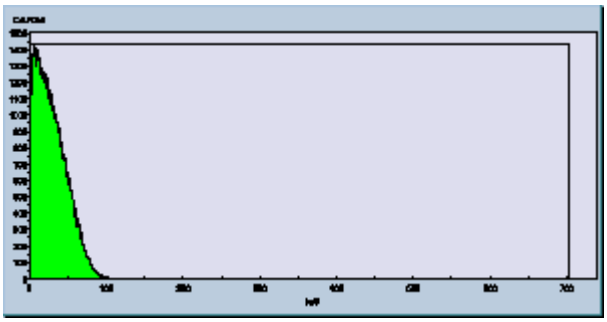
Regions	Half Life	Units	Reference Date	Reference Time
A				

Cycle 1 Results

S#	Count Time	CPMA	SIS	tSIE	MESSAGES
1	60.00	2123	94.92	285.51	S

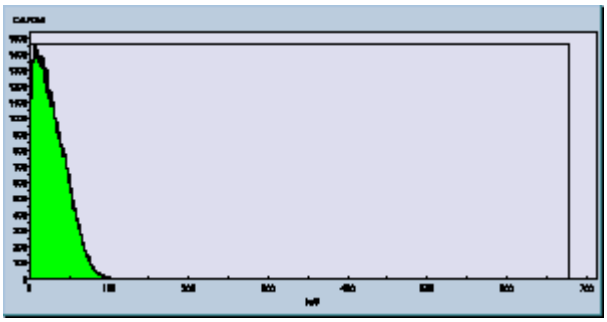
SpectraView Block Data

Tc99_2016 Quench Curve



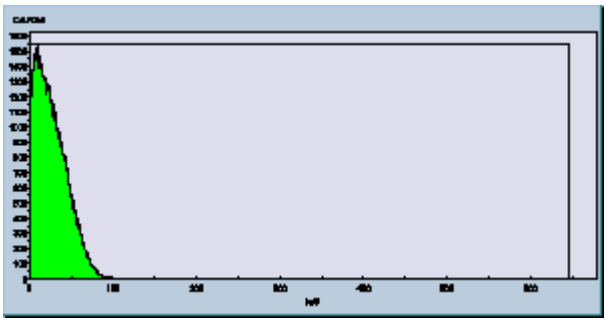
2	60.00	2113	92.07	272.05	S

SpectraView Block Data



3	60.00	2098	88.48	254.47	S

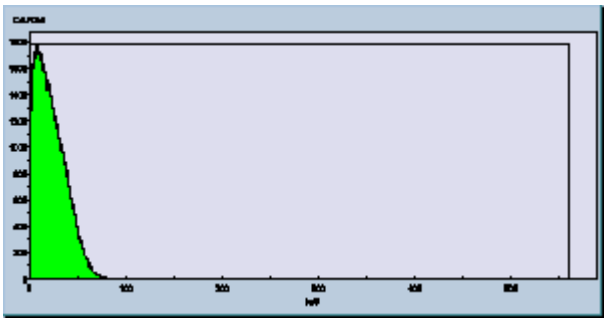
SpectraView Block Data



4	60.00	2068	74.06	207.12	S

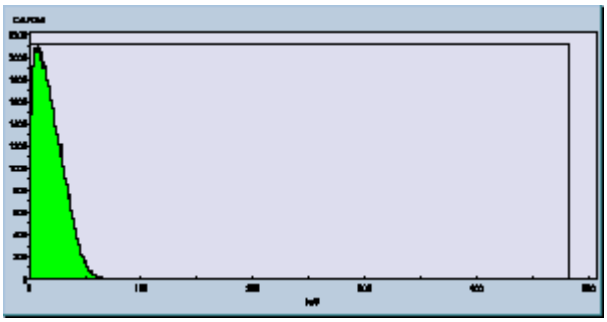
SpectraView Block Data

Tc99_2016 Quench Curve



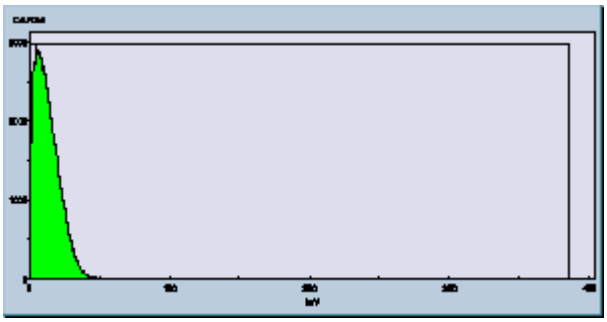
5	60.00	2021	60.60	164.10	S

SpectraView Block Data



6	60.00	1915	42.64	109.60	S

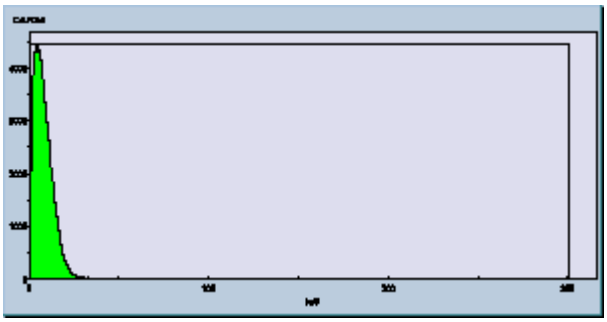
SpectraView Block Data



7	60.00	1697	26.28	63.62	S

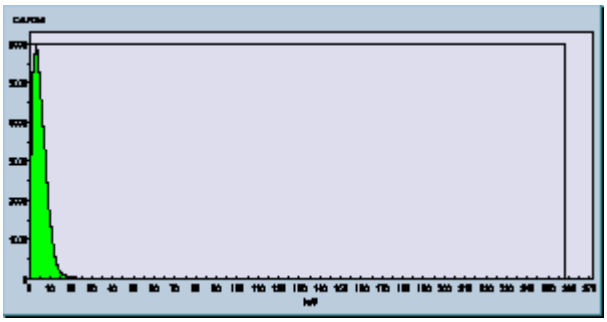
SpectraView Block Data

Tc99_2016 Quench Curve

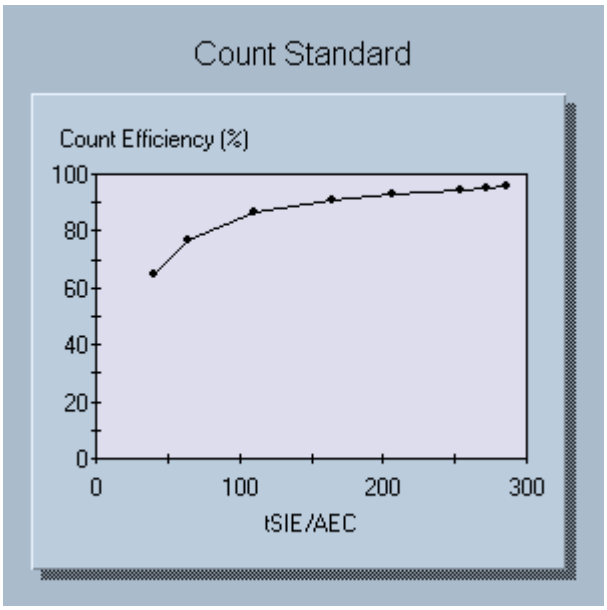


8	60.00	1435	17.89	40.24	S

SpectraView Block Data



Quench Curve Block Data



Date Acquired: 6/10/2016
Date Modified:
Count Standard

tSIE/AEC	Count Efficiency (%)
285.51	95.68

Tc99_2016 Quench Curve

272.05	95.21
254.47	94.53
207.12	93.19
164.10	91.09
109.60	86.28
63.62	76.49
40.24	64.67

Tritium Initial Calibration
2016
LSC Aqua

H3 Quench Curve

STD used: H-3_00022 (725749)
Activity: 112,799.154 dpm/mL
Reference date: 07/01/2007

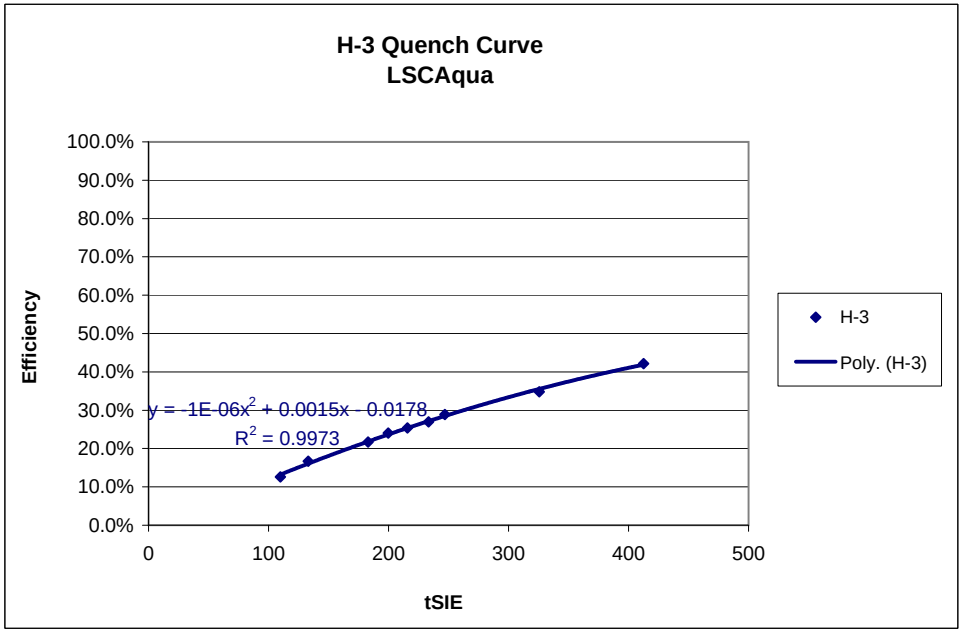
STD #	H20 (mL)	H-3_00022 (mL)	UGLLT (mL)	Nitromethane (uL)
1	4.9	0.1	15	0
2	7.9	0.1	12	0
3	9.9	0.1	10	0
4	9.9	0.1	10	5
5	9.9	0.1	10	10
6	9.9	0.1	10	15
7	9.9	0.1	10	25
8	9.9	0.1	10	50
9	9.9	0.1	10	75
10	9.9	0.1	10	100

Prepared by: Amanda Dick
Date: 08/04/2016

H-3 Quench Curve (IC)
LSCAqua

Position	Known (DPM)	CPM	Count (Min)	Counts	Quench (tSIE)	(tSIE)^2	Efficiency
1	6762	2853	6.24	17802.72	412.66	170288.3	42.2%
2	6762	2352	7.57	17804.64	325.51	105956.8	34.8%
3	6762	1955	9.1	17790.5	246.96	60989.24	28.9%
4	6762	1825	9.75	17793.75	233.41	54480.23	27.0%
5	6762	1715	10.38	17801.7	215.69	46522.18	25.4%
6	6762	1625	10.95	17793.75	199.83	39932.03	24.0%
7	6762	1469	12.11	17789.59	183.01	33492.66	21.7%
8	6762	1128	15.78	17799.84	133.12	17720.93	16.7%
9	6762	852	20.87	17781.24	109.86	12069.22	12.6%

Count Date: 8/4/2016
Standard used: H-3_00022 (725749) at 0.1 mL



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.998626595
R Square	0.997255076
Adjusted R Squ	0.996340102
Standard Error	0.005401142
Observations	9

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	0.063591411	0.031796	1089.9265	2.06819E-08
Residual	6	0.000175034	2.92E-05		
Total	8	0.063766445			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-0.01776976	0.01310979	-1.35546	0.2240711	-0.049848258	0.01430874
X Variable 1	0.001476335	0.00010873	13.57793	9.903E-06	0.001210282	0.00174239
X Variable 2	-1.0133E-06	2.0495E-07	-4.94417	0.0025931	-1.5148E-06	-5.118E-07

RESIDUAL OUTPUT

Observation	*Predicted Y*	*Residuals*	*%Diff*
1	0.418900966	0.003015626	0.7%
2	0.355425741	-0.007599654	-2.1%
3	0.285025376	0.00409027	1.4%
4	0.271616643	-0.001726078	-0.6%
5	0.253519908	0.000103281	0.0%
6	0.236783053	0.003530464	1.5%
7	0.218476131	-0.001232712	-0.6%
8	0.160803315	0.006011237	3.7%
9	0.13219066	-0.006192435	-4.7%

1st Level Reviewed: _____

2nd Level Reviewed: _____

FORM: H3_Aqua_2016_QuenchCurve.xls Revised: 6/7/2016

Decay Calculations

Raw Sample/Standard Information

Initial Date/Time (t_0):	7/1/2007 0:00		
Decayto Date/Time (t):	8/4/16 0:00		
Initial Activity (A_0):	112,799.15	dpm	
Initial Aliquot:	1	mL	
Initial Conc:	112799.154	dpm/mL	
***Soln. Density:**	1	g/mL	
Nuclide:	H-3		
Half-Life (days):	4499.88	decay days	fraction
****Decay Factor:**	0.5995	3322.00	0.73824
Decay Corr Activity:	6.7620E+04	dpm	
Decay Corr Conc:	6.7620E+04	dpm/mL	

Conversion/Calculations

Final Activity Unit:	dpm	
Activity Unit Factor:	1.00000	
Final Volume Unit:	mL	
Volume Unit Factor:	1.000	
Final Concentration:	6.7620E+04	dpm/mL
Aliquot Volume:	1.0000E-01	mL
Final Activity (A):	6.7620E+03	dpm

** Uses basic decay equation: $A = A_0 * \exp(-\ln(2)*(t-t_0)/(\text{half-life})$

* Soln. Density to be used when converting from liquid expressed in mass (g) units to liquid units (mL), and is only applied in that case.

H3_2016 Quench Curve

Assay Definition

Assay Description:

Assay Type: Quench Standards
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\
Raw Results Path: C:\Packard\Tricarb\Results\Default\H3_2016 Quench Curve\20160804_1619\20160804_1619.results
Assay File Name: C:\Packard\TriCarb\Assays\H3_2016 Quench Curve.lsa

Count Conditions

Nuclide: H3_2016
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 15 sec
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 60.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: n/a
#Vials/Sample: n/a Calculate % Reference: n/a

Background Subtract

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	18.6	1.50

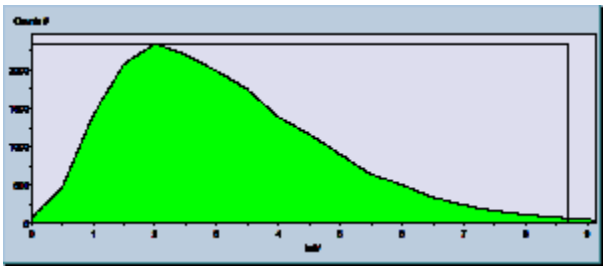
Count Corrections

Static Controller: On Luminescence Correction: n/a
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Cycle 1 Results

S#	Count Time	CPMA	SIS	tSIE	MESSAGES
1	6.24	2853	13.87	412.66	S

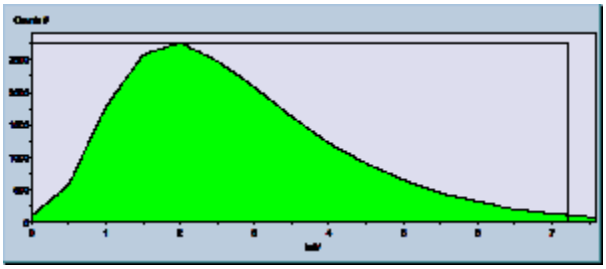
SpectraView Block Data



H3_2016 Quench Curve

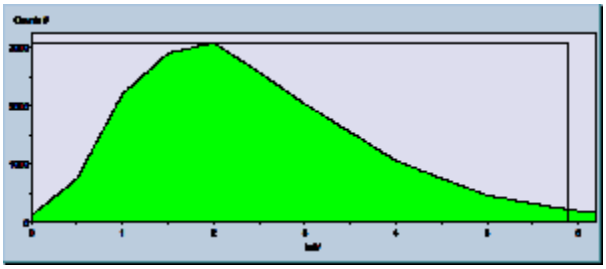
2	7.57	2352	12.03	325.51	S

SpectraView Block Data



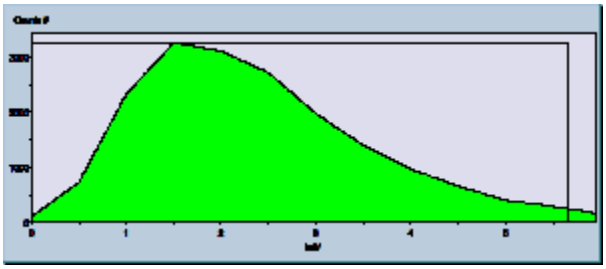
3	9.10	1955	15.63	246.96	S

SpectraView Block Data



4	9.75	1825	14.27	233.41	S

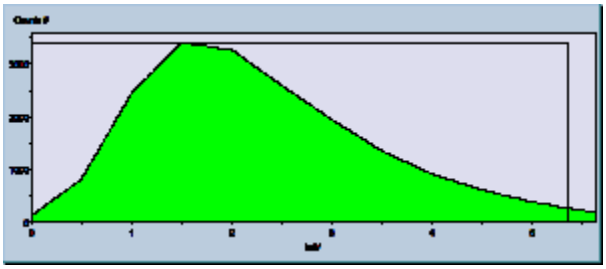
SpectraView Block Data



5	10.38	1715	12.58	215.69	S

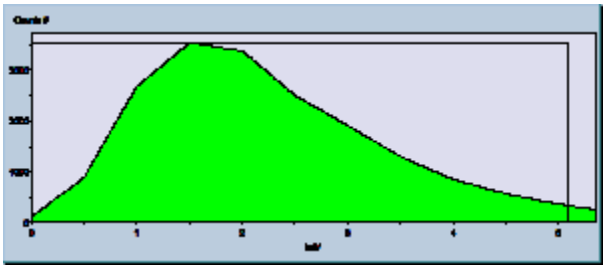
SpectraView Block Data

H3_2016 Quench Curve



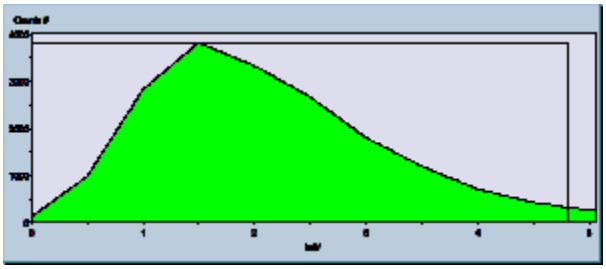
6	10.95	1625	13.15	199.83	S

SpectraView Block Data



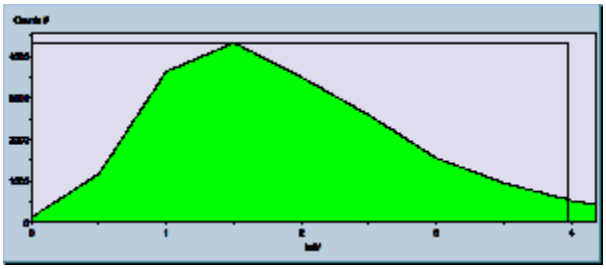
7	12.11	1469	14.33	183.01	S

SpectraView Block Data



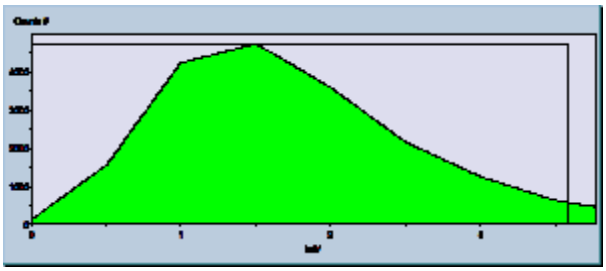
8	15.78	1128	12.85	133.12	S

SpectraView Block Data



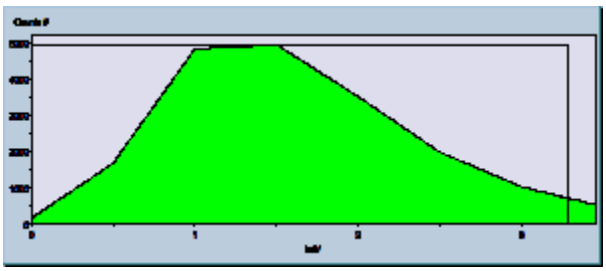
9	20.87	852	12.91	109.86	S

SpectraView Block Data

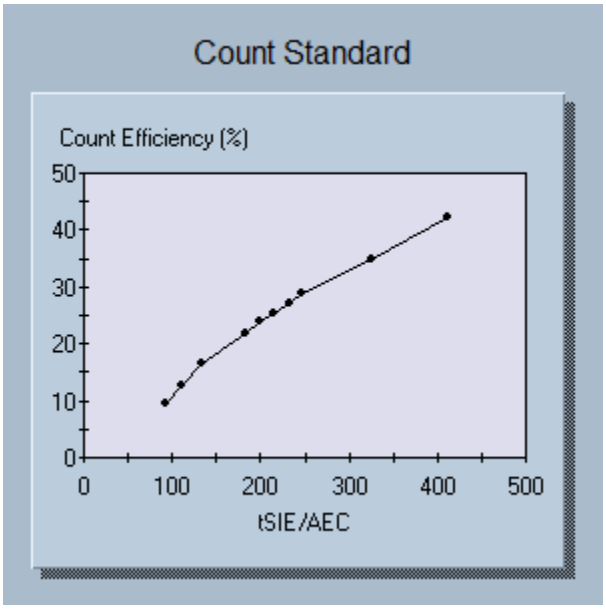


10	27.44	648	15.04	91.93	S

SpectraView Block Data



Quench Curve Block Data



Date Acquired: 8/5/2016
Date Modified:
Count Standard

tSIE/AEC	Count Efficiency (%)
412.66	42.19

H3_2016 Quench Curve

325.51	34.78
246.96	28.91
233.41	26.99
215.69	25.36
199.83	24.03
183.01	21.73
133.12	16.68
109.86	12.60
91.93	9.59

Initial Calibration Verifications

Technecium-99 Initial Calibration Verification
2016
LSC 3170

Tc-99 Initial Calibration Verification:

Std #: Tc-99_00019 (869867)
Activity: 228.82dpm/mL
Reference Date: 9/1/1996

Vial #	InstaGel (mL)	Teva Column	Tc-99_00016 (582609) (mL)	DI Water (mL)	Nitromethane (uL)
1	10	1	1	4	0
2	10	1	1	4	25
3	10	1	1	4	100

0.25mL of 2M HNO_3 was added to vials to mimic the tracer amount added to counting standards (A, B, C).

Teva column: conditioned with 5mL 0.01M HNO_3.

Prepared By: Rachel T. Mueller and Amanda L. Dick
Date: 6/8/2016

Tc-99 Verification
LSC3170

Recovery

	CPM	Cnt (Min)	Counts	tSIE	Eff	DPM	Known	Recovery
Analyte ICV 1	203.73	60	12223.8	219.42	0.9556	213	229	93.2%
Analyte ICV 2	200.73	60	12043.8	164.04	0.9185	219	229	95.4%
Analyte ICV 3	166.73	60	10003.8	78.38	0.7744	215	229	94.0%
							Avg:	94.2%

Count Date: 6/13/2016

Tc99_2016 Protocol 8

Assay Definition-

Assay Description:

Assay Type: DPM (Single)
Report Name: Tc99_Protocol 8
Output Data Path: \Stlfs01\rad\Upload\PACK_LSC_3170
Raw Results Path: C:\Packard\Tricarb\Results\Default\Tc99_2016 Protocol 8\20160613_1722
\20160613_1722.results
Assay File Name: C:\Packard\TriCarb\Assays\Tc99_2016 Protocol 8.lsa

Count Conditions-

Nuclide: Tc99_2016
Quench Indicator: tSIE
External Std Terminator (sec): 15 sec
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: Tc99_2016
Count Time (min): 60.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	292.0	1.50
B	2.0	292.0	0.00
C	292.1	450.0	0.00

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

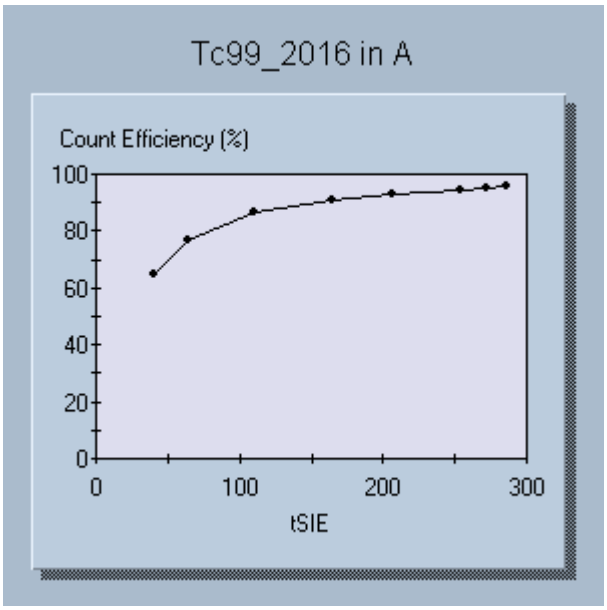
Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results
Quench Curve Block Data

Tc99_2016 Protocol 8

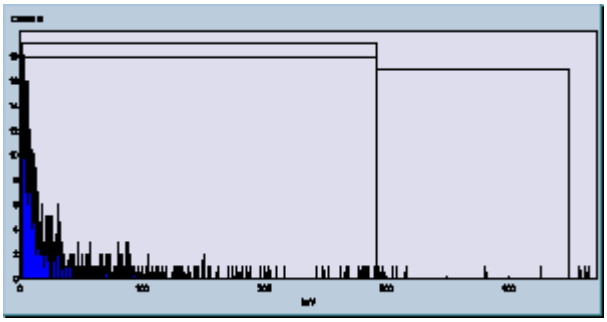


Date Acquired: 06/09/2016
Date Modified:
Tc99_2016 in A

tSIE	Count Efficiency (%)
285.51	95.67
272.05	95.19
254.47	94.51
207.12	93.18
164.10	91.09
109.60	86.28
63.62	76.48
40.24	64.68

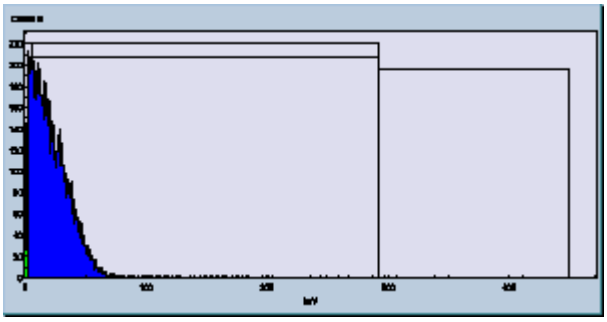
S#	SMPL_ID	Count Time	CPMA	DPM1	TIME	DATE	EFF	tSIE	LUM	MESSAGES
1	BKG	60.00	9.27e+000	9.73e+000	5:23:06 PM	6/13/2016	1	272.46	100	

SpectraView Block Data



2	ICV 1	60.00	2.13e+002	2.28e+002	6:25:08 PM	6/13/2016	1	219.42	100	

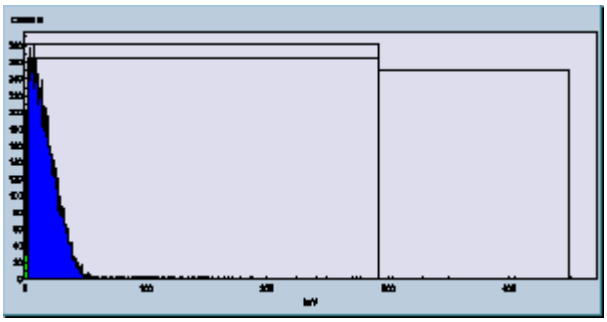
SpectraView Block Data



---

3 ICV 2 60.00 2.10e+002 2.30e+002 7:27:09 PM
6/13/2016 1 164.04 100

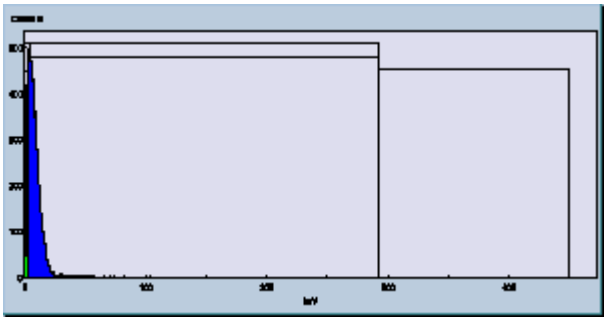
SpectraView Block Data



---

4 ICV 3 60.00 1.76e+002 2.21e+002 8:29:06 PM
6/13/2016 1 78.38 100

SpectraView Block Data



Tritium Initial Calibration Verification
2016
LSC Aqua

H-3 Quench Curve Verification

Std #: H-3_00017 (681751)
Activity: 110081.664 dpm/mL
Reference Date: 2/15/2015

Vial #	H2O (mL)	STD (mL)	UGLLT (mL)	Nitromethane (uL)
1	9	1	10	0
2	9	1	10	25
3	9	1	10	40

Prepared by: Amanda Dick
Date: 08/04/2016

H-3 Verification
LSCAqua

Recovery

	CPM	Cnt (Min)	Counts	tSIE	Eff	DPM	Known	Recovery
Analyte ICV 1	31698.13	0.57	18067.9	241.35	0.2795	113402	101340	111.9%
Analyte ICV 2	24298.13	0.74	17980.6	178.57	0.2135	113783	101340	112.3%
Analyte ICV 3	20598.13	0.87	17920.4	162.82	0.1957	105230	101340	103.8%
							Avg:	109.3%

Count Date: 8/5/2016

Decay Calculations

Raw Sample/Standard Information

Initial Date/Time (t_0):	2/15/2015 0:00		
Decayto Date/Time (t):	8/5/16 0:00		
Initial Activity (A_0):	110,081.66	dpm	
Initial Aliquot:	1	mL	
Initial Conc:	110081.664	dpm/mL	
***Soln. Density:**	1	g/mL	
Nuclide:	H-3		
Half-Life (days):	4499.88	decay days	fraction
****Decay Factor:**	0.9206	537.00	0.11934
Decay Corr Activity:	1.0134E+05	dpm	
Decay Corr Conc:	1.0134E+05	dpm/mL	

Conversion/Calculations

Final Activity Unit:	dpm	
Activity Unit Factor:	1.00000	
Final Volume Unit:	mL	
Volume Unit Factor:	1.000	
Final Concentration:	1.0134E+05	dpm/mL
Aliquot Volume:	1.0000E+00	mL
Final Activity (A):	1.0134E+05	dpm

** Uses basic decay equation: $A = A_0 * \exp(-\ln(2)*(t-t_0)/(\text{half-life})$

* Soln. Density to be used when converting from liquid expressed in mass (g) units to liquid units (mL), and is only applied in that case.

H3_2016 Protocol 2

Assay Definition

Assay Description:

Assay Type: DPM (Single)
Report Name: H3_Protocol 2
Output Data Path: Z:\
Raw Results Path: C:\Packard\Tricarb\Results\Default\H3_2016 Protocol 2\20160805_1605\20160805_1605.results
Assay File Name: C:\Packard\TriCarb\Assays\H3_2016 Protocol 2.lsa

Additional Data Files Generated with this Protocol:
2H3
[Auto] 2H3.001

Count Conditions

Nuclide: H3_2016
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 15 sec
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H3_2016
Count Time (min): 45.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	2.0	18.6	1.50
B	0.0	18.6	0.00
C	18.7	100.0	0.00

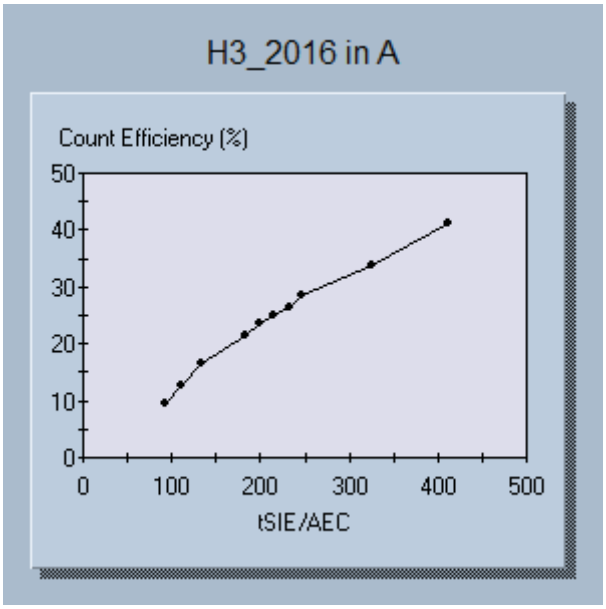
Count Corrections

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Cycle 1 Results

Quench Curve Block Data

H3_2016 Protocol 2

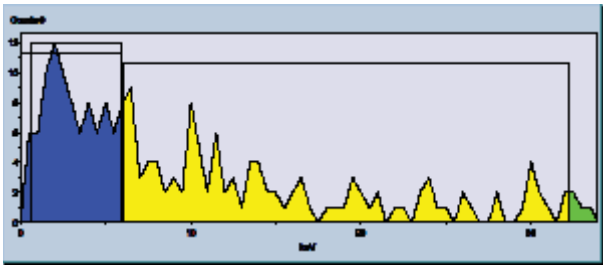


Date Acquired: 08/04/2016
Date Modified:
H3_2016 in A

tSIE/AEC	Count Efficiency (%)
412.66	41.04
325.51	33.96
246.96	28.39
233.41	26.58
215.69	24.99
199.83	23.76
183.01	21.53
133.12	16.58
109.86	12.53
91.93	9.52

S#	Count	Time	CPMA	CPMB	DPM1	tSIE	MESSAGES	EFF
CPMC	LUM	DATE	TIME		SMPL ID			
1	45.00	1.87e+000	1.91e+000	6.49e+000		252.92		0.288
2.54e+000	15	8/5/2016	4:05:56 PM			BKG		

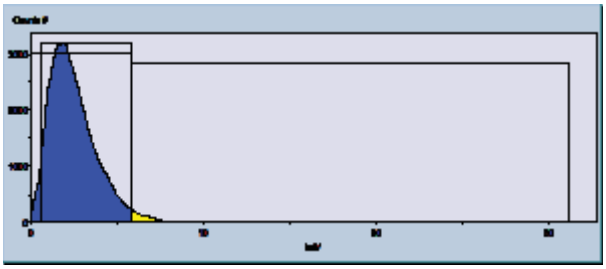
SpectraView Block Data



2	0.57	3.17e+004	3.23e+004	1.15e+005		241.35	0.276
1.06e+003	0	8/5/2016	4:55:57 PM			ICV 1	

SpectraView Block Data

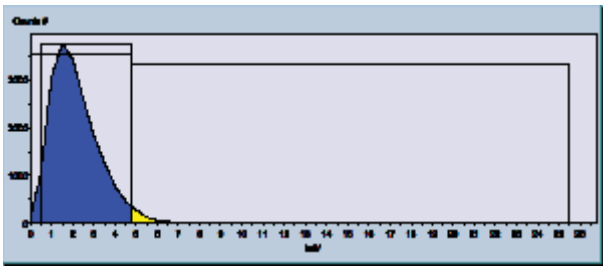
H3_2016 Protocol 2



---

3 0.74 2.43e+004 2.46e+004 1.15e+005 178.57 0.211
1.11e+003 0 8/5/2016 4:57:36 PM ICV 2

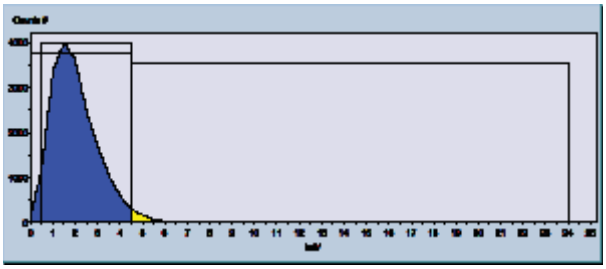
SpectraView Block Data



---

4 0.87 2.06e+004 2.08e+004 1.05e+005 162.82 0.195
7.27e+002 0 8/5/2016 4:59:21 PM ICV 3

SpectraView Block Data



Run Logs

Liquid Scintillation Counter Run Log

Detector: LSC3170 — Serial Number: 429774

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
06/09/16 12:00		IC 160-257601/1		257601			ALD
06/13/16 12:00		ICV 160-257601/2		257601			ALD
08/16/16 12:52		BBKG 160-265093/1		265093			
08/16/16 13:13	20	MB 160-264549/1-A		265093	264549	TC-02-RC	RTM
08/16/16 13:34	20	LCS 160-264549/2-A		265093	264549	TC-02-RC	RTM
08/16/16 13:54	20	ZZZZZ		265093			
08/16/16 14:15	20	ZZZZZ		265093			
08/16/16 14:36	20	ZZZZZ		265093			
08/16/16 14:57	20	160-18504-C-3-C DU		265093	264549	TC-02-RC	RTM
08/16/16 15:18	20	ZZZZZ		265093			
08/16/16 15:39	20	160-18521-1	YMTFA74SE001	265093	264549	TC-02-RC	RTM
08/16/16 15:59	20	160-18521-2	YMTFA75SE001	265093	264549	TC-02-RC	RTM

Detector: LSCAqua — Serial Number: 117385

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
08/04/16 00:00		IC 160-264515/1		264515			ALD
08/05/16 00:00		ICV 160-264515/2		264515			ALD
08/19/16 13:00		BBKG 160-265808/1		265808			
08/19/16 13:23	20	MB 160-265449/1-A		265808	265449	H3-04-RC	RTM
08/19/16 13:46	20	LCS 160-265449/2-A		265808	265449	H3-04-RC	RTM
08/19/16 14:08	20	160-18521-1	YMTFA74SE001	265808	265449	H3-04-RC	RTM
08/19/16 14:31	20	160-18521-1 DU	YMTFA74SE001 DU	265808	265449	H3-04-RC	RTM
08/19/16 14:54	20	160-18521-2	YMTFA75SE001	265808	265449	H3-04-RC	RTM
08/19/16 15:16	20	160-18521-2 MS	YMTFA75SE001 MS	265808	265449	H3-04-RC	RTM

Detector: — Serial Number: N/A

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
08/16/16 01:50		CCV 160-265099/1		265099			RTM
08/19/16 01:50		CCV 160-265814/1		265814			RTM

Radiological
Pre-Preparation Data

Radiological
Pre-Preparation Data

Subcontract Data

Analytical Data Package Prepared For

TESTAMERICA ST. LOUIS

Radiochemical Analysis By

TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TA-RL

Data Package Contains 51 ***Pages***

Report No.: 69206

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
51941		YMTFA74SE001(160-18521-1)	J6H150410-1	M84A71AA	9M84A710	6228062
		YMTFA75SE001(160-18521-2)	J6H150410-2	M84A81AA	9M84A810	6228062

Certificate of Analysis

August 25, 2016

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045

Attention: Erika Gish

Date Received in Lab	:	August 9, 2016
Sample Type	:	Two (2) Solid
SDG Number	:	51941
Job Number	:	160-18521-1
Project Number/Name	:	16005502/ORNL Y-12 Outfall 200 Characterization

CASE NARRATIVE

I. Introduction

On August 9, 2016, two solid samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt the samples were assigned to Lot Number J6H150410 with the laboratory ID number corresponding to the client ID as shown on the cover page.

II. Sample Receipt

The samples were received in good condition; no anomalies were noted upon check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Liquid Scintillation Counting
Carbon-14 by method RL-LSC-008

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

Liquid Scintillation Counting
Carbon-14 by method RL-LSC-008:
The LCS, batch blank, sample duplicate, and sample results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Roger A. Stringer

Digitally signed by Roger A. Stringer
DN: cn=Roger A. Stringer, o, ou,
email=Roger.Stringer@testamericainc.com, c=US
Date: 2016.08.25 15:58:13 -07'00'

Roger A. Stringer
Project Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in “NIST Technical Note 1297, 1994 Edition”. The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
CSU (#s) ***u_c Combined Standard Uncert.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, *u_c the combined standard uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA|MDL	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 25-Aug-16

TestAmerica Inc TA-RL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 69206 **SDG No:** 51942

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
6228062 RL-LSC-008									
YMTFA39SE001(160-18504-1) DUP									
	M84A91AC	CARBON-14	8.24E-02 +- 9.9E-02	U	PCI_G	100%	1.81E-01	1.00E+01	0.6
YMTFA74SE001(160-18521-1)									
	M84A71AA	CARBON-14	6.51E-02 +- 8.9E-02	U	PCI_G	100%	1.66E-01	1.00E+01	
YMTFA75SE001(160-18521-2)									
	M84A81AA	CARBON-14	5.40E-02 +- 9.6E-02	U	PCI_G	100%	1.81E-01	1.00E+01	

No. of Results: 3

TestAmerica Inc

rptTALRchSaSummary2 V5.6 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

QC Results Summary

Date: 25-Aug-16

TestAmerica Inc TA-RL

Ordered by Method, Batch No, QC Type,.

Report No. : 69206 **SDG No.:** 51941

Batch Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
RL-LSC-008								
6228062 BLANK QC,								
M84C41AA	CARBON-14	5.66E-02 +- 9.8E-02	U	PCI_G	100%			1.85E-01
6228062 LCS,								
M84C41AC	CARBON-14	7.32E+00 +- 5.1E-01		PCI_G	100%	105%	0.0	1.77E-01

No. of Results: 2

TestAmerica Inc
rptSTLRchQcSummary V5.6 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 25-Aug-16

Lab Name:	**TestAmerica Inc**	**SDG:**	51941	**Collection Date:**	8/5/2016 7:50:00 AM
Lot-Sample No.:	**J6H150410-1**	**Report No. :**	69206	**Received Date:**	8/9/2016 12:45:00 PM
Client Sample ID:	**YMTFA74SE001(160-18521-1)**	**COC No. :**		**Matrix:**	SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6228062	RL-LSC-008			**Work Order:** M84A71AA			**Report DB ID:** 9M84A710					
CARBON-14	**6.51E-02**	U	7.2E-02	8.9E-02	1.66E-01	PCI_G	100%	*0.39*	8/19/16 04:23 p		5.5	LSC4
						8.10E-02	1.00E+01	*(1.5)*			g	

No. of Results: 1 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.6 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 25-Aug-16

Lab Name:	**TestAmerica Inc**	**SDG:**	51941	**Collection Date:**	8/5/2016 9:25:00 AM
Lot-Sample No.:	**J6H150410-2**	**Report No. :**	69206	**Received Date:**	8/9/2016 12:45:00 PM
Client Sample ID:	**YMTFA75SE001(160-18521-2)**	**COC No. :**		**Matrix:**	SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6228062	RL-LSC-008			**Work Order:** M84A81AA			**Report DB ID:** 9M84A810					
CARBON-14	**5.40E-02**	U	7.8E-02	9.6E-02	1.81E-01	PCI_G	100%	*0.3*	8/19/16 06:27 p		5.1	LSC4
						8.84E-02	1.00E+01	*(1.1)*			g	

No. of Results: 1 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.6 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

FORM II

Date: 25-Aug-16

DUPLICATE RESULTS

Lab Name:	TestAmerica Inc	**SDG:**	51942	**Collection Date:**	8/4/2016 9:00:00 AM
Lot-Sample No.:	J6H150411-1	**Report No. :**	69206	**Received Date:**	8/9/2016 12:45:00 PM
Client Sample ID:	YMTFA39SE001(160-18504-1) DUP	**COC No. :**		**Matrix:**	SOLID SO

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6228062 RL-LSC-008				**Work Order:** M84A91AC		**Report DB ID:** M84A91CR			**Orig Sa DB ID:** 9M84A910			
CARBON-14	8.24E-02	U	7.9E-02	9.9E-02	1.81E-01	PCI_G	100%	0.45	8/19/16 10:34 p		5.0	LSC4
	4.12E-02	U	**RER2 0.6**			1.00E+01		(1.7)			g	

No. of Results: 1 **Comments:**

Page 2193 of 2237

TestAmerica Inc

rptSTLRchDupV5.6 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

FORM II

BLANK RESULTS

Date: 25-Aug-16

Lab Name: TestAmerica Inc

Matrix: SOLID

SDG: 51941

Report No. : 69206

Parameter	Result	Qual	Count Error (2 s)	CSU (2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6228062	RL-LSC-008			**Work Order:**	M84C41AA		**Report DB ID:**	M84C41AB				
CARBON-14	5.66E-02	U	7.9E-02	9.8E-02	1.85E-01	PCI_G	100%	0.31	8/20/16 06:48 a		5.0	LSC4
					9.03E-02	1.00E+01		(1.2)			g	

No. of Results: 1 **Comments:**

TestAmerica Inc

rptSTLRchBlank
V5.6 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 25-Aug-16

Lab Name: TestAmerica Inc

SDG: 51941

Matrix: SOLID

Report No. : 69206

Parameter	Result	Qual	Count Error (2 s)	CSU (2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 6228062	RL-LSC-008			**Work Order:**	M84C41AC		**Report DB ID:**	M84C41CS					
CARBON-14	7.32E+00		1.7E-01	5.1E-01	1.77E-01	PCI_G	100%	6.97E+00	1.40E-01	105%	8/20/16 08:52 a	5.2	LSC4
							Rec Limits:	75	125	0.0		g	

No. of Results: 1 **Comments:**

TestAmerica Inc **Bias** **- (Result/Expected)-1 as defined by ANSI N13.30.**

rptSTLRchLcs
V5.6 A2002

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Phone (314) 298-8566 Fax (314) 298-8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Gish, Erika K	Carrier Tracking No(s):	COC No: 160-90668.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: erika.gish@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 160-18521-1
Address: 2800 George Washington Way, ,	Due Date Requested: 8/18/2016			
City: Richland	TAT Requested (days):			
State, Zip: WA, 99352				
Phone: 509-375-3131(Tel) 509-375-5590(Fax)	PO #:			
Email:	WO #:			
Project Name: ORNL Y-12 Outfall 200 Characterization	Project #: 16005502			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Carbon 14)/ C-14	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X		X	
YMTFA74SE001 (160-18521-1) M84A7	8/5/16	07:50 Central		Solid			X	1	
YMTFA75SE001 (160-18521-2) M84A8	8/5/16	09:25 Central		Solid			X	1	

J6H150410

J6H150410
SDG-51941
Due 8-23-16

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 1

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
B	8/8/16 1700		J Bock J Bock	8-9-16/1245	TALR
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 8-9-16 / 1245 Container GM Screen Result: (Airlock) 0 cpm Initials[B]
Sample GM Screen Result (Sample Receiving) 0 cpm Initials[B]

Client: STLOR SDG #: 519441 SAF #: NA [B]

Lot Number: JL6H150410

Chain of Custody # 160-90668.1

Shipping Container ID or Air Bill Number : NA [B]

Samples received inside shipping container/cooler/box Yes [B] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: _____ °C NA [B]
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [B]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 2
7. Containers received: 2 x 4 oz jar
8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have: ____ tape ____ hazard labels ____ custody seals B appropriate sample labels
10. Matrix: B A (FLT, Wipe, Solid, Soil) ____ I (Water) ____ S (Air, Niosh 7400) ____ T (Biological, Ni-63)
11. Samples:
    B are in good condition ____ are leaking ____ are broken
    ____ have air bubbles (Only for samples requiring no head space) ____ Other ____
12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [B]
    (If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [B]
14. Description of anomalies (include sample numbers): NA [B]
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [B]
    *For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: [signature] Date: 8-9-16

Client Notification needed? Yes [ ] No [ ] Date: _____
By: _____
Person contacted: _____

[X] No action necessary; process as is

Project Manager [signature] Date 8-15-16

C-14

SAMPLE AND QC DATA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

8/24/2016 4:10:37 PM

Lot No., Due Date: J6H150410,J6H150411; 08/23/2016
Client, Site: 160; STLOR TA St Louis - ORNL Y12/Alliant
QC Batch No., Method Test: 6228062; RC14 C-14 by LSC
SDG, Matrix: 51941,51942; SOLID

1.0 COC	
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	Yes ✓ No N/A
2.0 QC Batch	
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	Yes ✓ No N/A
2.2 Are the QC appropriate for the analysis included in the batch?	Yes ✓ No N/A
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	Yes ✓ No N/A
2.4 Does the Worksheets include a Tracer Vial label for each sample?	Yes No N/A ✓
3.0 QC & Samples	
3.1 Is the blank results, yield, and MDA within contract limits?	Yes ✓ No N/A
3.2 Is the LCS result, yield, and MDA within contract limits?	Yes ✓ No N/A
3.3 Are the MS/MSD results, yields, and MDA within contract limits?	Yes No N/A ✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	Yes ✓ No N/A
3.5 Are the sample yields and MDAs within contract limits?	Yes ✓ No N/A
4.0 Raw Data	
4.1 Were results calculated in the correct units?	Yes ✓ No N/A
4.2 Were analysis volumes entered correctly?	Yes ✓ No N/A
4.3 Were Yields entered correctly?	Yes No N/A ✓
4.4 Were spectra reviewed/meet contractual requirements?	Yes No N/A ✓
4.5 Were raw counts reviewed for anomalies?	Yes ✓ No N/A
5.0 Other	
5.1 Are all nonconformances included and noted?	Yes No N/A ✓
5.2 Are all required forms filled out?	Yes ✓ No N/A
5.3 Was the correct methodology used?	Yes ✓ No N/A
5.4 Was transcription checked?	Yes ✓ No N/A
5.5 Were all calculations checked at a minimum frequency?	Yes ✓ No N/A
5.6 Are worksheet entries complete and correct?	Yes ✓ No N/A
6.0 Comments on any No response:	

First Level Jodie G **Date** 8/24/16

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 6228062

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Nonconformances (NCM) included and noted?			✓
2. Was the correct methodology used?	✓		
3. Were units checked?	✓		

Comments on any "No" response:

Second Level Review: [signature] Date: 8-25-16

Batch Nbr: 6228062

Liquid Scint, C-14 Digestion, Results

8/22/2016 9:40:02 PM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	*MLcC	MDC	QC	Trc Yld	LCS Yld
C-14 Digestion			LSC Using tSIE to Calc DPM With Batch Blk Subt *CntU: 0+1, + *SystU, `MDCConst:2.71											
Calc	TC	SOLID	M84C41AD	C-14	9.36E-01	(6.71E-02)		pCi/g	R			N		
Calc	TC	SOLID	M84C41AD	C-14	8.49E-01	(6.20E-02)		pCi/g	R			N		
Calc	TC	SOLID	M84C41AD	C-14	8.24E-01	(6.06E-02)		pCi/g	R			N		
Calc	TC	SOLID	M84C41AD	C-14	8.91E-01	(6.45E-02)		pCi/g	R			N		
Calc	TC	SOLID	M84C41AD	C-14	8.73E-01	(3.18E-02)		pCi/g	A			N		
Calc	TC	SOLID	M84A71AA	C-14	3.50E-02	(8.86E-02)	U4	pCi/g	R	1.62E-01	3.33E-01			
Calc	TC	SOLID	M84A71AA	C-14	7.51E-02	(8.97E-02)	U4	pCi/g	R	1.62E-01	3.33E-01			
Calc	TC	SOLID	M84A71AA	C-14	1.92E-02	(8.81E-02)	U4	pCi/g	R	1.62E-01	3.32E-01			
Calc	TC	SOLID	M84A71AA	C-14	1.36E-01	(9.15E-02)	U4	pCi/g	R	1.62E-01	3.32E-01			
Calc	TC	SOLID	M84A71AA	C-14	6.51E-02	(4.47E-02)	U4	pCi/g	A	8.10E-02	1.66E-01			
Calc	TC	SOLID	M84A81AA	C-14	1.36E-01	(9.88E-02)	U4	pCi/g	R	1.77E-01	3.63E-01			
Calc	TC	SOLID	M84A81AA	C-14	-4.74E-03	(9.48E-02)	U4	pCi/g	R	1.77E-01	3.63E-01			
Calc	TC	SOLID	M84A81AA	C-14	1.09E-01	(9.79E-02)	U4	pCi/g	R	1.77E-01	3.62E-01			
Calc	TC	SOLID	M84A81AA	C-14	-1.43E-02	(9.45E-02)	U4	pCi/g	R	1.77E-01	3.62E-01			
Calc	TC	SOLID	M84A81AA	C-14	5.40E-02	(4.82E-02)	U4	pCi/g	A	8.84E-02	1.81E-01			
Calc	TC	SOLID	M84A91AA	C-14	4.26E-03	(9.47E-02)	U4	pCi/g	R	1.75E-01	3.60E-01			
Calc	TC	SOLID	M84A91AA	C-14	1.45E-01	(9.87E-02)	U4	pCi/g	R	1.75E-01	3.60E-01			
Calc	TC	SOLID	M84A91AA	C-14	-7.64E-02	(9.27E-02)	U4	pCi/g	R	1.75E-01	3.59E-01			
Calc	TC	SOLID	M84A91AA	C-14	1.10E-01	(9.76E-02)	U4	pCi/g	R	1.75E-01	3.59E-01			
Calc	TC	SOLID	M84A91AA	C-14	4.12E-02	(4.80E-02)	U4	pCi/g	A	8.76E-02	1.80E-01			
Calc	TC	SOLID	M84A91AC	C-14	8.07E-02	(9.83E-02)	U4	pCi/g	R	1.77E-01	3.62E-01	R		
Calc	TC	SOLID	M84A91AC	C-14	-1.93E-02	(9.56E-02)	U4	pCi/g	R	1.76E-01	3.62E-01	R		
Calc	TC	SOLID	M84A91AC	C-14	1.71E-01	(1.01E-01)		pCi/g	R	1.76E-01	3.62E-01	R		
Calc	TC	SOLID	M84A91AC	C-14	1.07E-01	(9.91E-02)	U4	pCi/g	R	1.76E-01	3.62E-01	R		
Calc	TC	SOLID	M84A91AC	C-14	8.24E-02	(4.93E-02)		pCi/g	A	8.82E-02	1.81E-01	R		
Calc	TC	SOLID	M84CA1AA	C-14	1.35E-01	(9.83E-02)	U4	pCi/g	R	1.74E-01	3.58E-01			
Calc	TC	SOLID	M84CA1AA	C-14	3.87E-02	(9.54E-02)	U4	pCi/g	R	1.74E-01	3.57E-01			
Calc	TC	SOLID	M84CA1AA	C-14	5.02E-02	(9.58E-02)	U4	pCi/g	R	1.74E-01	3.57E-01			
Calc	TC	SOLID	M84CA1AA	C-14	9.40E-03	(9.46E-02)	U4	pCi/g	R	1.74E-01	3.57E-01			
Calc	TC	SOLID	M84CA1AA	C-14	5.72E-02	(4.80E-02)	U4	pCi/g	A	8.70E-02	1.79E-01			
Calc	TC	SOLID	M84CC1AA	C-14	7.20E-02	(9.11E-02)	U4	pCi/g	R	1.64E-01	3.37E-01			
Calc	TC	SOLID	M84CC1AA	C-14	2.61E-02	(8.98E-02)	U4	pCi/g	R	1.64E-01	3.37E-01			
Calc	TC	SOLID	M84CC1AA	C-14	1.89E-01	(9.46E-02)		pCi/g	R	1.64E-01	3.37E-01			
Calc	TC	SOLID	M84CC1AA	C-14	1.60E-01	(9.37E-02)		pCi/g	R	1.64E-01	3.37E-01			
Calc	TC	SOLID	M84CC1AA	C-14	1.09E-01	(4.62E-02)		pCi/g	A	8.21E-02	1.68E-01			
Calc	TC	SOLID	M84CD1AA	C-14	7.79E-02	(8.66E-02)	U4	pCi/g	R	1.56E-01	3.20E-01			
Calc	TC	SOLID	M84CD1AA	C-14	1.71E-01	(8.94E-02)		pCi/g	R	1.55E-01	3.19E-01			

() - (1s Uncertainities)
IDC - Instrument Detection Level in Conc Units
MLcC- Method Decision Level in Conc Units
MDC - Minimum Detectable Concentration
*Std - Lc, MDC using StdDev for Set of Blanks

Q - Qualifier, U is Less Than Lc = 1.645*TPU, R - Rejected Test, Outside Limits, Calib Curve
All Results Displayed to Three Digits Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:38
RADCALC v5.7.3
TestAmerica

Batch Nbr: 6228062

Liquid Scint, C-14 Digestion, Results

8/22/2016 9:40:02 PM

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	*Uncert	Q	Units	Av	MLcC	`MDC	QC	Trc Yld	LCS Yld
Calc	TC	SOLID	**M84CD1AA**	C-14	**-5.61E-02**	**(8.30E-02)**	U4	pCi/g	R	1.56E-01	3.20E-01			
Calc	TC	SOLID	**M84CD1AA**	C-14	**1.56E-01**	**(8.89E-02)**		pCi/g	R	1.56E-01	3.19E-01			
Calc	TC	SOLID	**M84CD1AA**	C-14	**8.20E-02**	**(4.35E-02)**		pCi/g	A	7.78E-02	1.60E-01			
Calc	TC	SOLID	**M84C41AA**	C-14	**9.48E-02**	**(9.95E-02)**	U4	pCi/g	R	1.81E-01	3.71E-01	**B**		
Calc	TC	SOLID	**M84C41AA**	C-14	**-7.57E-03**	**(9.66E-02)**	U4	pCi/g	R	1.80E-01	3.70E-01	**B**		
Calc	TC	SOLID	**M84C41AA**	C-14	**6.16E-02**	**(9.85E-02)**	U4	pCi/g	R	1.80E-01	3.70E-01	**B**		
Calc	TC	SOLID	**M84C41AA**	C-14	**8.10E-02**	**(9.91E-02)**	U4	pCi/g	R	1.81E-01	3.71E-01	**B**		
Calc	TC	SOLID	**M84C41AA**	C-14	**5.66E-02**	**(4.92E-02)**	U4	pCi/g	A	9.03E-02	1.85E-01	**B**		
Calc	TC	SOLID	**M84C41AC**	C-14	**7.32E+00**	**(5.12E-01)**		pCi/g	R	1.73E-01	3.55E-01	**S**		105%
Calc	TC	SOLID	**M84C41AC**	C-14	**7.22E+00**	**(5.05E-01)**		pCi/g	R	1.73E-01	3.55E-01	**S**		104%
Calc	TC	SOLID	**M84C41AC**	C-14	**7.57E+00**	**(5.27E-01)**		pCi/g	R	1.73E-01	3.55E-01	**S**		109%
Calc	TC	SOLID	**M84C41AC**	C-14	**7.18E+00**	**(5.03E-01)**		pCi/g	R	1.73E-01	3.54E-01	**S**		103%
Calc	TC	SOLID	**M84C41AC**	C-14	**7.32E+00**	**(2.56E-01)**		pCi/g	A	8.64E-02	1.77E-01	**S**		105%

() - (1s Uncertainities)
IDC - Instrument Detection Level in Conc Units
MLcC- Method Decision Level in Conc Units
MDC - Minimum Detectable Concentration
*Std - Lc, MDC using StdDev for Set of Blanks

Page 2

Q - Qualifier, U is Less Than Lc = 1.645*TPU, R - Rejected Test, Outside Limits, Calib Curve
All Results Displayed to Three Digits Reguardless of Significants
Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:50
RADCALC v5.7.3
TestAmerica

8/24/2016 4:09:56 PM

Rpt DB Transfer log (Batch Results)

SDG or Batch / Isotope	Rpt Db Id / Method	RTst	Qc	LotSample / Analysis Date	Client Id / Result	Cnt Uncert	Tot Uncert	Matrix / Mda	Received Date / Units	Sample Date / Expected	Yield	Volumes
51941	**9M84A710**			**J6H1504101**	YMTFA74SE001(16	SOLID		8/9/2016 12:45:00	8/5/2016 7:50:00 AM			
C-14	5SS3	0		8/19/2016 4:23:33 PM	**6.5064E-02**	3.6E-02	4.475E-02	1.663E-01	pCi/g		1.0	5.5E+0
51941	**9M84A810**			**J6H1504102**	YMTFA75SE001(16	SOLID		8/9/2016 12:45:00	8/5/2016 9:25:00 AM			
C-14	5SS3	0		8/19/2016 6:27:18 PM	**5.3972E-02**	3.888E-02	4.824E-02	1.814E-01	pCi/g		1.0	5.1E+0
51942	**9M84A910**			**J6H1504111**	YMTFA39SE001(16	SOLID		8/9/2016 12:45:00	8/4/2016 9:00:00 AM			
C-14	5SS3	0		8/19/2016 8:30:42 PM	**4.1248E-02**	3.859E-02	4.799E-02	1.797E-01	pCi/g		1.0	5.1E+0
51942	**9M84CA10**			**J6H1504112**	YMTFA40SE001(16	SOLID		8/9/2016 12:45:00	8/4/2016 12:40:00 PM			
C-14	5SS3	0		8/20/2016 12:37:52	**5.7158E-02**	3.86E-02	4.801E-02	1.786E-01	pCi/g		1.0	5.1E+0
51942	**9M84CC10**			**J6H1504113**	YMTFA41SE001(16	SOLID		8/9/2016 12:45:00	8/4/2016 1:25:00 PM			
C-14	5SS3	0		8/20/2016 2:41:36 AM	**1.0912E-01**	3.704E-02	4.616E-02	1.684E-01	pCi/g		1.0	5.4E+0
51942	**9M84CD10**			**J6H1504114**	YMTFA73SE001(16	SOLID		8/9/2016 12:45:00	8/4/2016 2:00:00 PM			
C-14	5SS3	0		8/20/2016 4:45:01 AM	**8.1961E-02**	3.491E-02	4.351E-02	1.597E-01	pCi/g		1.0	5.7E+0
51942	**M84A91CR**			**J6H1504111**	YMTFA39SE001(16	SOLID		8/9/2016 12:45:00	8/4/2016 9:00:00 AM			
C-14	5SS3	0	R	8/19/2016 10:34:27 PM	**8.2363E-02**	3.953E-02	4.926E-02	1.811E-01	pCi/g		1.0	5.0E+0
51941	**M84C41AB**			**J6H15000062**	INTRA-LAB BLANK	SOLID		8/9/2016 12:45:00	8/4/2016 9:00:00 AM			
C-14	5SS3	0	B	8/20/2016 6:48:46 AM	**5.6606E-02**	3.968E-02	4.92E-02	1.853E-01	pCi/g		1.0	5.0E+0
51941	**M84C41CS**			**J6H15000062**	INTRA-LAB CHECK	SOLID		8/9/2016 12:45:00	8/4/2016 9:00:00 AM			
C-14	5SS3	0	S	8/20/2016 8:52:10 AM	**7.3178E+00**	8.673E-02	2.559E-01	1.774E-01	pCi/g	6.9708E+00	1.0	5.2E+0

6228062, **Samples Inserted | Updated | NotUpdated => 9 | 0 | 0,
**Results Inserted | ReTestInserted | Updated | NotInserted => 9 | 0 | 0 | 0.
**Diff RptDb | Qtims => .

ICOC Fraction Transfer/Status Report

ByDate: 8/25/2015, 8/29/2016, Batch: '6228062', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			SOPs,Reagents,Comments
6228062						
AC		**Rev1C**	**NortonP**	8/16/2016 3:45:30 PM		
SC			campbellsc	IsBatched	8/16/2016 8:53:32 AM	ICOC_RADCALC v4.9.0
SC			NortonP	Sep1C	8/16/2016 3:45:30 PM	RL-LSC-008 REVISION6
SC			DawkinsO	InCnt1	8/17/2016 12:19:28 AM	RL-CI-005 REVISION 5
SC			DawkinsO	CalcC	8/23/2016 12:11:45 AM	RL-CI-005 REVISION 5
SC			carnesj	Rev1C	8/24/2016 4:09:35 PM	RL-DR-001 Rev 7
AC			**DawkinsO**	8/17/2016 12:19:28		
AC			**DawkinsO**	8/23/2016 12:11:45		
AC			**carnesj**	8/24/2016 4:09:35 PM		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 4

ICOCFractions v4.9.4

Liquid Scintillation Counting Sheet (Direct|Distilled Method)

Batch 6228062 **Matrix:** SOLID

Report Due: 08/23/2016 **160, Client:, TestAmerica St. Louis**

Analysis : S3-C-14 by LSC , Carbon-14 by Liquid Scint

Position No.	Tray No.	Work Order	QC	Volume Analyzed (g,mL,L,Hr)	Total Sample Volume (g,mL,L,Hr)	Vial Label Or Spike Value
1	6	M84C41AD	N			
2	6	M84A71AA		5.5g		
3	6	M84A81AA		5.1g		
4	6	M84A91AA		5.1g		
5	6	M84A91AC	R	5g		
6	6	M84CA1AA		5.1g		
7	6	M84CC1AA		5.4g		
8	6	M84CD1AA		5.7g		
9	6	M84C41AA	B	5g		
10	6	M84C41AC	S	5.2g		CSB2061

Comments:

Preparation Information

8/16/16
Date Cocktail Added

Total Count Dur: 120 min

Volume Counted: 10 mL

Tech Initials: PN

Counting Information

LSC #:: 4

Protocol Flag#: 11 8/16/16

CR Initials: OD

TestAmerica
Richland Wa.

Page 1

Prep_SamplePrep v4.8.69

Batch Nbr: 6228062

Liquid Scint, C-14 Digestion, Calculated Results
Detailed Report

8/22/2016 9:40:03 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
1	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84C41AD**	**pCi/g**	**N**	08/04/16 09:00	08/19/16 14:20			1	g	
0,INTRA-LAB BLANK					,J6H150000-62 v5.7.2		SOLID	**B**				Alq		10.00 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/19/16 12:47	C-14	17.5667	-1	LSC4	SVP10/1	N	N	8.4572E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			30	159.005			Y		(1.795E-02)						(0.000E+00)	0.10		
1	08/19/16 13:18	C-14	16	-1	LSC4	SVP10/1	N	N	8.4851E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			30	161.083			Y		(1.801E-02)						(0.000E+00)	0.10		
2	08/19/16 13:49	C-14	15.5	-1	LSC4	SVP10/1	N	N	8.4698E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			30	159.945			Y		(1.798E-02)						(0.000E+00)	0.10		
3	08/19/16 14:20	C-14	16.7667	-1	LSC4	SVP10/1	N	N	8.4746E-01		N	100%	N		1.0000E+00	4.5045E-01	1.0000E+00	
			30	160.3			Y		(1.799E-02)						(0.000E+00)	0.10		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/iLcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**0.935644**		1.75667E+01	20.771287	20.771287	10.00 G					
				(0.067133)		(7.6522E-01)	(1.006549)	(1.006549)	(0.1732)					
	08/22/16	C-14	R	**0.849397**		1.60000E+01	18.856609	18.856609	10.00 G					
				(0.062035)		(7.3030E-01)	(0.949229)	(0.949229)	(0.1732)					
	08/22/16	C-14	R	**0.824334**		1.55000E+01	18.300219	18.300219	10.00 G					
				(0.060583)		(7.1880E-01)	(0.933356)	(0.933356)	(0.1732)					
	08/22/16	C-14	R	**0.8912**		1.67667E+01	19.784634	19.784634	10.00 G					
				(0.064504)		(7.4759E-01)	(0.977045)	(0.977045)	(0.1732)					
	08/22/16	C-14	A	**0.87315**		1.64214E+01	19.383934	19.383934	10.00 G					
				(0.031806)		(3.7034E-01)	(0.483473)	(0.483473)	(0.0866)					

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
2	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84A71AA**	**pCi/g**		08/05/16 07:50	08/19/16 16:23			1	g	
160,YMTFA74SE001(160-18521-1)					,J6H150410-1		SOLID					Alq		5.50 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/19/16 14:51	C-14	17.2333	-1	LSC4	SVP10/1	N	N	8.6989E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	178.224			Y		(1.847E-02)					(4.835E-01)	(0.000E+00)	0.181818		
1	08/19/16 15:21	C-14	17.6667	-1	LSC4	SVP10/1	N	N	8.7022E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	178.52			Y		(1.847E-02)					(4.835E-01)	(0.000E+00)	0.181818		
2	08/19/16 15:52	C-14	17.1	-1	LSC4	SVP10/1	N	N	8.7161E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	179.801			Y		(1.850E-02)					(4.835E-01)	(0.000E+00)	0.181818		

() - (1s Uncertainities), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration
Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:2

RADCALC v5.7.3
TestAmerica

Batch Nbr: 6228062

Liquid Scint, C-14 Digestion, Calculated Results

8/22/2016 9:40:03 PM

3	08/19/16 16:23	C-14	18.3333	-1	LSC4	SVP10/1	N	N	8.7130E-01	N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	179.511			Y		(1.850E-02)				(4.835E-01)	(0.000E+00)	0.181818		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**0.034964**	**U4**	1.72333E+01	19.810842	0.426908	5.50 G				0.162231	
				(0.088604)		(7.5792E-01)	(0.967482)	(1.081558)	(0.173205)				0.332967	
	08/22/16	C-14	R	**0.075144**	**U4**	1.76667E+01	20.301441	0.917508	5.50 G				0.16217	
				(0.089721)		(7.6739E-01)	(0.981528)	(1.094141)	(0.173205)				0.332842	
	08/22/16	C-14	R	**0.019245**	**U4**	1.71000E+01	19.618915	0.234981	5.50 G				0.161912	
				(0.088123)		(7.5498E-01)	(0.961133)	(1.075882)	(0.173205)				0.332312	
	08/22/16	C-14	R	**0.135746**	**U4**	1.83333E+01	21.041389	1.657455	5.50 G				0.16197	
				(0.091489)		(7.8174E-01)	(1.002263)	(1.11278)	(0.173205)				0.33243	
	08/22/16	C-14	A	**0.065064**	**U4**	1.75704E+01	20.178356	0.794422	5.50 G				0.081036	
				(0.044747)		(3.8279E-01)	(0.489114)	(0.545591)	(0.086603)				0.16632	

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
3	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84A81AA**	**pCi/g**		08/05/16 09:25	08/19/16 18:27			1	g	
160,YMTFA75SE001(160-18521-2)					,J6H150410-2		SOLID					Alq		5.10 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/19/16 16:54	C-14	18	-1	LSC4	SVP10/1	N	N	8.6026E-01	N		100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	170.111			Y		(1.826E-02)					(4.835E-01)	(0.000E+00)	0.196078		
1	08/19/16 17:25	C-14	16.6333	-1	LSC4	SVP10/1	N	N	8.6048E-01	N		100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	170.287			Y		(1.827E-02)					(4.835E-01)	(0.000E+00)	0.196078		
2	08/19/16 17:56	C-14	17.7667	-1	LSC4	SVP10/1	N	N	8.6177E-01	N		100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	171.326			Y		(1.830E-02)					(4.835E-01)	(0.000E+00)	0.196078		
3	08/19/16 18:27	C-14	16.5667	-1	LSC4	SVP10/1	N	N	8.6184E-01	N		100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	171.382			Y		(1.830E-02)					(4.835E-01)	(0.000E+00)	0.196078		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**0.136024**	**U4**	1.80000E+01	20.923993	1.540059	5.10 G				0.176915	
				(0.098769)		(7.7460E-01)	(1.004039)	(1.114379)	(0.173205)				0.363104	
	08/22/16	C-14	R	**-0.004735**	**U4**	1.66333E+01	19.330324	-0.05361	5.10 G				0.17687	
				(0.094758)		(7.4461E-01)	(0.957724)	(1.072839)	(0.173205)				0.363011	
	08/22/16	C-14	R	**0.108866**	**U4**	1.77667E+01	20.616511	1.232577	5.10 G				0.176604	
				(0.097889)		(7.6956E-01)	(0.994494)	(1.105787)	(0.173205)				0.362467	
	08/22/16	C-14	R	**-0.01426**	**U4**	1.65667E+01	19.222484	-0.16145	5.10 G				0.17659	
				(0.094463)		(7.4312E-01)	(0.953943)	(1.069464)	(0.173205)				0.362437	
	08/22/16	C-14	A	**0.053972**	**U4**	1.72174E+01	19.995006	0.611072	5.10 G				0.088372	
				(0.048244)		(3.7905E-01)	(0.488899)	(0.545398)	(0.086603)				0.181376	

() - (1s Uncertainities), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU

IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

Batch Nbr: 6228062

Liquid Scint, C-14 Digestion, Calculated Results

8/22/2016 9:40:03 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
4	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84A91AA**	**pCi/g**		08/04/16 09:00	08/19/16 20:30			1	g	
160,YMTFA39SE001(160-18504-1)						,J6H150411-1	SOLID					Alq		5.10 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/19/16 18:58	C-14	16.8667	-1	LSC4	SVP10/1	N	N	8.6798E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	176.523			Y		(1.843E-02)					(4.835E-01)	(0.000E+00)	0.196078		
1	08/19/16 19:29	C-14	18.2667	-1	LSC4	SVP10/1	N	N	8.6864E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	177.109			Y		(1.844E-02)					(4.835E-01)	(0.000E+00)	0.196078		
2	08/19/16 20:00	C-14	16.1	-1	LSC4	SVP10/1	N	N	8.6940E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	177.784			Y		(1.846E-02)					(4.835E-01)	(0.000E+00)	0.196078		
3	08/19/16 20:30	C-14	17.9333	-1	LSC4	SVP10/1	N	N	8.6954E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	177.91			Y		(1.846E-02)					(4.835E-01)	(0.000E+00)	0.196078		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**0.004264**	**U4**	1.68667E+01	19.432212	0.048278	5.10 G				0.175341	
				(0.094726)		(7.4982E-01)	(0.957319)	(1.072476)	(0.173205)				0.359875	
	08/22/16	C-14	R	**0.145298**	**U4**	1.82667E+01	21.028991	1.645057	5.10 G				0.175207	
				(0.098746)		(7.8031E-01)	(1.003135)	(1.113565)	(0.173205)				0.359599	
	08/22/16	C-14	R	**-0.076443**	**U4**	1.61000E+01	18.518455	-0.865479	5.10 G				0.175054	
				(0.092679)		(7.3258E-01)	(0.929823)	(1.048006)	(0.173205)				0.359285	
	08/22/16	C-14	R	**0.109511**	**U4**	1.79333E+01	20.623808	1.239874	5.10 G				0.175025	
				(0.097624)		(7.7316E-01)	(0.991113)	(1.102748)	(0.173205)				0.359226	
	08/22/16	C-14	A	**0.041248**	**U4**	1.72483E+01	19.850939	0.467005	5.10 G				0.087578	
				(0.047987)		(3.7960E-01)	(0.485387)	(0.542252)	(0.086603)				0.179748	

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84A91AC**	**pCi/g**	R	08/04/16 09:00	08/19/16 22:34			1	g	
160,YMTFA39SE001(160-18504-1) DUP						,J6H150411-1	SOLID					Alq		5.00 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/19/16 21:02	C-14	17.8333	-1	LSC4	SVP10/1	N	N	8.7937E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	188.039			Y		(1.867E-02)					(4.835E-01)	(0.000E+00)	0.20		
1	08/19/16 21:32	C-14	16.8667	-1	LSC4	SVP10/1	N	N	8.7986E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	188.663			Y		(1.868E-02)					(4.835E-01)	(0.000E+00)	0.20		
2	08/19/16 22:03	C-14	18.7333	-1	LSC4	SVP10/1	N	N	8.8004E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	188.897			Y		(1.868E-02)					(4.835E-01)	(0.000E+00)	0.20		
3	08/19/16 22:34	C-14	18.1	-1	LSC4	SVP10/1	N	N	8.7982E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	188.607			Y		(1.868E-02)					(4.835E-01)	(0.000E+00)	0.20		

() - (1s Uncertainities), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration
Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

Batch Nbr: 6228062

Liquid Scint, C-14 Digestion, Calculated Results

8/22/2016 9:40:03 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**0.080695**	**U4**	1.78333E+01	20.279644	0.89571	5.00 G				0.176531	
				(0.09831)		(7.7100E-01)	(0.976771)	(1.089875)	(0.173205)				0.362317	
	08/22/16	C-14	R	**-0.019293**	**U4**	1.68667E+01	19.169786	-0.214148	5.00 G				0.176433	
				(0.095589)		(7.4982E-01)	(0.94439)	(1.060952)	(0.173205)				0.362115	
	08/22/16	C-14	R	**0.171442**		1.87333E+01	21.286927	1.902993	5.00 G				0.176397	
				(0.101033)		(7.9022E-01)	(1.005247)	(1.115468)	(0.173205)				0.362042	
	08/22/16	C-14	R	**0.107079**	**U4**	1.81000E+01	20.572499	1.188566	5.00 G				0.176442	
				(0.099065)		(7.7675E-01)	(0.984977)	(1.097235)	(0.173205)				0.362133	
	08/22/16	C-14	A	**0.082363**		1.78577E+01	20.298161	0.914228	5.00 G				0.088226	
				(0.049259)		(3.8604E-01)	(0.489046)	(0.54553)	(0.086603)				0.181076	

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
6	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84CA1AA**	**pCi/g**		08/04/16 12:40	08/20/16 00:37			1	g	
160,YMTFA40SE001(160-18504-2)						,J6H150411-2	SOLID					Alq		5.10 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/19/16 23:05	C-14	18.2667	-1	LSC4	SVP10/1	N	N	8.7347E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	181.58			Y		(1.854E-02)					(4.835E-01)	(0.000E+00)	0.196078		
1	08/19/16 23:36	C-14	17.3333	-1	LSC4	SVP10/1	N	N	8.7445E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	182.564			Y		(1.856E-02)					(4.835E-01)	(0.000E+00)	0.196078		
2	08/20/16 00:07	C-14	17.4333	-1	LSC4	SVP10/1	N	N	8.7375E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	181.863			Y		(1.855E-02)					(4.835E-01)	(0.000E+00)	0.196078		
3	08/20/16 00:37	C-14	17.0667	-1	LSC4	SVP10/1	N	N	8.7565E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	183.794			Y		(1.859E-02)					(4.835E-01)	(0.000E+00)	0.196078		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**0.135046**	**U4**	1.82667E+01	20.912913	1.528979	5.10 G				0.17424	
				(0.098254)		(7.8031E-01)	(0.997598)	(1.108579)	(0.173205)				0.357614	
	08/22/16	C-14	R	**0.038679**	**U4**	1.73333E+01	19.821859	0.437925	5.10 G				0.174043	
				(0.09542)		(7.6012E-01)	(0.965753)	(1.080011)	(0.173205)				0.357209	
	08/22/16	C-14	R	**0.050193**	**U4**	1.74333E+01	19.95222	0.568286	5.10 G				0.174182	
				(0.095762)		(7.6231E-01)	(0.969843)	(1.08367)	(0.173205)				0.357496	
	08/22/16	C-14	R	**0.009401**	**U4**	1.70667E+01	19.490367	0.106433	5.10 G				0.173805	
				(0.094591)		(7.5425E-01)	(0.955591)	(1.070935)	(0.173205)				0.356722	
	08/22/16	C-14	A	**0.057158**	**U4**	1.75138E+01	20.031076	0.647142	5.10 G				0.087032	
				(0.048008)		(3.8215E-01)	(0.48616)	(0.542944)	(0.086603)				0.178627	

() - (1s Uncertainities), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration
Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:7

RADCALC v5.7.3
TestAmerica

Batch Nbr: 6228062

Liquid Scint, C-14 Digestion, Calculated Results

8/22/2016 9:40:04 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
7	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84CC1AA**	**pCi/g**		08/04/16 13:25	08/20/16 02:41			1	g	
160,YMTFA41SE001(160-18504-3)						,J6H150411-3	SOLID					Alq		5.40 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/20/16 01:09	C-14	17.7	-1	LSC4	SVP10/1	N	N	8.7419E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	182.3			Y		(1.856E-02)					(4.835E-01)	(0.000E+00)	0.185185		
1	08/20/16 01:39	C-14	17.2667	-1	LSC4	SVP10/1	N	N	8.7665E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	184.863			Y		(1.861E-02)					(4.835E-01)	(0.000E+00)	0.185185		
2	08/20/16 02:10	C-14	18.9667	-1	LSC4	SVP10/1	N	N	8.7620E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	184.382			Y		(1.860E-02)					(4.835E-01)	(0.000E+00)	0.185185		
3	08/20/16 02:41	C-14	18.6667	-1	LSC4	SVP10/1	N	N	8.7644E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	184.642			Y		(1.861E-02)					(4.835E-01)	(0.000E+00)	0.185185		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**0.072018**	**U4**	1.77000E+01	20.247283	0.863349	5.40 G				0.164423	
				(0.091119)		(7.6811E-01)	(0.978166)	(1.091126)	(0.173205)				0.337466	
	08/22/16	C-14	R	**0.026059**	**U4**	1.72667E+01	19.696322	0.312388	5.40 G				0.163963	
				(0.089761)		(7.5865E-01)	(0.961134)	(1.075884)	(0.173205)				0.336521	
	08/22/16	C-14	R	**0.188737**		1.89667E+01	21.646502	2.262568	5.40 G				0.164046	
				(0.094615)		(7.9512E-01)	(1.017197)	(1.126248)	(0.173205)				0.336691	
	08/22/16	C-14	R	**0.159687**		1.86667E+01	21.298254	1.91432	5.40 G				0.164001	
				(0.093678)		(7.8881E-01)	(1.007212)	(1.117239)	(0.173205)				0.336599	
	08/22/16	C-14	A	**0.10912**		1.81235E+01	20.692059	1.308125	5.40 G				0.082055	
				(0.046157)		(3.8891E-01)	(0.49559)	(0.551404)	(0.086603)				0.168411	

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
8	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84CD1AA**	**pCi/g**		08/04/16 14:00	08/20/16 04:45			1	g	
160,YMTFA73SE001(160-18504-4)						,J6H150411-4	SOLID					Alq		5.70 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/20/16 03:12	C-14	17.8	-1	LSC4	SVP10/1	N	N	8.7385E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	181.957			Y		(1.855E-02)					(4.835E-01)	(0.000E+00)	0.175439		
1	08/20/16 03:43	C-14	18.8667	-1	LSC4	SVP10/1	N	N	8.7578E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	183.936			Y		(1.859E-02)					(4.835E-01)	(0.000E+00)	0.175439		
2	08/20/16 04:14	C-14	16.3333	-1	LSC4	SVP10/1	N	N	8.7467E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	182.787			Y		(1.857E-02)					(4.835E-01)	(0.000E+00)	0.175439		
3	08/20/16 04:45	C-14	18.7	-1	LSC4	SVP10/1	N	N	8.7530E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	183.435			Y		(1.858E-02)					(4.835E-01)	(0.000E+00)	0.175439		

() - (1s Uncertainities), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU

IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:8

RADCALC v5.7.3

TestAmerica

Batch Nbr: 6228062

Liquid Scint, C-14 Digestion, Calculated Results

8/22/2016 9:40:04 PM

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**0.077901**	U4	1.78000E+01	20.369692	0.985758	5.70 G				0.15583	
				(0.086609)		(7.7028E-01)	(0.981847)	(1.094427)	(0.173205)				0.31983	
	08/22/16	C-14	R	**0.170598**		1.88667E+01	21.542672	2.158738	5.70 G				0.155486	
				(0.089367)		(7.9303E-01)	(1.01445)	(1.123769)	(0.173205)				0.319123	
	08/22/16	C-14	R	**-0.056136**	U4	1.63333E+01	18.67359	-0.710344	5.70 G				0.155683	
				(0.083045)		(7.3786E-01)	(0.932097)	(1.050025)	(0.173205)				0.319528	
	08/22/16	C-14	R	**0.156478**		1.87000E+01	21.363997	1.980063	5.70 G				0.155571	
				(0.088935)		(7.8951E-01)	(1.009603)	(1.119395)	(0.173205)				0.319298	
	08/22/16	C-14	A	**0.081961**		1.78664E+01	20.421058	1.037125	5.70 G				0.077823	
				(0.043513)		(3.8649E-01)	(0.492521)	(0.548647)	(0.086603)				0.159727	

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
9	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84C41AA**	**pCi/g**	B	08/04/16 09:00	08/20/16 06:48			1	g	
0,INTRA-LAB BLANK					,J6H150000-62 v5.7.2		SOLID					Alq		5.00 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/20/16 05:16	C-14	17.5667	-1	LSC4	SVP10/1	N	N	8.5958E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	169.571			Y		(1.825E-02)					(4.835E-01)	(0.000E+00)	0.20		
1	08/20/16 05:47	C-14	16.6	-1	LSC4	SVP10/1	N	N	8.6011E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	169.993			Y		(1.826E-02)					(4.835E-01)	(0.000E+00)	0.20		
2	08/20/16 06:17	C-14	17.2667	-1	LSC4	SVP10/1	N	N	8.6041E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	170.233			Y		(1.827E-02)					(4.835E-01)	(0.000E+00)	0.20		
3	08/20/16 06:48	C-14	17.4333	-1	LSC4	SVP10/1	N	N	8.5950E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	169.508			Y		(1.825E-02)					(4.835E-01)	(0.000E+00)	0.20		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**0.094821**	U4	1.75667E+01	20.436443	1.052509	5.00 G				0.180596	
				(0.099451)		(7.6522E-01)	(0.990323)	(1.102037)	(0.173205)				0.370659	
	08/22/16	C-14	R	**-0.007571**	U4	1.66000E+01	19.299894	-0.08404	5.00 G				0.180484	
				(0.096595)		(7.4386E-01)	(0.956999)	(1.072191)	(0.173205)				0.370431	
	08/22/16	C-14	R	**0.061628**	U4	1.72667E+01	20.068005	0.684071	5.00 G				0.180421	
				(0.098461)		(7.5865E-01)	(0.979272)	(1.092117)	(0.173205)				0.370301	
	08/22/16	C-14	R	**0.081009**	U4	1.74333E+01	20.283126	0.899192	5.00 G				0.180613	
				(0.09905)		(7.6231E-01)	(0.985927)	(1.098089)	(0.173205)				0.370694	
	08/22/16	C-14	A	**0.056606**	U4	1.72085E+01	20.012256	0.628322	5.00 G				0.090264	
				(0.049198)		(3.7878E-01)	(0.489107)	(0.545584)	(0.086603)				0.18526	

() - (1s Uncertainities), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU

IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

Batch Nbr: 6228062

Liquid Scint, C-14 Digestion, Calculated Results

8/22/2016 9:40:04 PM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
10	Calc	TC	SOLID	*STLE	LsctSIEBs	**M84C41AC**	**pCi/g**	**S**	08/04/16 09:00	08/20/16 08:52		CSB2061	1	g	
0,INTRA-LAB CHECK					,J6H150000-62 v5.7.2		SOLID					CSB2061 Alq		5.20 g	

Sq	Cnt Date	Parameter	Sample Cpm	Dpm/tSIE	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Trc Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	08/20/16 07:19	C-14	89.6333	-1	LSC4	SVP10/1	N	N	8.6281E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	172.167			Y		(1.832E-02)					(4.835E-01)	(0.000E+00)	0.192308		
1	08/20/16 07:50	C-14	88.6667	-1	LSC4	SVP10/1	N	N	8.6336E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	172.62			Y		(1.833E-02)					(4.835E-01)	(0.000E+00)	0.192308		
2	08/20/16 08:21	C-14	92.1667	-1	LSC4	SVP10/1	N	N	8.6348E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	172.716			Y		(1.833E-02)					(4.835E-01)	(0.000E+00)	0.192308		
3	08/20/16 08:52	C-14	88.4	-1	LSC4	SVP10/1	N	N	8.6470E-01		N	100%	N	1.9384E+01	1.0000E+00	4.5045E-01	1.0000E+00	
			30	173.726			Y		(1.836E-02)					(4.835E-01)	(0.000E+00)	0.192308		

Sq	CalcDate,TrcAct	Parameter	Avg	Sa Act, Total U	Q	Grs Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	TrcYld,EnFct	LCSYld,EFctU	IDC/ILcC	BlkLcC/MDC	StdDvMdC/LcC
	08/22/16	C-14	R	**7.320022**		8.96333E+01	103.885825	84.501891	5.20 G		105%		0.173	
				(0.511642)		(1.7285E+00)	(2.979547)	(3.018517)	(0.173205)				0.35507	
	08/22/16	C-14	R	**7.217272**		8.86667E+01	102.699678	83.315744	5.20 G		104%		0.172889	
				(0.505167)		(1.7192E+00)	(2.952777)	(2.992096)	(0.173205)				0.354842	
	08/22/16	C-14	R	**7.567195**		9.21667E+01	106.739168	87.355235	5.20 G		109%		0.172866	
				(0.527157)		(1.7528E+00)	(3.042303)	(3.08048)	(0.173205)				0.354794	
	08/22/16	C-14	R	**7.176803**		8.84000E+01	102.232504	82.848571	5.20 G		103%		0.172622	
				(0.50258)		(1.7166E+00)	(2.94136)	(2.98083)	(0.173205)				0.354294	
	08/22/16	C-14	A	**7.317843**		8.96924E+01	103.86067	84.476736	5.20 G		105%		0.086422	
				(0.255863)		(8.6466E-01)	(1.489627)	(1.509114)	(0.086603)				0.177374	

() - (1s Uncertainities), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU

IDC - Instrument Detection Level in Conc Units, MLcC - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significants, Date/Time - mm/dd/yy hh:mm, 24hr Time

Batch Nbr: 6228062

Calculation Log

8/22/2016 9:40:05 PM

Time Stamp	Log Entry	User
8/22/2016 9:17:06	Updated Sep Date Count => 10	TAI\Dawkins
8/22/2016 9:17:07	Inserted IDB LSC Count Rows => 40	TAI\Dawkins
8/22/2016 9:34:21	Updated Sample Dates (Count of All WorkOrders for Sample) 6228062 => 10	TAI\Dawkins
8/22/2016 9:36:33	********** Calculating .... _LSC_v, 8/22/2016 9:36:33 PM	TAI\Dawkins
8/22/2016 9:36:33	Project=>*STLE,S3,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:36:33	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:36:33	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:2.00E-02	TAI\Dawkins
8/22/2016 9:36:33	=>Start 271066, M84C41AD, 0, C-14	TAI\Dawkins
8/22/2016 9:36:45	Event in DMMethodYield.Find, No Yield and/or Uncert Found! S3 C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:36:45	Event in DMEfficiency.Find, No Efficiency Found! LSC4 C-14 SVP10/10 S3 8/19/2016 12:47:25 PM: , Aborting...	TAI\Dawkins
8/22/2016 9:39:39	********** Calculating .... _LSC_v, 8/22/2016 9:39:39 PM	TAI\Dawkins
8/22/2016 9:39:41	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:41	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:41	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:43	=>Start 271066, M84C41AD, 0, C-14	TAI\Dawkins
8/22/2016 9:39:43	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:43	=>Start 271066, M84C41AD, 1, C-14	TAI\Dawkins
8/22/2016 9:39:44	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:44	=>Start 271066, M84C41AD, 2, C-14	TAI\Dawkins
8/22/2016 9:39:44	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:44	=>Start 271066, M84C41AD, 3, C-14	TAI\Dawkins
8/22/2016 9:39:44	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:49	=> Calc	TAI\Dawkins
8/22/2016 9:39:49	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:49	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:49	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271075, M84C41AC, 0, C-14	TAI\Dawkins
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271075, M84C41AC, 1, C-14	TAI\Dawkins
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271075, M84C41AC, 2, C-14	TAI\Dawkins
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271075, M84C41AC, 3, C-14	TAI\Dawkins
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:49	=> Calc	TAI\Dawkins
8/22/2016 9:39:49	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:49	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:49	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271067, M84A71AA, 0, C-14	TAI\Dawkins
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271067, M84A71AA, 1, C-14	TAI\Dawkins
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271067, M84A71AA, 2, C-14	TAI\Dawkins
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271067, M84A71AA, 3, C-14	TAI\Dawkins
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:49	=> Calc	TAI\Dawkins
8/22/2016 9:39:49	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:49	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:49	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271068, M84A81AA, 0, C-14	TAI\Dawkins

Time Stamp	Log Entry	User
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271068, M84A81AA, 1, C-14	TAI\Dawkins
8/22/2016 9:39:49	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:49	=>Start 271068, M84A81AA, 2, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271068, M84A81AA, 3, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=> Calc	TAI\Dawkins
8/22/2016 9:39:50	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:50	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:50	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271069, M84A91AA, 0, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271069, M84A91AA, 1, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271069, M84A91AA, 2, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271069, M84A91AA, 3, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=> Calc	TAI\Dawkins
8/22/2016 9:39:50	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:50	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:50	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271070, M84A91AC, 0, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271070, M84A91AC, 1, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271070, M84A91AC, 2, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271070, M84A91AC, 3, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=> Calc	TAI\Dawkins
8/22/2016 9:39:50	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:50	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:50	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271071, M84CA1AA, 0, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271071, M84CA1AA, 1, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/19/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271071, M84CA1AA, 2, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271071, M84CA1AA, 3, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:50	=> Calc	TAI\Dawkins
8/22/2016 9:39:50	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:50	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:50	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271072, M84CC1AA, 0, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271072, M84CC1AA, 1, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins

Calculation Log

Time Stamp	Log Entry	User
8/22/2016 9:39:50	=>Start 271072, M84CC1AA, 2, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271072, M84CC1AA, 3, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:50	=> Calc	TAI\Dawkins
8/22/2016 9:39:50	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:50	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:50	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271073, M84CD1AA, 0, C-14	TAI\Dawkins
8/22/2016 9:39:50	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:50	=>Start 271073, M84CD1AA, 1, C-14	TAI\Dawkins
8/22/2016 9:39:51	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:51	=>Start 271073, M84CD1AA, 2, C-14	TAI\Dawkins
8/22/2016 9:39:51	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:51	=>Start 271073, M84CD1AA, 3, C-14	TAI\Dawkins
8/22/2016 9:39:51	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:51	=> Calc	TAI\Dawkins
8/22/2016 9:39:51	Project=>*STLE,TC,38,pCi/L,BlkSubt:D,MDAc:2.71E00	TAI\Dawkins
8/22/2016 9:39:51	,UncertTy:0P1,Spk:,SpkRelU:3.00E-02,Trc:,NetAct:N/A	TAI\Dawkins
8/22/2016 9:39:51	,TrcRelU:3.00E-02,Sep1:,Sep2:,VolU:1.00E-02,FlowU:2.00E-02,MassU:1.00E-02,MethSys:5.00E-02	TAI\Dawkins
8/22/2016 9:39:51	=>Start 271074, M84C41AA, 0, C-14	TAI\Dawkins
8/22/2016 9:39:51	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:51	=>Start 271074, M84C41AA, 1, C-14	TAI\Dawkins
8/22/2016 9:39:51	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:51	=>Start 271074, M84C41AA, 2, C-14	TAI\Dawkins
8/22/2016 9:39:51	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:51	=>Start 271074, M84C41AA, 3, C-14	TAI\Dawkins
8/22/2016 9:39:51	Event in DMMethodYield.Find, No Yield and/or Uncert Found! TC C-14 SOLID 8/20/2016:	TAI\Dawkins
8/22/2016 9:39:51	=> Calc	TAI\Dawkins
8/22/2016 9:39:51	********** Calculation Complete... _LSC_v, 8/22/2016 9:39:51 PM	TAI\Dawkins

Protocol #:11 Name:C-14 19-Aug-16 12:47
Region A: LL-UL= 0.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.50
Region B: LL-UL= 4.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 30.00 QIP = tSIE/AEC ES Terminator = Count
LSC4: Set up 12-Oct-2001 M. Lane

S# PID	TIME	CPMA DPM1	CPMB	tSIE	SIS	LUM	FLAG
16	30.00	17.57	17.13	159.0	44.470	3	
16	30.00	16.00	15.70	161.1	41.820	4	
16	30.00	15.50	15.23	159.9	44.090	3	
16	30.00	16.77	16.30	160.3	46.650	2	
	30.00	16.46	16.09	160.1	44.257	3	A
26	30.00	17.23	16.87	178.2	45.870	2	
26	30.00	17.67	17.30	178.5	44.840	3	
26	30.00	17.10	16.80	179.8	47.090	3	
26	30.00	18.33	17.97	179.5	47.150	2	
	30.00	17.58	17.23	179.0	46.238	3	A
36	30.00	18.00	17.80	170.1	44.240	3	
36	30.00	16.63	16.23	170.3	45.860	3	
36	30.00	17.77	17.43	171.3	46.010	2	
36	30.00	16.57	16.13	171.4	44.670	2	
	30.00	17.24	16.90	170.8	45.195	3	A
46	30.00	16.87	16.50	176.5	48.440	4	
46	30.00	18.27	17.97	177.1	47.290	2	
46	30.00	16.10	15.97	177.8	44.720	3	
46	30.00	17.93	17.53	177.9	45.630	2	
	30.00	17.29	16.99	177.3	46.520	3	A
56	30.00	17.83	17.47	188.0	47.980	2	
56	30.00	16.87	16.50	188.7	47.610	3	
56	30.00	18.73	18.20	188.9	49.180	2	
56	30.00	18.10	17.70	188.6	46.620	3	

S# PID	TIME	CPMA DPM1	CPMB	tSIE	SIS	LUM	FLAG
	30.00	17.88	17.47	188.6	47.847	3	A
6	30.00	18.27	18.00	181.6	47.930	2	
6	30.00	17.33	17.03	182.6	45.270	2	
6	30.00	17.43	17.17	181.9	46.650	3	
6	30.00	17.07	16.73	183.8	45.550	4	
	30.00	17.52	17.23	182.5	46.350	3	A
7	30.00	17.70	17.33	182.3	45.060	2	
7	30.00	17.27	17.00	184.9	49.370	3	
7	30.00	18.97	18.70	184.4	46.020	3	
7	30.00	18.67	18.37	184.6	50.040	3	
	30.00	18.15	17.85	184.0	47.622	3	A
8	30.00	17.80	17.43	182.0	46.840	2	
8	30.00	18.87	18.57	183.9	48.110	1	
8	30.00	16.33	16.10	182.8	48.590	1	
8	30.00	18.70	18.30	183.4	48.910	3	
	30.00	17.92	17.60	183.0	48.112	2	A
9	30.00	17.57	17.23	169.6	44.800	2	
9	30.00	16.60	16.23	170.0	44.370	4	
9	30.00	17.27	17.03	170.2	44.670	3	
9	30.00	17.43	17.17	169.5	47.060	3	
	30.00	17.22	16.92	169.8	45.225	3	A
10	30.00	89.63	88.77	172.2	35.200	0	
10	30.00	88.67	87.67	172.6	35.040	1	
10	30.00	92.17	91.20	172.7	34.810	0	
10	30.00	88.40	87.53	173.7	35.000	0	
	30.00	89.72	88.79	172.8	35.013	0	A

C-14

STANDARDS AND TRACEABILITY

8/25/2016 2:47:13 PM

Standard Material Fractions (Vials)

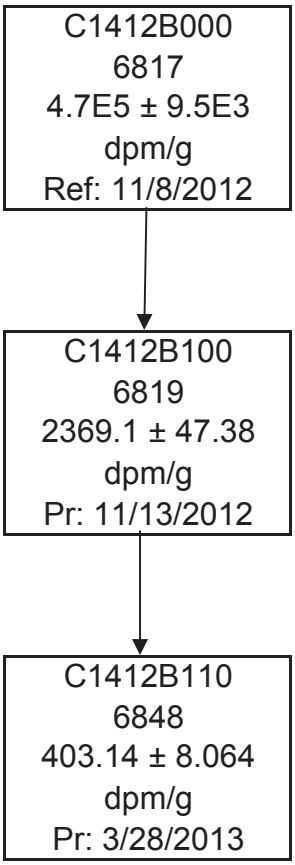
Vial Prep: 8/25/15 to 8/26/16,SMFractionIdentifier Like: csb2061%, Order by SMIdentifier,ConstituentCode,SMFractionIdentifier

Vial Identifier	Constituent	Prep Activity/Concentration			Std Wt Used		Prep,Decayed To Date		Prep by	Std Decayed Activity/Concentration		
	Parent Standard:	C1412B110		Ref:	11/8/2012		4.0314E+02	± 8.064E+00	DPM/G			
CSB2061	C-14	**8.0470E+01**	**± 1.611E+00**	DPM	0.1997	g	8/11/2016	8/11/2016	TAI\Mani	4.0296E+02	± 8.060E+00	DPM/G
		8.0470E+001	± 8.047E+001	(1)			8.0470E+001 , 8.0470E+001					

STL Richland, SMFractions v4.8.51.1 Page 1 Record Count: 1

* - Isotope is an Impurity

C1412B


C1412B000
6817
4.7E5 ± 9.5E3
dpm/g
Ref: 11/8/2012
C1412B100
6819
2369.1 ± 47.38
dpm/g
Pr: 11/13/2012
C1412B110
6848
403.14 ± 8.064
dpm/g
Pr: 3/28/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ISOTOPE DILUTION RECORD

1) Prepared by	drm	2) Date Prepared		3/28/2013
3) Source Identification Number / Ref. Number		***C1412B100***		***6819***
4) Source Activity (dpm ± dpm/g)		2.3691E+03	±	4.738E+01
5) Percent error of Source Activity		2	%	
6) Weight of Source Material used (g)	B050096229 *Balance I.D.*	85.0836		
7) (% Error) of Weight of Source Material used		0.0004	%	
8) Diluent	P-12-00605	DDD H2O / Formaldehyde 5.42g		
9) Total Weight of the Dilution (g)	G94157 *Balance I.D.*	500.01		
10) (% Error) of Total Weight of the Dilution		0.0346	%	
11) Specific Activity of Diluted Solution dpm/g		***4.0314E+02***	±	***8.064E+00***
12) Total Uncertainty		2.000	%	
13) Dilution Identification Number / Ref. Number		***C1412B110***		***6848***
14) Calibration Reference Date		11/8/2012		
15) Isotope Inventory File update by/date		drm		3/28/2013
16) Reviewed by/date		tda		3/28/2013
17) Location	QC Lab	18) Exhausted		

****

CALCULATIONS

5) **Cert value at 99.7% (K=3) level / 3 OR Cert Value 95% (K=2) level/2 = 1 sigma uncertainty for propagation**

*7) % error of wt. used = (0.0003 / weight of source material used * 100)*

wt uncert (4 place balance) = Sqrt($0.0002^2 + 0.0002^2 + 0.00001^2$) = 0.0003 g

*10) % error of dilution wt. = (0.173 / total weight of dilution * 100)*

wt uncert (0.1 place balance) = Sqrt($0.1^2 + 0.1^2 + 0.1^2$) = 0.173 g

*11) Specific Activity = Source Activity * Wt. of Source Material used / Total Wt. of the Dilution*

12) % Total Uncertainty = $\sqrt{(\%\ \text{error of Source Activity}^2 + \%\ \text{error of Wt. Used}^2 + \%\ \text{error of Dilution Wt.}^2)}$

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ISOTOPE DILUTION RECORD

1) Prepared by	drm	2) Date Prepared		11/13/2012
3) Source Identification Number / Ref. Number		***C1412B000***		***6817***
4) Source Activity (dpm ± dpm/g)		4.7257E+05	±	9.451E+03
5) Percent error of Source Activity		2	%	
6) Weight of Source Material used (g)	B050096229 *Balance I.D.*	5.0132		
7) (% Error) of Weight of Source Material used		0.0060	%	
8) Diluent	P-12-00605 / B14639	DDD H2O / Formaldehyde	10.77g	
9) Total Weight of the Dilution (g)	G94157 *Balance I.D.*	1000		
10) (% Error) of Total Weight of the Dilution		0.0173	%	
11) Specific Activity of Diluted Solution dpm/g		***2.3691E+03***	***±***	***4.738E+01***
12) Total Uncertainty		2.000	%	
13) Dilution Identification Number / Ref. Number		***C1412B100***		***6819***
14) Calibration Reference Date		11/8/2012		
15) Isotope Inventory File update by/date		drm		11/13/2012
16) Reviewed by/date		drm		2/22/2013
17) Location	QC Lab	18) Exhausted		

****

CALCULATIONS

5) **Cert value at 99.7% (K=3) level / 3 OR Cert Value 95% (K=2) level/2 = 1 sigma uncertainty for propagation**

*7) % error of wt. used = (0.0003 / weight of source material used * 100)*

wt uncert (4 place balance) = Sqrt($0.0002^2 + 0.0002^2 + 0.00001^2$) = 0.0003 g

*10) % error of dilution wt. = (0.173 / total weight of dilution * 100)*

wt uncert (0.1 place balance) = Sqrt($0.1^2 + 0.1^2 + 0.1^2$) = 0.173 g

*11) Specific Activity = Source Activity * Wt. of Source Material used / Total Wt. of the Dilution*

12) % Total Uncertainty = $\sqrt{(\%\ \text{error of Source Activity}^2 + \%\ \text{error of Wt. Used}^2 + \%\ \text{error of Dilution Wt.}^2)}$

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ISOTOPE RECORD FORM

1) Isotope: C-14
2) Reference Number: 6817
3) Half Life: 2.082E+06 days
4) Storage Location: Standards Lab 134A
5) Source Identification Number: C1412B000

****

CALIBRATION DATA

6) Activity as Received Units: 3.977E+04 Bq
7) Overall Uncertainty Percent: 2.0% (4.0 k=2)
8) Reference Date / Time: 11/8/2012 12:00 PM EST
9) Activity dpm/g: 472572 ± 9451.44 dpm/g
10) Volume or Mass (ml/g): 5.04939 g
11) Calibrated by: E & Z Analytics / NIST
12) Certificate Solution Number: 92407

****

SURVEY DATA

13) Date Received: 11/12/2012
14) Surveyed by: drm
15) Survey Reading (Beta/Gamma) cpm: BKGD
16) Survey Reading (Alpha) cpm: BKGD

****

17) Activity Conversion: 39770Bq * 60 / 5.04939 =

472572 ± 9451.44 dpm/g

18) Remarks: Used all for first dilution

19) Isotope File Updated by: drm 11/13/2012
20) QC Approved: drm

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

C1412B000
6817 Certificate
Rec;11/12/12drm

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

92407
C-14 5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica
P.O. No.: 2500033, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by Eckert & Ziegler Analytics. The master solution was calibrated by liquid scintillation counting. Radionuclide calibration and purity were checked by germanium gamma-ray spectrometry, liquid scintillation counting, and/or alpha spectrometry, as applicable. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
C-14	2.082E+06	3.977E+04	0.2	2.0	4.0	11/08/2012

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: γ-impurities<0.1%.
5.04939 g of solution 50 μg/g glucose + 1 mg/g formaldehyde in H2O.

Source Prepared by: K. Eardley, Radiochemist

QA Approved: J.D. McCorvey, Counting Room Manager

Date: 6 NOV 12

ANA Form005 Rev. —

Single Isotope Certificate Rev 3, 23 August 2012

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

C-14

CONTINUING CALIBRATION

Quality Assurance Report. Generated 25-AUG-2016 15:02:55.83

QA Filename : RDND07$DKA100:[QC]NEW_LSC4.QAF;3

-- Multi-Test Full Report --

Description : lsc4 H-3 bkg, cpm
Parameter Units : cpm Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 11.751095 Std Deviation : 0.664335

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
25-JUL-2016 00:47	QC		10.5000	| | |
27-JUL-2016 20:32	QC		11.5000	| | |
28-JUL-2016 19:22	QC		11.1000	| | |
31-JUL-2016 06:39	QC		12.1000	| | |
2-AUG-2016 15:04	QC		11.9000	| | |
3-AUG-2016 10:09	QC		10.9000	| | |
4-AUG-2016 21:19	QC		11.5000	| | |
8-AUG-2016 20:37	QC		11.6000	| | |
9-AUG-2016 17:45	QC		12.1000	| | |
12-AUG-2016 13:46	QC		11.2000	| | |
17-AUG-2016 07:25	QC		11.9000	| | |
19-AUG-2016 11:34	QC		11.3000	| | |
23-AUG-2016 23:38	QC		11.6000	| | |
24-AUG-2016 15:57	QC		11.1000	| | |
25-AUG-2016 02:08	QC		11.0000	| | |

-- Multi-Test Full Report --

Description : lsc4 C-14 bkg, cpm
Parameter Units : cpm Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 18.992701 Std Deviation : 0.908185

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
25-JUL-2016 00:47	QC		17.5000	| | |
27-JUL-2016 20:32	QC		18.9000	| | |
28-JUL-2016 19:22	QC		18.1000	| | |
31-JUL-2016 06:39	QC		19.4000	| | |
2-AUG-2016 15:04	QC		19.9000	| | |
3-AUG-2016 10:09	QC		18.1000	| | |

4-AUG-2016 21:19	QC	19.7000	| |	|
8-AUG-2016 20:37	QC	17.8000	| |	|
9-AUG-2016 17:45	QC	18.7000	| |	|
12-AUG-2016 13:46	QC	18.5000	| |	|
17-AUG-2016 07:25	QC	19.0000	| |	|
19-AUG-2016 11:34	QC	17.9000	| |	|

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
23-AUG-2016 23:38	QC		19.3000	| | |
24-AUG-2016 15:57	QC		18.4000	| | |
25-AUG-2016 02:08	QC		18.4000	| | |

-- Multi-Test Full Report --

Description : lsc4 full scale bkg, cpm
Parameter Units : cpm Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 29.767153 Std Deviation : 1.210561

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
25-JUL-2016 00:47	QC		28.5000	| | |
27-JUL-2016 20:32	QC		29.8000	| | |
28-JUL-2016 19:22	QC		28.3000	| | |
31-JUL-2016 06:39	QC		31.4000	| | |
2-AUG-2016 15:04	QC		30.4000	| | |
3-AUG-2016 10:09	QC		28.5000	| | |
4-AUG-2016 21:19	QC		29.6000	| | |
8-AUG-2016 20:37	QC		28.4000	| | |
9-AUG-2016 17:45	QC		29.2000	| | |
12-AUG-2016 13:46	QC		29.8000	| | |
17-AUG-2016 07:25	QC		30.0000	| | |
19-AUG-2016 11:34	QC		29.5000	| | |
23-AUG-2016 23:38	QC		29.8000	| | |
24-AUG-2016 15:57	QC		30.3000	| | |
25-AUG-2016 02:08	QC		29.2000	| | |

-- Multi-Test Full Report --

Description : lsc4 H-3 %eff
Parameter Units : Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----
Lower Bound : 60.320000 Upper Bound : 65.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----

Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 60.785400 Std Deviation : 2.596563

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
25-JUL-2016 00:47	QC		60.3000	Be| | |
27-JUL-2016 20:32	QC		60.4000	| | |
28-JUL-2016 19:22	QC		60.4000	| | |
31-JUL-2016 06:39	QC		60.3000	Be| | |
2-AUG-2016 15:04	QC		60.6000	| | |
3-AUG-2016 10:09	QC		60.2000	Be| | |

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
4-AUG-2016 21:19	QC		60.4000	| | |
8-AUG-2016 20:37	QC		60.6000	| | |
9-AUG-2016 17:45	QC		60.2000	Be| | |
12-AUG-2016 13:46	QC		60.3000	Be| | |
17-AUG-2016 07:25	QC		60.5000	| | |
19-AUG-2016 11:34	QC		60.3000	Be| | |
23-AUG-2016 23:38	QC		60.4000	| | |
24-AUG-2016 15:57	QC		60.3000	Be| | |
25-AUG-2016 02:08	QC		60.5000	| | |

-- Multi-Test Full Report --

Description : lsc4 C-14 %eff
Parameter Units : Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----
Lower Bound : 91.160004 Upper Bound : 100.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 95.400734 Std Deviation : 0.383960

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
25-JUL-2016 00:47	QC		95.4000	| | |
27-JUL-2016 20:32	QC		95.5000	| | |
28-JUL-2016 19:22	QC		95.4000	| | |
31-JUL-2016 06:39	QC		95.1000	| | |
2-AUG-2016 15:04	QC		95.5000	| | |
3-AUG-2016 10:09	QC		95.5000	| | |
4-AUG-2016 21:19	QC		95.6000	| | |
8-AUG-2016 20:37	QC		95.2000	| | |
9-AUG-2016 17:45	QC		95.2000	| | |
12-AUG-2016 13:46	QC		95.3000	| | |
17-AUG-2016 07:25	QC		95.4000	| | |
19-AUG-2016 11:34	QC		95.3000	| | |
23-AUG-2016 23:38	QC		95.3000	| | |

24-AUG-2016 15:57 QC 95.4000 | | |
25-AUG-2016 02:08 QC 95.6000 | | |

-- Multi-Test Full Report --

Description : lsc4 C-14 tSIE
Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 974.281738 Std Deviation : 8.696292

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
25-JUL-2016 00:47	QC		971.3000	| | |
27-JUL-2016 20:32	QC		969.5000	| | |
28-JUL-2016 19:22	QC		966.3000	| | |
31-JUL-2016 06:39	QC		967.5000	| | |
2-AUG-2016 15:04	QC		971.0000	| | |
3-AUG-2016 10:09	QC		970.7000	| | |
4-AUG-2016 21:19	QC		971.1000	| | |
8-AUG-2016 20:37	QC		975.9000	| | |
9-AUG-2016 17:45	QC		976.1000	| | |
12-AUG-2016 13:46	QC		972.4000	| | |
17-AUG-2016 07:25	QC		979.8000	| | |
19-AUG-2016 11:34	QC		979.0000	| | |
23-AUG-2016 23:38	QC		976.8000	| | |
24-AUG-2016 15:57	QC		978.1000	| | |
25-AUG-2016 02:08	QC		978.5000	| | |

Quality Assurance Report. Generated 25-AUG-2016 15:02:56.40

QA Filename : RDND07$DKA100:[QC]NEW_LSC4.QAF;3

-- Multi-Test Full Report --

Description : lsc4 H-3 bkg, cpm
Parameter Units : cpm Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 11.751095 Std Deviation : 0.664335

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej

25-JUL-2016 00:47	QC		10.5000			
27-JUL-2016 20:32	QC		11.5000			
28-JUL-2016 19:22	QC		11.1000			
31-JUL-2016 06:39	QC		12.1000			
2-AUG-2016 15:04	QC		11.9000			
3-AUG-2016 10:09	QC		10.9000			
4-AUG-2016 21:19	QC		11.5000			
8-AUG-2016 20:37	QC		11.6000			
9-AUG-2016 17:45	QC		12.1000			
12-AUG-2016 13:46	QC		11.2000			
17-AUG-2016 07:25	QC		11.9000			
19-AUG-2016 11:34	QC		11.3000			
23-AUG-2016 23:38	QC		11.6000			
24-AUG-2016 15:57	QC		11.1000			
25-AUG-2016 02:08	QC		11.0000			

-- Multi-Test Full Report --

Description : lsc4 C-14 bkg, cpm
Parameter Units : cpm Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 18.992701 Std Deviation : 0.908185

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS Rej
25-JUL-2016 00:47	QC		17.5000				
27-JUL-2016 20:32	QC		18.9000				
28-JUL-2016 19:22	QC		18.1000				
31-JUL-2016 06:39	QC		19.4000				
2-AUG-2016 15:04	QC		19.9000				
3-AUG-2016 10:09	QC		18.1000				
4-AUG-2016 21:19	QC		19.7000				
8-AUG-2016 20:37	QC		17.8000				
9-AUG-2016 17:45	QC		18.7000				
12-AUG-2016 13:46	QC		18.5000				
17-AUG-2016 07:25	QC		19.0000				
19-AUG-2016 11:34	QC		17.9000				

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS Rej
23-AUG-2016 23:38	QC		19.3000				
24-AUG-2016 15:57	QC		18.4000				
25-AUG-2016 02:08	QC		18.4000				

-- Multi-Test Full Report --

Description : lsc4 full scale bkg, cpm
Parameter Units : cpm Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 29.767153 Std Deviation : 1.210561

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
25-JUL-2016 00:47	QC		28.5000	| | |
27-JUL-2016 20:32	QC		29.8000	| | |
28-JUL-2016 19:22	QC		28.3000	| | |
31-JUL-2016 06:39	QC		31.4000	| | |
2-AUG-2016 15:04	QC		30.4000	| | |
3-AUG-2016 10:09	QC		28.5000	| | |
4-AUG-2016 21:19	QC		29.6000	| | |
8-AUG-2016 20:37	QC		28.4000	| | |
9-AUG-2016 17:45	QC		29.2000	| | |
12-AUG-2016 13:46	QC		29.8000	| | |
17-AUG-2016 07:25	QC		30.0000	| | |
19-AUG-2016 11:34	QC		29.5000	| | |
23-AUG-2016 23:38	QC		29.8000	| | |
24-AUG-2016 15:57	QC		30.3000	| | |
25-AUG-2016 02:08	QC		29.2000	| | |

-- Multi-Test Full Report --

Description : lsc4 H-3 %eff
Parameter Units : Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----
Lower Bound : 60.320000 Upper Bound : 65.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 60.785400 Std Deviation : 2.596563

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
25-JUL-2016 00:47	QC		60.3000	Be| | |
27-JUL-2016 20:32	QC		60.4000	| | |
28-JUL-2016 19:22	QC		60.4000	| | |
31-JUL-2016 06:39	QC		60.3000	Be| | |
2-AUG-2016 15:04	QC		60.6000	| | |
3-AUG-2016 10:09	QC		60.2000	Be| | |

Measurement Time	Sample ID	Sample Analyst	Value	LU|SD|UD|BS Rej
4-AUG-2016 21:19	QC		60.4000	| | |
8-AUG-2016 20:37	QC		60.6000	| | |
9-AUG-2016 17:45	QC		60.2000	Be| | |
12-AUG-2016 13:46	QC		60.3000	Be| | |

17-AUG-2016 07:25	QC		60.5000			
19-AUG-2016 11:34	QC		60.3000	Be		
23-AUG-2016 23:38	QC		60.4000			
24-AUG-2016 15:57	QC		60.3000	Be		
25-AUG-2016 02:08	QC		60.5000			

-- Multi-Test Full Report --

Description : lsc4 C-14 %eff
Parameter Units : Parameter Type : Generic

---- Lower/Upper Bounds Test Parameters ----
Lower Bound : 91.160004 Upper Bound : 100.000000

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 95.400734 Std Deviation : 0.383960

Measurement Time	Sample ID	Sample Analyst	Value	LU	SD	UD	BS Rej
25-JUL-2016 00:47	QC		95.4000				
27-JUL-2016 20:32	QC		95.5000				
28-JUL-2016 19:22	QC		95.4000				
31-JUL-2016 06:39	QC		95.1000				
2-AUG-2016 15:04	QC		95.5000				
3-AUG-2016 10:09	QC		95.5000				
4-AUG-2016 21:19	QC		95.6000				
8-AUG-2016 20:37	QC		95.2000				
9-AUG-2016 17:45	QC		95.2000				
12-AUG-2016 13:46	QC		95.3000				
17-AUG-2016 07:25	QC		95.4000				
19-AUG-2016 11:34	QC		95.3000				
23-AUG-2016 23:38	QC		95.3000				
24-AUG-2016 15:57	QC		95.4000				
25-AUG-2016 02:08	QC		95.6000				

-- Multi-Test Full Report --

Description : lsc4 C-14 tSIE
Parameter Units : Parameter Type : Generic

Investigate Level : 2.000000 Action Level : 3.000000

---- Sample Driven N-Sigma Test Parameters ----
Start Date : 15-OCT-2014 00:00 End Date : 1-MAY-2015 00:00
Mean : 974.281738 Std Deviation : 8.696292

Measurement Time Sample ID Sample Analyst Value LU|SD|UD|BS Rej
---

Measurement Time Sample ID Sample Analyst Value LU|SD|UD|BS Rej

25-JUL-2016 00:47	QC	971.3000			
27-JUL-2016 20:32	QC	969.5000			
28-JUL-2016 19:22	QC	966.3000			
31-JUL-2016 06:39	QC	967.5000			
2-AUG-2016 15:04	QC	971.0000			
3-AUG-2016 10:09	QC	970.7000			
4-AUG-2016 21:19	QC	971.1000			
8-AUG-2016 20:37	QC	975.9000			
9-AUG-2016 17:45	QC	976.1000			
12-AUG-2016 13:46	QC	972.4000			
17-AUG-2016 07:25	QC	979.8000			
19-AUG-2016 11:34	QC	979.0000			
23-AUG-2016 23:38	QC	976.8000			
24-AUG-2016 15:57	QC	978.1000			
25-AUG-2016 02:08	QC	978.5000			

THIS PAGE LEFT BLANK
INTENTIONALLY

Shipping and Receiving Documents

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Phone (314) 298-8566 Fax (314) 298-8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: R. Stout	Lab PM: Gish, Erika K	Carrier Tracking No(s): 8100 3192 5927 FedEx	COC No: 160-4416-2171.4
Client Contact: Matt Frost	Phone: 865-255-5540	E-Mail: erika.gish@testamericainc.com		Page: Page 4 of 4
Company: Alliant Corporation				Job #:
Address: 320 N Cedar Bluff Road Suite 200	Due Date Requested:			
City: Knoxville	TAT Requested (days): by contract			
State, Zip: TN, 37923				
Phone: 865-255-5540	PO #: 16-PO-001581			
Email: mfrost@alliantcorp.com	WO #: 4326			
Project Name: ORNL Y-12 Outfall 200 Characterization	Project #: 16005502			
Site: Y-12 Headworks/9720-8	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	A_01_R_Am_Cm, A01R_Np, A01R_Pu, A01R_Th, A01R_U, SR_03_RC_Tot_Sr, TC_02_RC	C_01_1, DOE_H3_04_RC	8260C - TCLP VOC	8151A - TCLP Herbicides	GA_01_R_Ra - Gamma - Radium-226/228	8082A - PCB	8270D - TCLP BNAs	6010C, 7470A	8082A - PCBs	Radionuclides	TCLP metals	TCLP SVOCs		Total Number of containers	Special Instructions/Note:
				Preservation Code:			N	N	N	N	N	N	N	N	N						
YMTFA74SE001	8-5-16	0750	C	Solid					X	X		X				X	X	X			
YMTFA75SE001	8-5-16	0925	C	Solid					X	X		X				X	X	X			

160-18521 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	8-5-2016/1400		[signature]	080616 0850	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: Alliant Corporation

Job Number: 160-18521-1
SDG Number: Headworks/9720-8

Login Number: 18521
List Number: 1
Creator: McKinney, Gerrod E

List Source: TestAmerica St. Louis

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	