

TYPICAL OPERATIONS AT THE 222-S LAB

Typical Operations at the 222-S laboratory:

Sample Preparation

- Sample Breakdown
- Homogenize Sample
- Centrifuge Sample
- Composite Sample
- Bulk Density
- Volume of % Centrifuged Solids
- Liquid Weight
- Solid Weight
- Volume of Solid
- Acid Dilution for ICP/AA/Radiochemistry
- Water Digest for ICP/AA/Radiochemistry
- Fusion with KOH
- Water Digest (no acid)

Analyses:

Inorganic, Physical Analyses, Total Organic Carbon (TOC)

- Ammonium by Ion Chromatography (IC)/Cations by IC
- DSC exotherms by TA
- Iso Uranium by ICP/Mass Spectrometry(MS)
- Specific Gravity
- % Water by Gravimetric Measurement
- Anions by IC
- ICP Acid Digest/Routine Analysis
- Total Organic Carbon (TOC) by Persulfate/Coulometry

Organic Analyses

- PCB Sample Preparation
- PCB Analyses (SW846 8082)
- Volatile Analyses (SW846 8260)
- Semivolatile Analyses (SW846 8270)

Radionuclide Analyses

- Alpha in liquid sample
- Am241, Cm 243 by TRU-SPEC Resin
- Plutonium (Pu) 238, 239 by TRU-SPEC Resin
- GEA
- Strontium (Sr) 89/90 High Level

Data Reporting

- Full Data Package
- Summary Data Package
- Summary Data Package with Quality Assurance and TCD Upload

QC Samples are priced per method requirements individually for blanks, spikes, duplicates, and external reference samples.

TYPICAL ANALYSES AND PROCEDURES USED BY THE LAS&T CONTRACTOR

Determination of Free OH-/H+ Using Metrohm 682 Titroprocessor
Determination Of Caustic Demand
Caustic Ratio Determination Of Waste Analysis
pH Determination on Solid Matrix Samples
pH Determination Of Aqueous Samples
Tritium Analysis by Liquid Scintillation Counting
Tritium By Lachat Micro-Dist and Liquid Scintillation Counting
High Level Strontium-89, 90 in Aqueous Samples
Strontium-90 In Leachates Of Soil, Vegetation, Air Filters, And Other Solid Samples
Strontium-90 In Water By Carbonate Precipitation
Strontium-90 in Solids
Spectrophotometric Determination of Hexavalent Chromium
Determination Of Nickel-63
Mercury Analysis By Cold Vapor Atomic Absorption Using the FIAS-400
Mercury Analysis By Cold Vapor Atomic Absorption Using The HG3000 With EHG3000 And SDS-270
Sample Preparation of Mercury Vapor Traps for Cold Vapor Atomic Absorption Analyses
Determination of Carbon by Hot Persulfate Oxidation and Coulometric Detection
Total Organic Carbon (TOC) Combustion Tube Change
Determination of Carbon in Solutions by Combustion and Coulometry
Carbon-14 In Small Volume Sample By Persulfate Oxidation And Liquid-Scintillation Count
Determination of Sulfide by Microdistillation and Ion Selective Electrode Analysis
Determination Of Selenium-79
Determination of I-129 In Waste Tank Sample
Iodine-129 In Tank Farm Solids
Determinatin of Iodine-129 in Soil
Determination of Technetium-99 by Solvent Extraction and Liquid Scintillation Counting
Determination of Technetium-99 in Soil
Water Leach Sample Preparation
Acid Digest Preparation Of Sediments, Sludges, And Soils In 11A Hot Cells For Metal Analysis by ICP-MS, ICP-AES, GFAA, and FLAA
Microwave Assisted Acid Digestion of Air filter Media, Wipes, and Bulk Materials for Analysis by Inductively Coupled Plasma
Acid Digestion/Dilutions of Aqueous Samples and Extracts for Spectroscopic Analysis of Metals
ICP Emission Spectrometric Method For The Thermo Jarrell Ash Type 61E
Acid Digestion of Sediments, Sludges, or Soil Samples for Spectroscopic Analysis of Metals
Inductively Coupled Plasma Emission Spectrometric Method for the JY Ultima C
Metals Analysis of IH Samples By Inductively Coupled Plasma Atomic Emission Spectrometry
Acid Digestion of IH-Related Filter, Wipe, Soil, and Bulk Samples
Determination of Trace Elements and Radionuclides Using the PQ EXCELL Inductively Coupled Plasma Mass Spectrometer
Determination of Trace Elements and Radionuclides Using the Agilent 7500ce Inductively Coupled Plasma-Mass Spectrometer
Alpha and Beta Samples
Total Alpha Counting By Alpha Proportional Counters
222-S Counting Room Calculations For Routine Air, Water, And Smear Samples Operation of the Alpha Beta Counting System Using PC Control
Operation Of the Beckman Liquid Scintillation Counters
Operation of the Alpha Beta Counting System Using PC Control and Windows
Alpha Energy Analysis Using The Genie System
Gamma Energy Analysis - The Genie 2K System
Alpha Energy Analysis Using the Genie 2000 System
Determination of Specific Gravity for Free Liquid Samples

Total Dissolved Solids (TDS) Determination
Specific Gravity Of Sludge Samples
Total Suspended Solids
Determination Of Conductivity By Use Of The Accumet AR20
Thermal Stability And Percent Water Using The TA DSC And TGA
Use And Calibration Of The DMA 58 Digital Density Meter
Percent Of Solids And Bulk Density Determinations By Centrifuge
Sample Description Protocol At 222-S
Semivolatiles and PCBs From Aqueous Samples Using Semimicro Continuous Liquid-Liquid
Extraction
Volatile Organics By Closed System Purge And Trap/Gas Chromatography Mass Spectroscopy
Using SW-846 Method 8260B
Semivolatile Organics By Gas Chromatography Mass Spectroscopy Based On SW-846 Method
8270C
Soxhlet Extraction of Solid Samples for Semivolatile Organic or PCB Analysis
Polychlorinated Biphenyls By SW-846, Method 8082, Using Gas Chromatography With Electron
Capture Detection
Polychlorinated Biphenyls Screening Extraction
Accelerated Solvent Extraction (ASE) Of Solid Samples
Semivolatiles From Solid Samples Using Accelerated Solvent Extraction (ASE)
Polychlorinated Biphenyls Screening Analysis
Analysis of Volatile Organics Collected on Thermal Desorption Tubes by Gas
Chromatography/Mass Spectrometry
Dilution of Samples for Semivolatile Organic or PCB Analysis
Analysis of Nitrous Oxide in SUMMA Passivated Canisters by GC/ECD
Analysis of Semi-volatile Organic Compounds Collected on Thermal Desorption Unit Tubes by
Gas Chromatography/Mass Spectrometry
Analysis of Benzene, Toluene, Ethyl Benzene, and Xylenes in Sorbent Tubes using Gas
Chromatography/Mass Spectrometry
Cation Analysis On Dionex Model DX-500
Ion Chromatographic Analysis of Anions on DIONEX Model DX-500
Ion Chromatographic Analysis of Anions and Cations on DIONEX Model 500
Sample Preparation of Inorganic Acid Vapor Tubes for Ion Chromatography Analysis
Co-Precipitation of Transuranics for Alpha Energy Analysis (AEA) Counting
Nitric Acid Hydrochloric Acid Leach Of Soil
Nitric Acid Hydrochloric Acid Leach Of Vegetation
Calcium Oxalate Precipitation For Actinide Scavenging And Separation
Sample Preparation of Nitrogen Dioxide Vapor Traps for Ion Chromatography Analysis
Sample Preparation of Ammonia Vapor Tubes For Ion Chromatography Analysis
Micro-distillation Separation of Ammonia For Ion Chromatographic Analysis
Toxicity Characteristics Leaching Procedure (TCLP) Nonvolatile Samples
Preparation Of Mounts For Scintillation Counting
Preparation Of Sample Mounts For Gamma Energy Analysis
Dissolution Of Solids On Filters And Smears
Nitric Acid Hydrogen Peroxide Oxidation Of Organic Matter
Fusion by Alkali Metal Hydroxide
Drying of Dimethyl Mercury Tubes For Analysis
Percent Solids/Percent Water by Gravimetric Analysis
Determination Of Cyanide By Microdistillation And Spectrophotometric Analysis
Determination Of Cyanide By EDTA/EN Dissolution Followed By Microdistillation And
Spectrophotometric Analysis
Determination Of Uranium By Kinetic Phosphorescence
Preparation Of Neptunium-237 By TIOA-TTA Extraction And Alpha Counting
Determination of Plutonium by Extraction and ICP-MS
Determination of Plutonium and Americium By Extraction with TRU-Resin

SAMPLE OF TYPES AND NUMBERS OF TESTS PERFORMED IN 2008**Specific analytical tests⁽²⁾:**

Test Description	Count	Instrument	Department ⁽¹⁾
Caustic Ratio	2	C/R	i
Chromium (VI) by Spec.	34	Colorimetri c	i
Mercury by CVAA (PE) with FIAS	62	CVAA	i
EDTA/HEDTA by C.Z.E.	24	CZE	i
% Water by TGA using TA	198	DSC/TGA	i
DSC Exotherm by TA	19	DSC/TGA	i
DSC Exotherm Dry Calculated	1	DSC/TGA	i
Anions by IC SW846	322	iC	i
Anions and small Organic Acids	185	iC	i
Cations by Ion Chromatograph	49	IC	i
ICP (Acid Added to Liquid)	416	ICP	i
ICP (Acid Digest of Liquid)	99	ICP	i
ICP (Acid Dig.) Routine Metals	54	ICP	i
ICP (Fus. Dig.) Routine Metals	32	ICP	i
ICP Fusion Zr Cruc. All Metals	13	ICP	i
ICP Acid Digest 'All' Metals	8	ICP	i
ICP (Acid Added to Liquid)	8	ICP	i
ICP (Acid Added to Sample)	6	ICP	i
ICP (Acid Digest of Liquid)	2	ICP	i
ICP Fusion for 'All' Metals	2	ICP	i
99Tc,126Sn,133,135,137Cs	64	ICP/MS	i
Tc99 by ICP/MS (Acid Digest)	36	ICP/MS	i
Iso Actinides by ICP/MS-Acidil	33	ICP/MS	i
Iso Actinides by ICP/MS	25	ICP/MS	i
Iso Actinides by ICP/MS-Fusion	25	ICP/MS	i
Iso Uranium by ICP/MS Acid Add	25	ICP/MS	i
99Tc,126Sn,133,135,137Cs	22	ICP/MS	i
Iso Uranium by ICP/MS AcidD158	22	ICP/MS	i
Iso Actinides by ICP/MS	16	ICP/MS	i
Iso Uranium by ICP/MS-AcidD159	15	ICP/MS	i
Tc 99 by ICP/MS Acid Addition	13	ICP/MS	i
I 129 by ICP/MS	11	ICP/MS	i
I 129 by ICP/MS	11	ICP/MS	i
Isotopic Actinides by ICP/MS	9	ICP/MS	i
99Tc,126Sn,133,135,137Cs	8	ICP/MS	i
Tc 99 by ICP/MS (Fusion Prep)	7	ICP/MS	i
Metals 1 by ICP/MS- ACD158	3	ICP/MS	i
Metals 2 by ICP/MS- ACD158	3	ICP/MS	i
Periodic Tbl by ICP/MS- ACD159	3	ICP/MS	i

Metals 2 by ICP/MS- ACD159	1	ICP/MS	i
ICP/MS	1	ICP/MS	i
Uranium by Phosphorescence	44	KPA	i
OH- by Pot. Titration	266	OH	i
pH Direct	243	pH	i
pH on Solid Samples	23	pH	i
Polarized Light Microscopy	10	PLM	i
Scanning Electron Microscope	27	SEM	i
Specific Gravity	232	SPG	i
Specific Gravity-Solid/Sludges	27	SPG	i
Hot Cell Specific Gravity	14	SPG	i
TIC/TOC Acid-Persulfate	203	TIC TOC	i
TIC/TOC Acid Persulfate	81	TIC TOC	i
Total Carbon by Coulometry	77	TIC TOC	i
TIC by Acid/Coulometry	74	TIC TOC	i
Tot. Organic Carbon by Coul.	68	TIC TOC	i
TOC by Persulfate/Coulometry	3	TIC TOC	i
Phase ID by X-ray Diffraction	22	XRD	i
PCB DWT EPA SW-846 Method 8082	70	PCB	o
PCBs by EPA SW-846 Method 8082	68	PCB	o
PCB Sample Preparation	66	PCB	o
PCB Scan	22	PCB	o
SemiVOA Sample Preparation	12	PCB	o
Semi-Voa Evaporator	30	SV	o
SW-846 8270B Semi-Volatiles	9	SV	o
SW-846 8270B Semi-Volatiles	8	SV	o
Semi-VOA GC/MS RCRA protocol	5	SV	o
VOA Evaporator	24	VOA	o
VOA by GC/MS - CLP protocol	12	VOA	o
VOA by GC/MS - CLP protocol	6	VOA	o
VOA by GC/MS - RCRA protocol	1	VOA	o
Pu239,Pu238 by TRU-SPEC Resin	85	AEA	r
Am241,Cm243 by TRU-Spec Resin	74	AEA	r
Pu238,239 by TRU-SPEC Resin	38	AEA	r
Air Filter AEA	14	AEA	r
Am241 by Extraction	13	AEA	r
Pu239 by TRU-SPEC Resin	12	AEA	r
AEA for peak %	2	AEA	r
AEA for peak %	1	AEA	r
Alpha/Beta Organic Scan	175	Alpha/Beta	r
Alpha in Liquid Samples	165	Alpha/Beta	r
Alpha and Beta, Liquid Samples	133	Alpha/Beta	r
Env Alpha/Beta	55	Alpha/Beta	r
Alpha and Beta, Digested Solid	32	Alpha/Beta	r
Np237 by TTA Extraction	29	Alpha/Beta	r
Alpha of Digested Solid	26	Alpha/Beta	r

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Env Alpha/Beta	25	Alpha/Beta	r
Alpha of Sample	14	Alpha/Beta	r
ENV Beta of Sample	4	Alpha/Beta	r
ENV Alpha of Sample	3	Alpha/Beta	r
Env Alpha/Beta-2nd Count	3	Alpha/Beta	r
Sr-89/90 High Level	199	Beta	r
Env Sr-89/90 on Sample	26	Beta	r
Env Sr-89/90 for Solids	15	Beta	r
Env Sr-89/90 for Liquids	3	Beta	r
GEA Large Library Method	107	GEA	r
Env GEA Large Library Method	94	GEA	r
Iodine-129 Waste Tank Samples	78	GEA	r
GEA:Cs137,Co60,Eu154-155,Am241	40	GEA	r
GEA for Co,Sb,Cs,Eu,Ra,Ac,Am	28	GEA	r
GEA for Co60, Cs137	24	GEA	r
Env GEA Large Library Method	15	GEA	r
ENV GEA for Co,Cs,Eu	13	GEA	r
GEA (ENV) Co,Sb,Cs,Eu,RA,Ac,Am	4	GEA	r
GEA for Co60, Cs137	1	GEA	r
Neutron Activat./GEA Al,Cl,Na	4	GEA/NA	r
Technetium - Liq. Scint.	116	Liq Scint	r
Selenium-79 by Liquid Scint.	68	Liq Scint	r
Carbon 14, Small Volume	64	Liq Scint	r
Tritium (H3) by Lachat	26	Liq Scint	r

Note:

- (1) Department i=inorganic, o=organic, r=radiochemistry
- (2) Types and quantities change due to needs of customers and DOE programs.

Additional tests and notifications required by customers:

Activity Description	Count
Dose Rate(hotcell) in mrem/hr	573
Amount of Sam/Present/hotcell	527
Homogenize Sample	439
Dose Rate(samp prep)in mrem/hr	365
Received Sample Yet?	337
Solids Recovered - Weight	248
Hold for Proj Coord Attention	242
Disposal down 11A drain	139
Dose Rate in mrem/hour	115
Acid Digest for ICP/AA/Radchem	110
Acid Digest for ICP/AA/Radchem	85
Organic Vol Present / hotcell	82
% Water by Gravimetric	81
Hot Cell Break down samples	80
Archive aliq of sample/hotcell	80
Bulk Density of Sample	76
Liquid Recovered - Weight	72

Water Digest-NO ACID	63
Make Composite Sample	60
Hot Cell Photography	60
Addition of Water to Sample	59
PCB Sample Preparation	58
Fusion with KOH	55
Centrifuge Liquid / hotcell	48
Liquid Recovered - Volume	47
Appearance of Sample-Hot Cells	44
Push Mode Ext. of Core Samples	44
Notebook with source data	44
Give this sample to PCL	43
Conductivity of Liquid AR20	40
Liner Liquid Recoverd - Volume	40
Solids Recovered - Volume	40
Drainable Liquid Recovrd - Vol	38
Drainable Liquid Recoverd - Wt	38
Hot Cell % Water by Gravimetr.	37
Volume - Material in Container	36
Break down samples/Dose&Appear	35
SemiVOA Sample Preparation	35
Volume % Centrifuged Solids	33
Bulk Density of Sample	32
Alkali Metal Hydroxide Fusion	27
Solids % - Gravimetric	27
Cyanide EDTA Addition	20
Volume % Settled Solids	18
Ship aliquot of sample to PNL	18
Volume % Centrifuged Solids	16
Fusion (Zr Crucible) with KOH	15
Ship Class B Rad. (PAS-1 Cask)	15
Cyanide Water Distillation	14
Archive an aliquot of sample	14
Acid Dig-Sandfilter Backwash	13
AMT/ORG/SLDS/COLOR/DOSE	11
TOXICICTY LEACHING PROCEDURE	11
Ship Class A Rad. (Hedge Hog)	10
Suspended Solids in a Liquid	8
Shear Strength	8
Hot Cell Breakdown Samples	6
Particle Size Analysis	5
Weight Percent Oxides	4
Filter Liquid / hotcell	4
Hot Cell Water Digest-NO ACID	4
Water Dilution of a Sample	4
Solids % - Grav. in Hot Cell	4
Ship Class C Rad.(On-site Pig)	4
Total Dissolv. Solids - Grav.	3
Ship sample	3
Bulk Density Special Test Plan	2

Breakdown Samples-Dose &Appear	1
Volume Pct Settled Solid - TP	1
Volume Percent Solid Test Plan	1

FACILITIES THAT ARE PART OF THE 222-S LABORATORY COMPLEX AND AUXILIARY BUILDINGS

- 222-S Building ⁽¹⁾
- 222-S Building Annex ⁽¹⁾
- 222-SA Standards Laboratory ⁽¹⁾
- 222-SB Filter Building
- 222-SC Filter Building
- 222-SE Filter Building
- 222-SF Material Staging Area
- 2716-S Storage Building
- 212-S and 213-S Gas Storage Docks
- HS-0065 Chemical Storage Unit
- CFX Pit

Waste Handling Facilities

- 207-SL Retention Basin
- 225-WB
- 219-S Waste Handling Facility
- 222-SD Solid Waste Handling/Storage System
- Bone Yard
- 222-S Dangerous and Mixed Waste Storage Areas (HS-0082 and HS-0083)

Administrative and Office Buildings

- 2704-S Building ⁽²⁾
- MO-037
- MO-039
- MO-291
- MO-028
- Connex boxes

⁽¹⁾ LAS&T personnel will occupy these facilities, but not necessarily exclusively, where the analytical chemistry work is performed.

⁽²⁾ LAS&T management and administrative personnel will be provided space in this facility.

Facility Descriptions

222-S Laboratory and Related Structures

222-S Building--The 222-S Building is a two-story building 111.5 m (366 ft) long and 32.6 m (107 ft) wide located in the southeast corner of the 200 West Area.

The first floor of the 222-S Building is divided into four general areas. The west end contains the lunchroom, offices, and locker rooms, which are maintained free of radioactivity and toxic chemicals. The west central section contains laboratories and service areas for work with radioactive and/or toxic materials. The east central section, commonly referred to as the multi-curie section, contains laboratories, hot cells, and service areas for working with radioactive samples. The east end contains the Hot Cell Facility, Room 11A. The Hot Cell Facility is the newest addition and contains six cells with manipulators for instrument analysis of high-dose rate samples. The multi-curie section contains four older cells with manipulators. These cells are generally used to develop remote analytical methods and procedures.

The partial basement includes tunnels containing service piping and vacuum pumps, a counting room, an instrument maintenance shop, and a scanning electron microscope laboratory.

The second floor includes the ventilation supply fans, supply and exhaust ductwork, the ventilation system control room, an electrical shop, a manipulator repair shop, and storage areas.

222-SA Standards Laboratory--The 222-SA Laboratory is a five-wide trailer located southeast of the 222-S Building. Non-radioactive standards are prepared in part of this laboratory. Non-radiological process development work is done in the other section of the laboratory. Analytical equipment for non-rad analyses of mercury and ammonia is also available.

222-SB Filter Building--The 222-SB Filter Building, located south of the 222-S Building, houses 96 high-efficiency particulate air (HEPA) filters to provide final filtration for the 222-S Laboratory. Under normal operation of the ventilation system, three electrically powered fans exhaust air from the 222-S Laboratory. Exhaust air leaves the 222-SB Filter Building through the 296-S-21 stack. If exhaust plenum differential pressure becomes too low, supplementary exhaust ventilation will be provided through the 222-SE Filter Building via direct drive diesel powered exhaust fan.

222-SC Filter Building--The 222-SC Filter Building, located north of the 222-S Building, contains the second- and third-stage HEPA filtration for hot cells 1-A, 1-E-1, 1-E-2, 1-F, and 11-A-1 through 11-A-6. The hot cells in rooms 1-A, 1-E, 1-F, and 11-A are serviced by the main building supply and exhaust ventilation. The 222-SC Filter Building houses five parallel pairs of HEPA filters, which provide filtration to hot cell exhaust air before it enters the main exhaust plenum and final filtering in the 222-SB and 222-SE Filter Buildings.

222-SE Filter Building--The 222-SE Filter Building, located south of the 222-S Building, is a facility that houses 56 HEPA filters. This building provides redundant backup filtering capabilities for the 222-S Laboratory exhaust utilizing a diesel powered exhaust fan.

212-S Gas Storage Docks--Storage areas, located on the south side of the 222-S Laboratory, will accommodate a large number of gas cylinders that support instruments in the laboratories. These docks allow separation of the cylinders into new and used, and into flammables and oxidizers.

Chemical Storage Unit (CSU)--The CSU (HS-0065) is located north of 222-SA Building and provides safe storage of bulk chemicals. It is divided into two sections for separate storage of flammables and all other chemicals. The sections have numerous sump areas to prevent incompatible chemicals from mixing in case of accidental breakage.

CFX Pit--The CFX Pit is located to the south of 222-SB Filter Building. It is a 5.2 m (17 ft) deep pit with 3.7 m (12 ft) of water shielding two 252Cf sources which support delayed neutron activation analysis. These sources are encapsulated in Department of Transportation (DOT) special forms containers. Because the 252Cf material is in DOT special forms containers, they are excluded from the 222-S Laboratory source term per DOE-STD-1027-92.

Waste Handling Facilities:

Those facilities dedicated to the processing, storage, or handling of wastes from the 222-S Laboratory and auxiliary buildings are described in the following paragraphs.

207-SL Retention Basin--The 207-SL retention basin, located northeast of the 222-S Laboratory, provides temporary hold-up of wastewater with a low potential for having radioactive or hazardous constituents prior to discharge to the Treated Effluent Disposal Facility (TEDF) or the Effluent Treatment Facility (ETF). This facility is comprised of two below-grade 94,635-L (25,000-gal) compartments and three above-grade 75,708-L (20,000-gal) tanks. This facility allows batch collection, sampling, and discharge of the waste, provided the wastewater meets release/acceptance criteria. Water not meeting the release criteria will normally be transferred to the holding tanks and an action plan for disposal will be developed.

225-WB--The 225-WB Building houses the electronic interface to the TEDF.

218-W-7 Dry Waste Burial Ground--The 218-W-7 Dry Waste Burial Ground is located southeast of the 222-S Building. This underground tank was removed from service before 1975. It was used primarily for disposal of contaminated dry hood waste generated by the 222-S Laboratory. It is classified as a CERCLA site in Operable Unit RO3. This site has been assigned to the environmental restoration contractor for cleanup.

219-S Waste Handling Facility--The 219-S Waste Handling Facility, located north of the 11-A hot cell addition to the 222-S Building, collects liquid mixed waste generated by the 222-S Laboratory operations. This facility consists of a below-grade containment vault, an operations building, and an attached concrete-walled sample gallery. The containment vault is divided into two sections, called cells A and B, which contain the liquid waste tanks and a moisture de-entrainer tank. The waste tanks are vented through the de-entrainer and a HEPA filter to the atmosphere via the 296-S-16 stack. The operations building contain the operating gallery, the pipe trench, and a tank of caustic that is used to neutralize the waste tanks. The concrete sample gallery contains the waste sampling hood, which is vented through HEPA filtration to the atmosphere via the 296-S-23 stack. This area is classified as a Resource Conservation and Recovery Act (RCRA) treatment, storage and disposal (TSD) facility.

222-SD Solid Waste Handling/Storage System--The 222-SD Solid Waste Handling/Storage System, located north of the 222-S Building, is a concrete-shielded drum storage area. This area is used for temporary storage of radioactive waste drums before transfer to the burial ground.

222-S Permitted Treatment, Storage, and Disposal (TSD) Area--This area consists of two metal storage lockers (HS-0082 and HS-0083) sited on a concrete pad north of the 222-S Building, which can store drums of radioactive waste, mixed waste and non-radioactive dangerous waste.

The drums are stored until transferred to the Hanford Central Waste Complex (mixed waste) or offsite for disposal.

Administrative and Office Buildings

The following are administrative office buildings:

- 2704-S Building: Management and Analytical Project Management offices
- MO-037: Chemists offices
- MO-039: Analytical Process Development offices
- MO-924: Inorganic chemists' offices
- MO-291: QA and Laboratory Support Services

MO-028: Radiological Control

LIST OF MAJOR EQUIPMENT USED BY LAS&T CONTRACTOR

Varian Spectrophotometer
TA Instruments DSC 2920 Differential Scanning Calorimeter
TA Instruments TGA 2050 ThermoGravimetric Analyzer
Perkin Elmer FIMS 400
GBC 932plus Atomic Absorption Spectrophotometer
Dionex Ion Chromatograph DX500 with AS50 Autosampler (5)
Thermo Jarrell Ash ICAP 61E Purge
JY Horiba Ultima -C ICP
Metrohm 809 Titrator
Thermo Elemental VG PQ Excell ICP/MS
Agilent 7500 Series ICP/MS with ASX-500 Autosampler
Accumet pH meter
UIC Coulometer
CEM Microwave MDS 2100
Dionex ASE 200 Accelerated Solvent Extractor (2)
Agilent 5890 Gas Chromatograph/ ECD (2)
HP 5890 Series II Gas Chromatograph/ 5971 Mass Spectrometer
Agilent 6890N Gas Chromatograph/5973N Mass Spectrometer (7)
Gerstel TDSA2 Thermal Desorption Auto Sampler (2)
Perkin Elmer Automated Desorption Unit (2)
OI Analytical Archon Auto Sampler Model 4560
Varian Archon 4552 Purge and Trap
Beckman Liquid Scintillation Counter LS6500 and LS6000LL (3)
E G & G Ortec Germanium Gamma Energy Analyzer (2)
E G & G Ortec Germanium Coaxial Gamma Energy Analyzer (4)
E G & G Ortec Fill system 7494S
Gamma Products Alpha/Beta Counter G4000 & G5050 (8)
Canberra Alpha Energy Analyzer 7400-14 (5)
Avant Gas Flow Proportional Detector (4)

RM Environmental Summa Cleaning Station 960
Kodak DC920 camera
Olympus C5000 ZOOM Camera

Also in the facility are Mettler balances, organic extraction glassware, heating plates, refrigerators, automatic Pipets, RO-water system, Ovens, and other commonly used laboratory equipment.