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CCP-TP-053

Revision 10

CCP Standard Real-Time Radiography (RTR) Inspection Procedure

EFFECTIVE DATE: 03/04/2011

Larry Porter

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	03/16/2004	Initial Issue
1	04/12/2004	Incorporated CBFO comment resolutions into Sections 2.0, 4.0, Table 1, and Attachments 1 and 3.
2	07/15/2004	Revised in response to CBFO CAR #04-026. The changes in this document involved an addition of a note prior to step 4.4.3[C.9] for clarification and implementation of percent full of a drum as identified in a finding during the certification audit at LLNL. As such, this change is data quality affecting.
3	03/21/2005	Revised to clarify procedural steps.
4	12/22/2005	Revised Table 3 to add the weight of an 85-Gallon Skolnik Drum. Revised responsibility for pagination of the BDR.
5	11/16/2006	Revised to implement the Waste Isolation Pilot Plant Hazardous Waste Facility Permit requirements resulting from the Section 311/Remote-Handled (RH) Permit Modification Request (PMR). Addressed Carlsbad Field Office (CBFO) Document Review Record (DRR) comments.
6	03/04/2008	Revised to incorporate changes based on an observer inquiry identified during the Savannah River Site (SRS)/Central Characterization Project (CCP) Certification Audit A-08-01 and address minor editorial comments.
7	10/21/2009	Revised to address the New Mexico Environmental Department's (NMED's) concerns regarding who could perform replicate scans, independent observations, and/or independent technical reviews.
8	06/30/2010	Revised to incorporate April 1, 2010, modification of the Waste Isolation Pilot Plant Hazardous Waste Facility Permit (HWFP).

RECORD OF REVISION (continued)

Revision Number	Date Approved	Description of Revision
9	09/30/2010	Revised to incorporate another test image type.
10	03/04/2011	Revised to address Carlsbad Field Office (CBFO) Corrective Action Report (CAR)-11-015. Deleted requirement to identify locations of dense waste material, sharp/heavy objects. Deleted requirement of identification of block and/or bracing of sharp/heavy objects and heterogeneity of the waste (e.g., DO **NOT** just list plastic, describe it as small plastic bottles, plastic tubing, plastic sheeting, or plastic coveralls etc.). Deleted requirement of recording of liquid amounts on attachments. All prohibited conditions will be addressed in the Nonconformance Report (NCR) process. Added the ability to use procedure to Real-Time Radiography (RTR) Remote-Handled (RH) waste.

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TABLE OF CONTENTS

1.0 PURPOSE 6
1.1 Scope 6

2.0 REQUIREMENTS 6
2.1 References 6
2.2 Training Requirements 7
2.3 Equipment List 7
2.4 Software 7
2.5 Precautions and Limitations 7
2.6 Prerequisite Actions 7
2.7 Definitions 7

3.0 RESPONSIBILITIES 8
3.1 RTR Operator 8
3.2 Independent Technical Reviewer (ITR) 8
3.3 Lead Operator (LO) 8
3.4 Records Custodian 9

4.0 PROCEDURE 10
4.1 Waste Container Preparation 10
4.2 RTR System Startup 10
4.3 Video/Audio Recorded Media System Startup/Image Test 10
4.4 RTR System Operation 12
4.5 Replicate Scan 17
4.6 Independent Observations 18
4.7 RTR System Shutdown 18
4.8 Video/Audio Recording Media System Shutdown 19
4.9 Batch Data Report Preparation 19
4.10 RTR Independent Technical Review 20

5.0 RECORDS 21

LIST OF TABLES

Table 1. Prohibited Items 22
Table 2. Waste Material Parameters 23
Table 3. Waste Item Weights 24

Controlled
Copy

LIST OF ATTACHMENTS

Attachment 1 – CCP RTR Measurement Control Report 26
Attachment 2 – CCP Radiography Data Sheet 27
Attachment 3 – CCP Radiography Independent Technical Reviewer Checklist.....30
Attachment 4 – CCP Radiography Batch Data Report Table of Contents and Batch Narrative 32
Attachment 5 – CCP Radiography Batch Data Report Cover Sheet 33

1.0 PURPOSE

Real-Time Radiography (RTR) inspection is used to verify that the physical form matches the waste stream description and that the Waste Matrix Code (WMC) assigned to the waste container is consistent with acceptable knowledge (AK) of the waste. The system is also used to estimate Waste Material Parameter (WMP) weights and identify prohibited items within a waste container.

This procedure contains the requirements for the collection of data and the generation level review of data from the RTR process.

1.1 Scope

This procedure applies to S3000 homogeneous solids, S4000 soils/gravel and S5000 debris transuranic (TRU) waste streams that require Nondestructive Examination (NDE). This procedure specifies instructions for performing NDE of waste containers using a RTR system. It also specifies methods for documenting the examination results as required by CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan*, CCP-PO-002*, CCP Transuranic Waste Certification Plan*, DOE/WIPP-02-3214, *Remote-Handled TRU Waste Characterization Program Implementation Plan*, and CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control (CCP RH-TRAMPAC)*.

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- CCP-PO-003, *CCP Transuranic Authorized Methods for Payload Control (CCP CH-TRAMPAC)*

Referenced Documents

- CCP-PO-001*, CCP Transuranic Waste Characterization Quality Assurance Project Plan*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-005, CCP *TRU Nonconforming Item Reporting and Control*
- CCP-QP-008, *CCP Records Management*

2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan,* prior to performing this procedure.

2.3 Equipment List

2.3.1 Test Image

2.4 Software

2.4.1 None.

2.5 Precautions and Limitations

2.5.1 If this procedure CAN **NOT** be implemented as written, RTR personnel shall notify appropriate supervisors. If it is determined that a portion of the work CAN **NOT** be accomplished as described in this procedure, or would result in an undesirable situation, work shall be STOPPED. Work will **NOT** be resumed until this procedure is modified or replaced by a new document that reflects the current work practice.

2.5.2 Workers who will be working in a radiation area must have met the Host site requirements prior to entering the area.

2.5.3 Review the Job Hazards Analysis.

2.6 Prerequisite Actions

2.6.1 None.

2.7 Definitions

2.7.1 **Internal Container** – A container inside the outermost container examined during radiography or visual examination (VE). Drum liners, liner bags, plastic bags used for contamination control, capillary-type labware, and debris not designated to hold liquid at the time of original waste packaging are not internal containers.

2.7.2 **Observable Liquid** – Liquid that is observable using radiography or VE as specified in the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit.

3.0 RESPONSIBILITIES

3.1 RTR Operator

3.1.1 Operates the RTR system to determine the waste content attributes within a waste container.

3.1.2 Produces video/audio recorded media and a written record of the x-ray scan of the waste containers.

3.1.3 Performs the initial review of the data generated.

3.1.4 A second and independent qualified RTR Operator performs a Replicate Scan on one waste container per testing batch, or once per calendar day of operation, whichever is less frequent. In this context, independence means the individual did not perform, nor review the original work.

3.1.5 A second and independent qualified RTR Operator other than any RTR Operator involved in the original scan of the container selected performs an Independent Observation (IO) on a waste container, from a radiography video/audio recorded media, at a minimum of once per batch, or once per calendar day of operation, whichever is less frequent.

3.1.6 Assembles the Batch Data Report (BDR).

3.2 Independent Technical Reviewer (ITR)

NOTE

The Independent Technical Reviewer (ITR) will be a third and independent qualified RTR Operator.

3.2.1 Reviews the raw data (e.g., Attachment 2, CCP Radiography Data Sheet).

3.2.2 Completes Attachment 3, CCP Radiography Independent Technical Reviewer Checklist.

3.3 Lead Operator (LO)

3.3.1 Provides supervision of the overall operation of the RTR system.

3.4 Records Custodian

3.4.1 Receives, processes, and transmits records generated by this procedure in accordance with CCP-QP-008, *CCP Records Management*.

4.0 PROCEDURE

NOTE
All steps within this procedure will be performed by RTR Operator unless otherwise specified.

4.1 Waste Container Preparation

4.1.1 Prepare the waste containers for examination in accordance with Host site and/or Central Characterization Project (CCP) procedures.

4.2 RTR System Startup

4.2.1 Startup the RTR system for operation in accordance with the CCP procedure.

4.3 Video/Audio Recorded Media System Startup/Image Test

NOTE
Video/audio recording of the RTR examination **MUST** be produced for all waste containers. The Image Test is performed once per day.

4.3.1 Record the following on Attachment 1, CCP RTR Measurement Control Report:

[A] Site.

[B] BDR Number.

[C] Examination Date.

4.3.2 Install the Image Test device

4.3.3 Prepare the video/audio media systems for operation in accordance with the manufacturer's instructions.

[A] Verify/Turn ON all the video/audio media system components and monitors.

[B] Label each video/audio media with the following information:

[B.1] For the primary video/audio recording media, record the BDR Number followed by a unique identifier (e.g., LA-RTR1-060004A).

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[B.2] **IF** additional recording media is required to complete a BDR,
THEN label the additional media with the BDR number followed by another unique identifier as described in step 4.3.3[B.1].

4.3.4 Perform a video/audio recorded media system check by recording the results of the Image Test on Attachment 1 as follows:

[A] Perform the Image Test.

[A.1] **IF** the test image is correctly observed (Minimum acceptable is five lines-pair/centimeters [cm] or the #6 sieve is viewable),
THEN record the results of the test, **AND** mark SAT on Attachment 1.

[A.2] **IF** the test image is **NOT** correctly observed,
THEN record the results of the test **AND** mark UNSAT on Attachment 1, STOP WORK **AND** notify the Lead Operator (LO) and Vendor Project Manager (VPM).

[B] Replay the video/audio recording media, **AND** verify the video/audio recording media check are satisfactory.

[B.1] **IF** the results of the video/audio recording media check are satisfactory,
THEN mark SAT on Attachment 1.

[B.2] **IF** the results of the video/audio recording media checks are **NOT** satisfactory,
THEN record the results of the test and mark UNSAT on Attachment 1, STOP WORK, and notify the LO and VPM.

4.3.5 Remove the Image Test device when it is conducive to operations.

4.3.6 Record comments if necessary, print name, sign, and date Attachment 1.

4.3.7 Place in holding file.

4.4 RTR System Operation

4.4.1 Waste Container Scanning

NOTE

Waste Container Identification (ID) Numbers shall be obtained by direct visual observation. An Attachment 2 must be completed for all waste containers examined.

The data required by steps 4.4.2[A.1] through 4.4.2[A.8] and 4.4.2[D.1]through 4.4.2[D.5](a)may be entered on Attachment 2 at any time after the waste container is loaded into the RTR unit. The remaining data required to be entered on Attachment 2 may be entered as the operator determines it during the scan.

[A] Enter the appropriate scan information (e.g., Container ID No., Date) on the video display.

[B] Start recording the examination scan **AND** record verbally the information for the waste container being examined.

[C] Manipulate the container and x-ray controls such that 100% of the container volume is examined.

[D] Scan the waste container.

[E] Record the results verbally **AND** in Section 3, Container Inventory and Comments of Attachment 2.

4.4.2 Data Entry

NOTE

To assist the RTR Operator in recording information onto the data sheets, another person may be used for data entry. This person does not require any RTR qualifications, as the RTR Operator retains responsibility for the data recorded. However, if another RTR Operator performs this function, that operator must sign the data sheet below the first Operator, and must be exempted from the IO, Replicate, and ITR functions.

The data required by steps [A.1]through [A.8] and [D.1] through [D.5](a) may be entered on Attachment 2 at any time after the waste container is loaded to the RTR unit. The remaining data required to be entered on Attachment 2 may be entered as the operator determines it during the scan.

[A] Record the following data in Section 1 of Attachment 2:

[A.1] Check "√" the applicable type of RTR examination.

[A.2] Site ID.

[A.3] Batch Number.

[A.4] Examination Date.

[A.5] Waste Container ID.

[A.6] Waste Container ID at the top of Page 2 and Page 3 of Attachment 2.

[A.7] Video/Audio Recorded Media Number.

[A.8] Procedure and Revision No.

[B] **IF** a container is identified in the S5000 summary category group that CAN **NOT** be penetrated by the RTR method because of the presence of lead, or other shielding, **THEN** initiate a nonconformance report (NCR) in accordance with CCP-QP-005, *CCP TRU Nonconforming Item Reporting and Control*.

[C] **IF** a container is identified in the S3000 or S4000 waste containers, **AND** RTR is **NOT** capable of penetrating the container so that any liquid present on the top, sides, or bottom of the waste form is identifiable, **THEN** initiate a NCR in accordance with CCP-QP-005.

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[D] Record the following data in Section 2: Waste Container Data, of Attachment 2:

[D.1] Container Type.

[D.2] Content (TRUCON) Code.

[D.3] Waste Matrix Code.

[D.4] Waste Stream ID.

[D.5] Waste Container Weights (kilograms [kg]).

(a) Gross Weight (from the CCP Container Traveler or obtain the weight in accordance with the Host site Interface Document).

(b) Tare Weight (Total Packaging Weight from Section 4: Packaging Material and Waste Material Parameters, of Attachment 2).

(c) Net Weight (Subtract Tare Weight from Gross Weight).

[D.6] Rigid Liner and Liner Vent Description.

(a) Describe both the rigid liner **AND** liner venting method (e.g., “90 millimeter liner with punctured lid,” **OR** “No Liner”).

[D.7] Estimated Number of Layers of Confinement.

NOTE

The fill percent of the container is based on the highest level of the bulk of the waste. Items (e.g., pipe, scrap angle, plastic bags) that protrude above the bulk of the waste are not to be included in the fill percent determination. The fill percent is to be recorded in five percent increments (e.g., 35%, 40%, 45%).

[D.8] Record the estimated Volume Utilization Percentage (VUP).

[E] Complete an itemized description of the waste inventory in the container in Section 3.

NOTE

Additional weight information for items commonly found in waste streams at each site may be provided in accordance with a controlled Operator Aid.

[F] Using packaging weight information provided by the Host site, record the estimated weight (kg) for the packaging materials in Section 4: Packaging Material and Waste Material Parameters, of Attachment 2.

[G] Using Table 2, Waste Material Parameters, Table 3, Waste Item Weights, and additional item weight information provided by the Host site, record the estimated weight for each WMP and sum all WMPs and record the total WMP weight in Section 4 of Attachment 2.

NOTE

The potential exists for prohibited items to be present in the waste container based upon shapes seen in the image and the RTR Operator's knowledge of the waste stream. For example; if the AK for the waste stream DOES **NOT** indicate the presence of Polychlorinated Biphenyl (PCB) free light ballasts, and a ballast is present in the container, the RTR Operator will have reason to believe that PCBs are present.

Investigate the presence of liquids by rotating the container back and forth, tilting, or per the equipment manufacturer's instructions.

Internal containers (e.g., bottles, cans, etc.) shall have no more than 60 milliliters or 3 percent by volume, whichever is greater, observable liquid **AND** in no case, shall the total observable liquid volume (i.e., the sum of all internal and/or outermost container volumes) exceed >1%.

[H] Using Table 1, Prohibited Items, as a reference, complete the checklist in Section 5: RTR Summary, of Attachment 2, to confirm there are **NO** prohibited items in the waste container.

[H.1] **IF** any hazardous waste(s) **NOT** identified in the AK Summary Report(s) for the waste stream being characterized **OR** any nonconforming/prohibited items are noted during the RTR examination,
THEN perform the following:

(a) Initiate an NCR in accordance with CCP-QP-005 **AND** record the NCR number in Section 1 of Attachment 2.

NOTE

The physical waste form requirements and waste stream descriptions for the waste stream being evaluated are found in the AK Summary Report. The AK Summary will be available in the work area and referenced as needed.

[H.2] **IF** the waste form DOES **NOT** match the Waste Stream description and/or the Waste Matrix Code, **THEN** initiate an NCR in accordance with CCP-QP-005, **AND** record NCR number in Section 1 of Attachment 2 and a description in the Comments block.

[I] Review Attachment 2 for completeness and accuracy.

NOTE

Data changes shall be made by the individual who originally collected the data or an equally qualified individual authorized to change the data.

[I.1] Ensure changes to the data have been initialed and dated with a justification, as necessary, provided in the Comments block of Attachment 2.

[J] Print name, sign, and date Attachment 2.

[K] Place in holding file.

[L] **IF** the waste container constitutes the last container of the batch or day,
THEN STOP, remove the video/audio recording media from the recording components, **AND** properly store the media.

[M] Repeat steps 4.4.1 through 4.4.2 until all containers in the batch have been examined.

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4.5 Replicate Scan

NOTE

A Replicate Scan shall be performed once per calendar day or once per testing batch, whichever is less frequent. The Replicate Scan is performed by a second and independent qualified RTR Operator who was not involved in the original scan of the waste container. The Replicate Scan will be performed under the same uniform conditions as a routine scan of a waste container in Section 4.4.

Second RTR Operator

4.5.1 Prior to reviewing the initial, Attachment 2, scan the replicate waste container per Section 4.4, **AND** record the results on a new Attachment 2.

4.5.2 Review the original Attachment 2, **AND** compare the results with the second Attachment 2.

4.5.3 Perform the following when identification of the waste matrix code, liquids in excess of Treatment, Storage, Disposal Facility (TSDF)-Waste Acceptance Criteria (WAC) limits, and compressed gases differ between the two operators:

[A] Reconcile the results with both RTR Operators as follows:

[A.1] Jointly perform a real-time review of the Attachment 2(s).

[A.2] Jointly review the video/audio recording media **OR** re-scan the container, **AND** make corrections, as required, to the Attachment 2(s).

[B] **IF** the results CAN **NOT** be reconciled, **THEN** STOP WORK **AND** notify the LO.

4.6 Independent Observations

NOTE

An Independent Observation of one container scan, other than the Replicate Scan, shall be performed once per calendar day or once per testing batch, whichever is less frequent. The Independent Observation will be performed by a second and independent qualified RTR Operator who was not involved in the original scan of the waste container. The Independent Observation will be performed by observing the video recording of the original scan with no audio.

Second RTR Operator

4.6.1 Review the video/audio recording media of the original scan, **AND** complete a second Attachment 2.

4.6.2 Review the original Attachment 2 for the subject container, **AND** compare the results with the Independent Observation Attachment 2.

4.6.3 Perform the following when identification of the waste matrix code, liquids in excess of TSDF-WAC limits, and compressed gases differ between the two operators.

[A] Reconcile the results with both RTR Operators as follows:

[A.1] Jointly perform a real-time review of Attachment 2(s).

[A.2] Jointly review the video/audio recording media, **OR** re-scan the container, **AND** make corrections, as required, to the Attachment 2(s).

[B] **IF** the results CAN **NOT** be reconciled, **THEN** STOP WORK **AND** notify the LO.

4.7 RTR System Shutdown

4.7.1 Shutdown the RTR system in accordance with CCP procedure.

4.8 Video/Audio Recording Media System Shutdown

4.8.1 Verify all video/audio recording media have been finalized if necessary and removed from the recording components.

4.8.2 Turn OFF the video/audio recording media recording systems in accordance with CCP procedure, or the manufacturer's instructions.

4.9 Batch Data Report Preparation

RTR Operator

4.9.1 Assemble Attachment 2(s) for up to 20 waste containers (regardless of matrix) that have been processed from a single RTR unit.

4.9.2 Complete Attachment 5, CCP Radiography Batch Data Report Cover Sheet, **AND** record the following:

[A] BDR No.

[B] Date.

[C] Waste Container ID Numbers.

[D] Record which containers are by designation, Replicate Scans and Independent Observations.

4.9.3 Assemble the following data for the BDR:

[A] Attachment 5, CCP Radiography Batch Data Report Cover Sheet

[B] Attachment 4, CCP Radiography Batch Data Report Table Of Contents and Batch Narrative

[C] Attachment 1, CCP RTR Measurement Control Report

[D] Attachment 2, CCP Radiography Data Sheets

[E] Copy of NCRs, if applicable.

[F] Paginate the BDR.

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[G] Complete Attachment 4, CCP Radiography Batch Data Report Table of Contents, and Batch Narrative.

[H] Audio/Video Media.

4.9.4 Forward the BDR package to the ITR.

4.10 RTR Independent Technical Review

NOTE

The independent technical review is conducted by a third and independent qualified RTR Operator who was not involved in the generation or recording of the data under review. The Independent Technical Reviewer CAN **NOT** review his/her own work.

ITR

4.10.1 Review Attachment 1, Attachment 2, and associated video/audio media recordings, **AND** resolve any comments with the RTR Operator(s).

4.10.2 Review the BDR to the criteria in the checklist of Attachment 3, **AND** document the results.

4.10.3 Print name, sign, and date Attachment 3 and Attachment 5.

4.10.4 Insert Attachment 3, CCP Radiography Independent Technical Reviewer Checklist, as the last page in the BDR.

4.10.5 Record page number on the Attachment 3 and Table of Contents.

4.10.6 Forward the BDR package to the Records Custodian.

Records Custodian

[A] Receive, process, and transmit records in accordance with CCP-QP-008.

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5.0 RECORDS

5.1 Records generated during the performance of this procedure are maintained as QA records in accordance with CCP-QP-008. The records are the following:

5.1.1 QA/Lifetime

[A] Batch Data Report (BDR):

- Attachment 1, CCP RTR Measurement Control Report
- Attachment 2, CCP Radiography Data Sheet
- Attachment 3, CCP Radiography Independent Technical Reviewer Checklist
- Attachment 4, CCP Radiography Batch Data Report Table of Contents and Batch Narrative
- Attachment 5, CCP Radiography Batch Data Report Cover Sheet
- Copies of NCRs, if applicable

5.1.2 QA/Non-permanent

[A] RTR VHS or DVD

Table 1. Prohibited Items

LIST OF PROHIBITED ITEMS
Liquid waste - Observable liquid shall be no more than 1 percent by volume of the outermost container. - Internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater, are prohibited. - Containers with Hazardous Waste Number U134 assigned shall have no observable liquid.
Nonradioactive pyrophorics
Non-mixed hazardous waste
Incompatible wastes (Wastes that are incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, and/or other wastes).
Explosives
Compressed Gases/Pressurized containers (e.g., aerosol cans)
PCB liquids
Ignitables
Corrosives
Reactive waste
Sealed containers greater than 4 liters
Heat Sealed Bags (unvented) with surface area less than 390 square inches and greater than 4 liters, or heat sealed bags not authorized in the RH TRUCON Code
Sharp or heavy objects, that could reasonably be expected to cause a breach of the container during transport because it is not adequately blocked, braced, or packaged

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Table 2. Waste Material Parameters

Waste Material Parameter	Description
Iron-based metals/alloys (IM)	Iron and steel alloys in the waste; does not include the waste container materials
Aluminum-based metals/alloys (AM)	Aluminum or aluminum-based alloys in the waste materials
Other metals (OM)	All other metals found in the waste materials
Other inorganic materials (OI)	Nonmetallic inorganic waste, including concrete, glass, firebrick, ceramics, sand, and inorganic sorbents
Cellulosics (C)	Materials generally derived from high polymer plant carbohydrates (e.g., paper, cardboard, wood, cloth)
Rubber (R)	Natural or man-made elastic Latex materials (e.g., surgeon's gloves, leaded rubber gloves)
Plastics (waste materials) (XPM)	Generally man-made materials, often derived from petroleum feedstock (e.g., polyethylene, polyvinylchloride)
Organic matrix (OR)	Cemented organic resins, solidified organic liquids, and sludges
Inorganic matrix (IN)	Any homogeneous materials consisting of sludge, or aqueous-based liquids which are solidified with cement, calcium silicate, or other solidification agents (e.g., waste water treatment sludge, cemented aqueous liquids, and inorganic particulate)
Soils (S)	Generally consists of naturally occurring soils which have been contaminated with inorganic waste materials
Steel (packaging materials) (ST)	Steel Drums (55- and 85- Gallon)
Plastics (packaging materials) (PP)	90-mil polyethylene drum liner and plastic bags

Table 3. Waste Item Weights[a] Page 1 of 2

ITEM	WEIGHT
Electric Drill Motor	2.2 kg
Electric 4” Side Grinder	2.5 kg
Plastic bag for waste	0.6 kg
Fiber pack	13.0 kg
Fiber pack lead-lined	66.0 kg
Lead brick (5.1 x 10 x 20 cm)	12.0 kg
Leaded Rubber Glove	2.5 kg
Aluminum Sphincter Can	0.2 kg
Leaded Rubber Apron	2.4 kg
Vermiculite	0.1 kg/liter
Oil-Dry	0.4 kg/liter
Poly Bottles (1 gallon)	2.2 kg
Poly Bottles (1 liter)	0.5 kg
Metal Can (for salt wastes)	1.1 kg
Metal Can	0.2 kg
Uncured Portland Cement	2.9 kg/liter
Setup Portland Cement	1.1 kg/liter
High-Efficiency Particulate Air (HEPA) Filter (8 x 8 3-1/16)	1.0 kg
HEPA Filter (8 x 8 x 5-7/8)	1.9 kg
HEPA Filter (12 x 12 x 5-7/8)	2.5 kg
HEPA Filter (24 x 24 x 5- 7/8)	7.2 kg
HEPA Filter (24 x 24 x 11-1/2)	14.1 kg
10’ Tape Measure	0.1 kg
13 Oz. Aerosol Can ¼ Full	0.2 kg
17 Oz. Aerosol Can Full of Liquid	0.5 kg
17" Section of 1" Electrical Conduit	0.5 kg
17" Section of 1" Sch 40 S/s Pipe	1.1 kg
2-Gallon Car-boy ½ Full of Water	5.8 kg
2’ X 4’ Board 20" long	0.7 kg
25’ Plastic Suit Hose	2.3 kg
3" Roll of Duct Tape	0.7 kg
3" Roll of Masking Tape	0.4 kg
5-Gallon Metal Bucket	1.3 kg
50’ Plastic Suit Hose	5.0 kg
6-Gallon Car-boy ½ Full of Water	14.0 kg

Table 3. Waste Items Weights[a] (Continued) Page 2 of 2

ITEM	WEIGHT
Channel Lock Pliers	0.3 kg
Coveralls	0.9 kg
Crescent Wrench	0.2 kg
Empty 2-Gallon Car-boy	0.7 kg
Empty 6-Gallon Car-boy	2.0 kg
Flashlight with Batteries	0.5 kg
Flashlight Without Batteries	0.1 kg
Flat File	0.4 kg
Hacksaw with Blade	0.5 kg
Hammer	0.6 kg
Large Open End Wrench	0.5 kg
Plastic Suit Top and Pants	2.3 kg
Razor Knife	0.1 kg
Sand Bag ½ Full of Gravel	12.7 kg
Scissors	0.2 kg
Vice Grip Pliers	0.5 kg
Welder's Chipping Hammer	0.4 kg
Wire Brush	0.1 kg
Wooden Folding Ruler	0.2 kg
Wooden Wedge	0.2 kg
Liner Bags – Large	0.5 kg
Rad Bags – Medium and Small	0.1 kg

[a]The weights for waste packaging and containers will be provided by the Host site. Additional Host site/AK specification weights shall be provided in accordance with an approved Operator Aid.

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Attachment 1 – CCP RTR Measurement Control Report

Site ID:		
Batch Data Report No.:		
Examination Date:		
Control Checks		
Video/Audio Recorded Media System Check	☐ SAT	☐ UNSAT
Image Test : _____ (Minimum acceptable is 5 lines-pair/cm or #6 Sieve is viewable)	☐ SAT	☐ UNSAT
Comments:		
RTR Operator:		
Printed Name	Signature	Date

Attachment 2 – CCP Radiography Data Sheet

Section 1: General Information	
☐ RTR Examination ☐ RTR Replicate Scan ☐ RTR Independent Observation	
Site ID:	
Batch Number:	
Examination Date:	
Waste Container ID:	
Video/Audio Recorded Media Number:	
Procedure and Revision No.:	Rev.
NCR(s) associated with the container? (e.g., Prohibited Items)	☐ NO ☐ YES NCR No.:_____ NCR No.:_____

Section 2: Waste Container Data	
Container Type:	
TRUCON Code:	
Waste Matrix Code:	
Waste Stream I.D.:	
Waste Container Weights:	Gross Wt: _____kg. Tare Wt: _____kg. Net Wt:_____kg.
Rigid Liner and Liner Vent Description: (e.g., “90 mil liner – NO Lid” or “NO Liner”)	
Number of Layers of Confinement:	
Volume Utilization Percentage:	_____%

Attachment 2 – CCP Radiography Data Sheet (Continued)

Page 2 of 3

Waste Container ID:_____

Section 3: Container Inventory and Comments (Detailed descriptions)

Section 4: Packaging Material and Waste Material Parameters	
Packaging Material:	Estimated Weight (kg)
Steel (ST):	
Plastics (PP):	
Others:	
Total Packaging Weight:	
Waste Material Parameter:	Estimated Weight (kg)
Iron-based Metal / Alloys (IM):	
Aluminum-based Metals / Alloys (AM):	
Other Metals (OM):	
Other Inorganic Materials (OI):	
Cellulosics (C):	
Rubber (R):	
Plastics (waste materials) (XPM):	
Organic Matrix (OR):	
Inorganic Matrix (IN):	
Soils (S):	
Total WMP Weight:	

Attachment 2 – CCP Radiography Data Sheet (Continued)

Page 3 of 3

Waste Container ID:_____

Section 5: RTR Summary (Questions answered "YES" will be explained in the Comments block)	Yes	No
Is there any observable liquid in internal containers, more than 60 milliliters or 3 percent by volume, whichever is greater?	☐	☐
Is the total volume of observable liquid in the outermost container **GREATER** than 1% of the container?	☐	☐
Is there observable liquid in payload containers with an EPA Hazardous Waste Number of U134?	☐	☐
Is there an indication of non-radionuclide pyrophoric materials, such as elemental potassium?	☐	☐
Is there an indication of hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)?	☐	☐
Is there an indication of wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes (i.e., waste does NOT match TRUCON Code[s])?	☐	☐
Is there an indication of wastes containing explosives or compressed gases?	☐	☐
Is there an indication of PCBs liquids?	☐	☐
Is there an indication of the waste exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA hazardous waste numbers of D001, D002, or D003)?	☐	☐
Is the physical form of the waste inconsistent with the Waste Stream Description or the Waste Matrix Code?	☐	☐
CH or RH TRAMPAC		
Are there heat-sealed bags (unvented) GREATER than 4 liters and LESS than 390 square inches in the waste, or heat sealed bags not authorized in the RH TRUCON Code?	☐	☐
Were there Non-approved Closure Methods used on liner bags or inner bags greater than 4 liters?	☐	☐
Are there sealed containers GREATER than 4 liters?	☐	☐
Are there indications of inadequate protection for heavy and/or sharp objects?	☐	☐

Comments:

RTR Operator:

_____ _____ _____

Print Name Signature Date

Attachment 3 – CCP Radiography Independent Technical Reviewer Checklist

Batch Data Report No.:_____

Description				
1.	Data generation and reduction were conducted in a technically correct manner in accordance with the methods used?	☐ NO	☐ YES	☐ N/A
2.	Was the correct revision of the procedure used? Procedure: Rev.:	☐ NO	☐ YES	☐ N/A
3.	Are the WMPs entered correctly?	☐ NO	☐ YES	☐ N/A
4.	Do the estimated weights in Section 4 of Attachment 2 equal the container gross weight?	☐ NO	☐ YES	☐ N/A
5.	Is the data reported in the proper units with the correct number of significant figures (e.g., one tenth of a kilogram)?	☐ NO	☐ YES	☐ N/A
6.	Has the data been verified for transcription errors?	☐ NO	☐ YES	☐ N/A
7.	Does the Testing Batch Report include radiography for up to 20 containers?	☐ NO	☐ YES	☐ N/A
8.	BDR contents are complete and match the CCP Waste RTR Batch Data Report Table of Contents?	☐ NO	☐ YES	☐ N/A
9.	Is all the data signed and dated in reproducible ink and by the individual(s) generating it?	☐ NO	☐ YES	☐ N/A
10.	Is all data recorded clearly, legibly, and accurately?	☐ NO	☐ YES	☐ N/A
11.	All changes to original data lined out, initialed and dated by the individual making the changes?	☐ NO	☐ YES	☐ N/A
12.	Was justification made for changing the original data?	☐ NO	☐ YES	☐ N/A
13.	Were data changes made by the individual who originally collected the data?	☐ NO	☐ YES	☐ N/A
14.	Does the waste match the Waste Matrix Code and Waste Stream description?	☐ NO	☐ YES	☐ N/A
15.	Are the RTR Operator's decisions regarding the Radiography documented?	☐ NO	☐ YES	☐ N/A
16.	Is there an adequate written description of the contents of each item?	☐ NO	☐ YES	☐ N/A
17.	Was the video/audio recording media properly prepared and labeled for each waste container?	☐ NO	☐ YES	☐ N/A
18.	Was the video/audio recording media check performed satisfactorily and recorded on Attachment 1?	☐ NO	☐ YES	☐ N/A

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Attachment 3 – CCP Radiography Independent Technical Reviewer Checklist (Continued)

Batch Data Report No.:_____

Description				
19.	Was the Image Test performed satisfactorily and recorded on Attachment 1?	☐ NO	☐ YES	☐ N/A
20.	Was the Replicate Scan performed and recorded on an Attachment 2? (1 per batch or 1 per day, whichever is less frequent).	☐ NO	☐ YES	☐ N/A
21.	Was the Replicate Scan RTR Operator different from the first RTR Operator?	☐ NO	☐ YES	☐ N/A
22.	Did the Replicate Scan RTR Operator and the first RTR Operator agree on the results?	☐ NO	☐ YES	☐ N/A
23.	Was the Independent Observation performed and recorded on an Attachment 2? (1 per batch or 1 per day, whichever is less frequent).	☐ NO	☐ YES	☐ N/A
24.	Was the Independent Observation RTR Operator different from the first RTR Operator?	☐ NO	☐ YES	☐ N/A
25.	Did the Independent Observation RTR Operator and the first RTR Operator agree on the results?	☐ NO	☐ YES	☐ N/A
26.	Was the data collection performed by qualified individuals?	☐ NO	☐ YES	☐ N/A
27.	Are the NCR(s) associated with the RTR examination included in the BDR?	☐ NO	☐ YES	☐ N/A
28.	QAOs (precision, accuracy, completeness, representativeness) have been met?	☐ NO	☐ YES	☐ N/A

Comments:

I have reviewed 100% of the container specific and batch data in this report and find it acceptable.

Independent Technical Reviewer:

Printed Name	Signature	Date

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Attachment 4 – CCP Radiography Batch Data Report Table of Contents and Batch Narrative

Batch Data Report No.:_____ Date:_____

Table Of Contents		
Item	Description	Page No.
1	CCP Radiography Batch Data Report Cover Sheet	
2	CCP Radiography Batch Data Report Table Of Contents	
3	CCP RTR Measurement Control Report	
4	CCP Radiography Data Sheets	
5	Copy of NCRs (NA, If Not Applicable)	
6	CCP Independent Technical Reviewer Checklist	

Batch Narrative

RTR Operator _____ Signature _____ Date _____

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Attachment 5 – CCP Radiography Batch Data Report Cover Sheet

Batch Data Report No.:_____ Date:_____

Waste Container ID Numbers	
Replicate Scan:	
Independent Observation:	
1	
2	
3	
4	
5	
6	
7	
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10	
11	
12	
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16	
17	
18	
19	
20	

Independent Technical Reviewer:

_____ _____ _____
Printed Name Signature Date