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2009 Auto-TCR for Tank 241-T-111

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Abstract: The purpose of this report is to publish the AUTO-Tank Characterization Report (AutoTCR) that was automatically generated by the TWINS database. The archiving and retrieval of tank information will be performed using a tank-by-tank full document issuance system in the future. This is necessary because the software that generates the AutoTCR is no longer compatible with modern hardware operating system(s), and/or interfacing software packages. The purpose of issuing the AutoTCR document is to provide a snapshot of the inventories and to preserve a historical record of tank data. The text description for the TCR has not been updated since 2005, with the exception of the Best Basis Inventory. The text contains tank historical data, procedures used in sample analysis, waste transfer history, and physical and chemical data. The information here was that available in the AutoTCR as of August 2009.

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2009 Auto-TCR for Tank 241-T-111

Some of the reports herein may contain data that has not been reviewed or edited. The data will have been reviewed or edited as of the date that a Tank Interpretive Report (TIR) is prepared and approved. The TIR for this tank was approved on May 1, 2003.

Tank: 241-T-111

Sampling Events:

- 31
- 32
- 33

Reports:

- Analytical Methods and Procedures
- Best Basis Inventory Without Details
- Best Basis Inventory Without Details Supplementals
- Core Profiles
- Data Source Reference Index
- Data Source Reference List
- Description of Tank
- Dilution and Mixing Studies
- Dilution and Mixing Studies Index
- Major Transfers
- Means and Confidence Intervals
- Rheology Report
- Riser Configuration for Tank
- Sample Breakdown Diagrams
- Standard Acronym Definitions
- Tank Interpretive Report
- Tank Subsampling Scheme and Sample Description
- Tank Surface Level
- Tank Temperature Profile

Constituent Groups:

- Anions
- Inorganics
- Metals/Nonmetals
- Organics
- PCBs
- Physical Properties
- Radionuclides

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Data Dictionary to Reports in this Document

Report	Field	Description
Tank Interpretive Report		Interprets information about the tank answering a series of standard questions covering areas such as information drivers, tank history, tank comparisons, disposal implications, data quality and quantity, and unique aspects of the tank.
Description of Tank		Provides an executive summary of information about the tank including tank description, tank status, sampling dates, and service status.
	Tank Description	Section provides basic physical information for the tank.
	Type	Single or Double Shell Tank
	Constructed	Year(s) the tank was constructed
	In-Service	Month/Year the tank was put into service
	Diameter	Distance across the tank (in meters and feet)
	Operating Depth	Depth of allowable operation (referenced to the tank bottom) (in centimeters and feet)
	Design Capacity	Tank waste volume if filled to its operating capacity (in kiloliters and kilogallons)
	Bottom Shape	Shape of the tank bottom (flat or dish)
	Ventilation	Type of ventilation system on the tank (active or passive)
	Tank Status (as of date)	Section provides current status information for the tank. Date reported is the effective date of the most recent BBI effective date
	Volumes: Total Waste Volume Supernatant Volume Retained Gas Volume Ret Gas Sludge Volume Ret Gas Saltcake Volume Saltcake Liquid Volume Saltcake Solid Volume Sludge Volume	Tank vols from the most recent Best Basis Inventory (BBI) update. All BBI waste phases are listed, but the vol is left as NA if the BBI does not have an estimate for that phase. For example, tank AN-103 does not contain sludge, so the Sludge vol is reported as NA. In most DSTs, the saltcake liquid and saltcake solids are combined into a single total saltcake phase. These are reported under the saltcake solids category and the liquid vol is left blank, though liquid does exist in the tank. Retained gas vols are only reported if retained gas measurements were taken. It may be reported as associated with a particular phase (saltcake or sludge), or simply as the retained gas vol. All vols are listed in kL and kgal.

Data Dictionary to Reports in this Document

Report	Field	Description
	Surface Level (date)	Surface level provided in PCSACS that corresponds to the BBI volume effective date (effective date shown). Provided in centimeters and inches.
	PCSACS Surface Level (date)	Most recent surface level provided in the PCSACS database (effective date shown). Provided in centimeters and inches.
	Temperature (date range)	Minimum and maximum temperature of tank over the one year range preceding BBI volume effective date (range shown). Data is from the PCSACS database. Data is provided in degrees Celsius and Fahrenheit.
	Temperature (date)	Minimum and maximum temperature of tank (all thermocouples) of the most recent readings (date specified). Data is from PCSACS database. Data is provided in degrees Celsius and Fahrenheit.
	Integrity	Sound, assumed leaker, or known leaker. Based on Waste Tank Summary Report (HNF-EP-0182, latest Rev)
	Flammable Gas Facility Group	Waste group category as defined in RPP-10006. May be category A, B, or C.
	Sampling Dates: Core Samples Grab Samples Vapor Samples Auger Samples	The dates when sampling was performed on this tank as provided in the TWINS Tank Characterization Database, and Tank Vapor Database. If none are listed, no sampling has occurred in the tank since approximately 1992.
	Service Status	Section provides dates of common points of interest in the tank's history. Date is left blank or NA if the subject is not applicable.
	Declared Inactive	Date the tank was declared inactive.
	Interim Stabilization	Date interim stabilization was completed.
	Intrusion Prevention	Date intrusion prevention was completed.
Riser Configuration for Tank		Shows riser numbers, diameters, and a description of the risers.
Best Basis Inventory Without Details		Contains best basis inventory without details for the contents of the Hanford waste tanks.
	Analyte	The name of the constituent used for reporting purposes.

Data Dictionary to Reports in this Document

Report	Field	Description
	Waste Phase	Waste Phase is the phase of waste to which the concentration data is applicable (e.g., supernatant, saltcake, sludge, liquid, solid, etc.).
	Waste Type	Waste Type is the waste type as defined in HDW Rev. 4 or as defined by "templates" (e.g., SMMA1, SMMT1, etc.).
	Volume	Volume of the waste phase
	Concentration	Concentration reported in uCi/g, ug/g, uCi/mL, or ug/mL
	Inventory	Best Basis Inventory estimate, reported in kg or Ci
	Basis	The basis for the inventory value.
	Comment	Further information to clarify the information in the table.
Best Basis Inventory Without Details Supplementals		Contains best basis inventory without details for the contents of the Hanford waste tanks for the supplemental analytes not part of the BBI.
	Analyte	The name of the constituent used for reporting purposes.
	Waste Phase	Waste Phase is the phase of waste to which the concentration data is applicable (e.g., supernatant, saltcake, sludge, liquid, solid, etc.).
	Waste Type	Waste Type is the waste type as defined in HDW Rev. 4 or as defined by "templates" (e.g., SMMA1, SMMT1, etc.).
	Volume	Volume of the waste phase
	Concentration	Concentration reported in uCi/g, ug/g, uCi/mL, or ug/mL
	Inventory	Best Basis Inventory estimate, reported in kg or Ci
	Basis	The basis for the inventory value.
	Comment	Further information to clarify the information in the table.
Analytical Methods and Procedures		Lists procedure numbers and applicable analyses. Optionally displays appropriate analytes for each analyses.
	Analyte	The name of the constituent used for reporting purposes.

Data Dictionary to Reports in this Document

Report	Field	Description
	Method	Name assigned to the general group of laboratory analytical methods to which the current method belongs.
	Procedure	Laboratory procedure identifier.
Tank Subsampling Scheme and Sample Description		Contains information on samples taken in a sampling event including sample identification, sample weight, percent of sample recovery and sample physical appearance.
	Sample Location	Riser and surface level
	Sample Event	Identification number of a sampling event collected from a waste site. For cores, a core number, for supernate samples, a supernate sample number, and for surface samples, a surface sample number is provided.
	Amount	Mass of the sample in grams and/or volume of the sample in milliliters
	Aggregation Level	Description of the portion of the original tank sample represented by the current sample.
	Sample Characteristics	Description of the physical appearance of the sample.
Sample Breakdown Diagrams		Sample Breakdown Diagrams show the pedigree for each of the sample vials drawn from a tank waste material source, such as core sample, auger sample, or grab sample.
Rheology Report		Contains narrative, tables, and graphical displays of rheological data for this tank.
Analytical Results: Rheology		Contains results (primary/ duplicate/ triplicate/ average) of laboratory measurement of rheological properties of waste site samples. Grouped by analyte and procedure.
	Sample Number	Internal lab identifier assigned by the lab that analyzed the sample.
	Sample Location	Location from which sample was taken. Could be core and segment or riser identification depending on the sampling type.
	Sample Portion	Description of the portion of the original tank sample represented by the current sample.
	Result	Primary result of the analysis of the sample.
	Duplicate	Duplicate result of the analysis of the sample.
	Triplicate	Triplicate result of the analysis of the sample.

Data Dictionary to Reports in this Document

Report	Field	Description
	Average	Average of the primary, duplicate, and triplicate results.
Sample Attributes		Contains list of sample attributes for altered samples included in the report.
	Sample Number	Internal lab identifier assigned by the lab that analyzed the sample.
	Attribute Name	Name of the sample attribute.
	Attribute	Value and units or textual description of the sample attribute.
Rheology Measurements		Contains graphical displays of rheology data for this tank.
	Sample Number	Internal lab identifier assigned by the lab that analyzed the sample.
	Sample Location	Location from which sample was taken. Could be core and segment or riser identification depending on the sampling type.
	Sample Portion	Description of the portion of the original tank sample represented by the current sample.
	Result Type	Association of displayed data with a result (primary), duplicate, or triplicate measurement.
	Project Type	Internal identifier assigned in order to specify that the reported measurement was made on an unaltered tank sample (Unaltered), an altered tank sample (Altered), or a baseline sample in a project requiring sample alteration (Semi-Altered).
Means and Confidence Intervals		Contains statistical analysis data for tank content including means and variances.
	Analyte	The name of the constituent used for reporting purposes.
	Method	Name assigned to the general group of laboratory analytical methods to which the current method belongs.
	Mean	Average of the primary, duplicate, and triplicate results.
	df	Degrees of freedom
	LL	Lower 95% limit
	UL	Upper 95% limit
	Units	Measurement units

Data Dictionary to Reports in this Document

Report	Field	Description
Major Transfers		Waste Transfers summarizes the waste transfer history of the tank after January 1, 1994.
	Transfer Source	The description of the source of the waste that was transferred.
	Transfer Destination	The description of the destination of the waste that wast transferred.
	Waste Type	The description of the type of waste that was transferred.
	Time Period	The time over which the waste transfer occurred.
	Estimated Waste Volume (kL)	The estimated volume of waste transferred in kL.
	Estimated Waste Volume (kgal)	The estimated volume of waste transferred in kgal.
HTCE Surface Level		Surface level information as reported in the 1996 Historical Tank Contents Estimate (HTCE) report.
Tank Surface Level		Contains history of current tank waste surface level plot by year and month.
Tank Temperature Profile		Contains history of and current tank maximum temperature by year and month. Please note that tank temperature is not necessarily the same as waste temperature.
Core Profiles		Core Profiles are graphical depictions of physical properties of each segment of a core of tank waste.
Data Source Reference Index		Lists the documents found in the Data Source Access (DSA) database which are appropriate for this tank. Provides hyperlinks to both the DSA metadata and to the electronic documents themselves.
Data Source Reference List		Lists the documents found in the Data Source Access (DSA) database which are appropriate for this tank. Provides hyperlinks to both the DSA metadata and to the electronic documents themselves.

Data Dictionary to Reports in this Document

Report	Field	Description
Dilution and Mixing Studies		Lists the Dilution and Mixing Studies documents found in the Data Source Access (DSA) database which are appropriate for this tank. Provides hyperlinks to both the DSA metadata and to the electronic documents themselves.
Dilution and Mixing Studies Index		Lists the Dilution and Mixing Studies documents found in the Data Source Access (DSA) database which are appropriate for this tank. Provides hyperlinks to both the DSA metadata and to the electronic documents themselves.
Standard Acronym Definitions		Contains acronyms and abbreviations with definitions
	Acronym	Acronym or abbreviation
	Definition	Definition of an acronym or abbreviation

Tank Interpretive Report For 241-T-111

Tank Information Drivers

Question 1: What are the information drivers applicable to this tank? What type of information does each driver require from this tank? (Examples of drivers are Data Quality Objectives, Mid-Level Disposal Logic, RPP Operation and Utilization Plan, test plans and Letters of Instruction.) To what extent have the information and data required in the driving document been satisfied to date by the analytical and interpretive work done on this tank?

There are no current information drivers for tank 241-T-111.

Closed Issues and Issues Previously Addressed:

Closed issues and issues previously addressed include the *Tank Safety Screening Data Quality Objective* (Safety Screening DQO) (Dukelow et al. 1995), the *Data Quality Objective to Support Resolution of the Organic Complexant Safety Issue* (Turner et al. 1995) (Organic Complexant DQO), *Data Quality Objectives for Generic In-Tank Health and Safety Issue Resolution* (H & S Vapor DQO) (Osborne et al. 1995), the *Data Quality Objectives for the Waste Compatibility Program* (Compatibility DQO) (Carothers 1994), and *Interim Data Quality Objectives for Waste Pretreatment and Vitrification* (Kupfer et al. 1994).

The 1991 sampling and analysis of cores 31 and 33 predates current DQOs. However, the analytical results from this sampling event and vapor samples taken in 1995 provide information to respond to the technical issues.

The data needed to screen the waste in tank 241-T-111 for potential safety problems are documented in the Safety Screening DQO (Dukelow et al. 1995). These potential safety problems are exothermic conditions in the waste; flammable gases in the waste and/or tank headspace; and criticality conditions in the waste. Each of these conditions is addressed separately below.

The first requirement outlined in the Safety Screening DQO (Dukelow et al. 1995) is to ensure that there is not enough fuel in tank 241-T-111 to cause a safety hazard. Because of this requirement, energetics in the tank waste were evaluated. The threshold limit for energetics is 480 J/g on a dry weight basis. Results obtained using differential scanning calorimetry (DSC) indicated that the top three segments of both core samples contained substantial exotherms.

The maximum dry weight exothermic value was 3,316 J/g for core 33, segment 2. The results show that a significant fuel source is located in the top layers of the waste. Generally, the water content of these segments was over 80 percent. Therefore, there is little probability of a propagating exothermic reaction occurring.

The determination of the tank headspace flammability was not required when the tank was sampled in 1991. Vapor samples taken in 1995 were not measured for overall flammability with

a combustible gas meter. Individual gas constituents were evaluated against their respective lower flammability limits, and it was determined that there were no flammability concerns (Huckaby and Bratzel 1995).

The safety threshold limit is 1 g ^{239}Pu per liter of waste. Assuming that all alpha is from ^{239}Pu and using a maximum measured density of 1.35 g/mL, 1 g/L of ^{239}Pu is equivalent to 45.6 μCi/g of alpha activity. The total alpha activity in all samples was well below this limit. The upper limit to a 95 percent confidence interval on the mean was 1.93 μCi/g, much less than 45.6 μCi/g. Therefore, criticality is not a concern for this tank.

The *Evaluation of Tank Data for Safety Screening* by Reynolds et al. (1999) performed a formal review of tank 241-T-111 and determined the sampling and analysis performed in this tank were consistent with the requirements of the Safety Screening DQO.

Tank 241-T-111 was added to the organic Watch List in 1994 because of the energetic results from the safety screening analyses. Although the 1991 core-sampling event predated the DQO process, the analytical data were evaluated according to *Data Quality Objective to Support Resolution of the Organic Complexant Safety Issue* (Turner et al. 1995). The Organic Complexant DQO defines the type, quantity, and quality of data required to categorize the tank, and to resolve the safety issues. The specific issues addressed by the Organic Complexant DQO are the exothermic conditions in the waste, fuel content determined by total organic carbon (TOC), and the moisture content of the waste.

Tank exotherms exceeded the threshold limit of 480 J/g (dry weight). However, because all waste samples contained greater than 60 percent water, there is little probability of a propagating exothermic reaction occurring (Turner et al. 1995).

The TOC was analyzed for the purpose of determining the fuel content of the tank waste. The Organic DQO established a decision threshold of 30,000 μg/g (dry weight basis) for TOC. All individual results were well below the action limit after being converted to dry weight. However, the upper limit to a one-sided 95 percent confidence interval on the tank mean was 45,800 μg/g on a dry weight basis, which exceeds the threshold level. However, Because of the high moisture content of the waste, the TOC results do not impact tank safety.

The organic complexant issue was closed for all single-shell tanks (SSTs) in 1998 (Owendoff 1998).

The data required to support vapor screening are documented in *Data Quality Objectives for Generic In-Tank Health and Safety Issue Resolution* (H & S Vapor DQO) (Osborne et al. 1995). The H & S Vapor DQO addresses the following two technical issues: (1) The characterization of tank headspace vapors is needed to address the possibility of explosion/fire from flammable constituents, and (2) worker safety associated with the toxicity of released vapors. These issues were evaluated using the data from the 1995 vapor sampling.

The presence of flammable constituents in the vapors of Hanford Site waste tanks is a safety question that must be resolved prior to conducting any type of intrusive sampling, stabilization,

or remedial activities in or around the tanks (Osborne et al. 1995). No flammability concerns were found.

Ammonia was the only analyte present at levels that exceeded the toxicity notification limit (150 ppmv). The measured ammonia concentration was 226 ppmv. This level of ammonia would not contribute appreciably to the flammability of the headspace or the tank toxicity (Huckaby and Bratzel 1995). Notification procedures were followed as described in the tank characterization plan (Homi 1995). The H & S Vapor DQO was revised after the sampling event and is documented in *Data Quality Objective for Tank Hazardous Vapor Safety Screening* (Osborne and Buckley 1995). However, hazardous vapor screening is no longer an issue because headspace vapor (sniff) tests are required for the Safety Screening DQO (Dukelow et al. 1995), and the toxicity issue is now closed for all tanks (Hewitt 1996).

Tank 241-T-111 was grab sampled in March 1994 per the Compatibility DQO (Carothers 1994) to evaluate a transfer of waste to tank 241-SY-102 via tank 244-TX. All Compatibility criteria were met, and the transfer was completed in February 1995. The Pretreatment DQO requires collections of samples for process development work. Subsamples from the 1991 core-sampling event were shipped to Pacific Northwest Laboratory (PNL) for pretreatment studies as directed by Kupfer et al. (1994). Results of the pretreatment studies are documented in Rapko et al. (1995).

Table 1-1 displays a summary of the technical issues.

Table 1-1. Summary of Technical Issues.

Issue	Sub-issue	Result
Safety screening	Energetics	Segments 1-3 of core 31 and segments 1 and 2 of core 33 exceeded the action limit of 480 J/g, dry weight basis. The high moisture level precludes a propagating reaction.
	Flammable gas	Vapor measurements using a combustible gas meter were not performed. Individual gas flammability measurements demonstrated that a flammability concern does not exist.
	Criticality	All total alpha results were well below the action limit of 45.6 μCi/g. The upper limit to a 95 percent confidence interval on the tank mean was 1.93 μCi/g. Criticality is not an issue.
Organic	Energetics	See safety screening – energetics
	Organic content	All TOC results were well below the action limit of 30,000 μg/g (dry weight) with a mean of 13,000 μg/g. The upper limit to a 95 percent confidence interval on the tank mean was 45,800 μg/g, dry weight. The high moisture level precludes a propagating reaction.
	Moisture	All weight percent water results were greater than 17 weight percent.
Vapor	Flammable gas	See safety screening – flammable gas
	Toxicity characterization	Ammonia concentration of 226 ppmv exceeded the notification limit (150 ppmv). Appropriate notifications were made, and this was determined not to be a concern.
Compatibility		All compatibility criteria met. Transfers to 241-SY-102 via 244-TX

Table 1-1. Summary of Technical Issues.

Issue	Sub-issue	Result
		were made in 1995.

Two tank waste issues were closed, and the tank was not sampled for these issues. The flammable gas issue has been closed for all tanks (Roberson 2000). The organic solvent safety issue was closed for all tanks in August 2000 (Huntoon 2000).

A factor in assessing tank safety is the heat generation and temperature of the waste. The heat load estimate based on the ^{137}Cs and ^{90}Sr data reported in the best-basis inventory as of January 1, 2001 (see the *Best-Basis Inventory Without Details* Standard Report) decayed to January 1, 2001 is 63 W (215 Btu/hr). (See Table 1-2.) The heat load estimate based on the tank process history was 23 W (79 Btu/hr) (Agnew et al. 1997a). The heat load estimate based on the tank headspace temperature was 241 W (822 Btu/hr) (Kummerer 1995). All of these estimates are less than the 11,700 W (40,000 Btu/hr) operating specification that requires temperature monitoring for SSTs (CH2M HILL 2002).

Table 1-2. Heat Load Estimate Based on the Best-Basis Radionuclide Inventory.

Radionuclide	Waste Inventory (Ci)	Decay Heat Generation[1] (W/Ci)	Heat Load (Watts)
^{90}Sr	9.23E+3	0.00669	62
^{137}Cs	2.29+2	0.00472	1
Total			63

Note: [1]Includes daughter isotopes.

Tank History

Question 2: What is known about the history of this tank as it relates to waste behavior?

The T Tank Farm was constructed between 1943 and 1944 in the 200 West Area. The tank farm contains four 200-series and twelve 100-series single-shell tanks. Tank 241-T-111 has a capacity of 2,006 kL (530 kgal), a diameter of 22.9 m (75.0 ft), and an operating depth of 5.18 m (17.0 ft). Tank 241-T-111 entered service in 1945 and is second in a three tank cascading series. Additional tank descriptive material is located in the tank 241-T-111 Standard Reports *Description of Tank and Riser Configuration Table*.

The tank was brought into service during the fourth quarter of 1945 with a cascade from tank 241-T-110 of second cycle decontamination (2C) waste (Agnew et al. 1996b). The tank was filled with 2C waste, at which time the waste was cascaded to tank 241-T-112. Cascading

continued until the third quarter of 1946, when tank 241-T-112 was filled. During the third and fourth quarters of 1947, nearly all of the supernatant of tank 241-T-111 was transferred to crib T-006. The cascading of 2C waste resumed in the first quarter of 1948. When the entire cascade became full, waste from tank 241-T-112 was transferred to a crib. This cycle continued until the fourth quarter of 1952. From 1952 to 1956, tank 241-T-111 was used to cascade 2C and lanthanum fluoride waste (224) from the lanthanum fluoride finishing process in T-Plant to a crib. In 1995, supernatant waste was transferred from the tank to crib T-005.

The tank contents remained unchanged until the second quarter of 1974. From 1974 to 1976, 238 kL (63 kgal) of supernatant were transferred to tanks 241-S-110, 241-T-101, 241-T-109, and 241-TX-109. Saltwell liquid was pumped from the tank in support of tank stabilization efforts in the fourth quarter of 1990, the fourth quarter of 1994, and the first quarter of 1995.

Tank 241-T-111 is characterized as an assumed leaker (Hanlon 2002) and was declared inactive in 1976. Tank 241-T-111 was at one point on the Organics Watch List from 1994 to 1998. The tank was interim stabilized in February 1995.

Tank Comparisons

Question 3: What other tanks have similar waste types and waste behaviors, and how does knowledge of the similar tanks contribute to the understanding of this tank?

The Best-Basis Inventory (BBI) for tank 241-T-111 incorporates waste-type templates that correlate with the waste types in the tank. Templates are based on sampling data from tanks that contain the same waste type as tank 241-T-111, supplemented with Hanford Defined Waste (HDW) model (Agnew et al. 1997a) data, and contribute significantly to the understanding of the concentrations of certain constituents in the tank 241-T-111 waste. Tank 241-T-111 currently contains 1,692 kL (447 kgal) of waste

Tank 241-T-111 currently contains one defined waste phase consisting of two waste types (224 Post 1949 and 2C). Other tanks with a 224 Post 1949 inventory include B Tank Farm tanks 241-B-202, 241-B-203, and 241-B-204; T Tank Farm tanks 241-T-110, 241-T-112, 241-T-202, 241-T-203, and 241-T-204. Other tanks with a 2C inventory include B Tank Farm tanks 241-B-104, 241-B-105, 241-B-110, 241-B-111, and 241-B-112 and T Tank Farm tanks 241-T-105, 241-T-110, and 241-T-112.

Disposal Implications

Question 4: Given what is known about the waste properties and waste behaviors in this tank, what are the implications of the waste properties and behaviors to the waste retrieval/processing methodologies and equipment selection?

The waste in SST 241-T-111 is comprised of sludge (224 Post 1949 and 2C). The projected retrieval sequence, assumed methodologies, and delivery of tank waste are described in Case 2 scenario in current planning documents: *Tank Farm Contractor Operation and Utilization Plan* (Kirkbride et al. 2001) and *Single-Shell Tank Retrieval Sequence and Double-Shell Tank Space Evaluation* (Hohl et al. 2001). The long-lived mobile radioisotopes that are categorized as Long-Term Health Risk contaminants include ^{14}C, ^{79}Se, ^{99}Tc, ^{129}I, ^{234}U, ^{235}U, and ^{238}U (Banning 2001). These analytes and other contaminants of concern (Hohl et al. 2001) are listed in Table 4-1. Additional analyses for these constituents may be required prior to waste retrieval and tank closure.

Sixty-seven of the SSTs are known or suspected to have leaked, and tank 241-T-111 is listed as an assumed leaker (Hanlon 2002). All of the SSTs have exceeded their design lives. Because tank 241-T-111 is an assumed leaker, the use of large amounts of liquid to mobilize or dissolve the waste will not be permitted. Therefore, the current approach is to demonstrate retrieval technologies that use very little, if any, liquids to mobilize and retrieve the waste. Any liquid that is used will be small in volume and used in a confined manner. Three waste retrieval technologies that are being considered/demonstrated are combined crawler-based confined sluicing and robotic technologies, sluicing low-volume density gradient saltcake dissolution, and AEA Technology Power Fluidics.™ Specific plans for retrieving tank 241-T-111 will developed in the future.

The results reported from the January 20, 1995 Industrial Hygiene Sniff survey were flammability measured at <1 percent of the lower flammability limit and 15 ppmv of organic vapor. Tank 241-T-111 was vapor sampled in January 1995. Ammonia was detected at 160 mg/m^3. The extent to which retrieval operations, such as mixing and pumping, will cause emission of ammonia and organic vapors should be considered. No organic layer was observed in the core-sampling event.

Table 4-1. Contaminants of Concern (Retrieval and Disposal Considerations).

Airborne			Chemical	Ground Water
Analyte	**Analyte**	**Analyte**	**Analyte**	**Analyte**
^{94}Nb	^{239}Pu	^{243}Cm	NO_2	^{14}C
^{126}Sn	^{240}Pu	^{244}Pu	NO_3	^{79}Se
^{232}Th	^{241}Pu	^{244}Cm	Cr(VI)	^{99}Tc
^{236}Pu	^{241}Am	^{245}Cm		^{129}I
^{237}Np	^{242}Pu	^{246}Cm		^{238}U
^{238}U	^{242m}Am	^{247}Cm		
^{238}Pu	^{243}Am	^{248}Cm		

Note: For tank 241-T-111 analyte inventory values, see the *Best-Basis Inventory Without Details* Standard Report.

Scientists Assessment of Data Quality and Quantity

Question 5: What additional information about the waste, if any, is needed to satisfy tank waste issues described in question #1 of this Tank Interpretive Report? How should the information be obtained (new samples, archive analysis, mathematical models, other)? What is the quality of

the samples and analytical results obtained for this tank? Are clarifications or explanations needed for standard report tables and figures?

Sampling and Analysis

All current applicable DQOs and waste issues have been addressed for this tank, and no additional sampling and analyses are necessary to satisfy current safety issue requirements. Prior to delivery of the waste to the Waste Treatment Plant (Hohl et al. 2001), existing data and archived samples will be evaluated to determine if additional sampling will be necessary to address the applicable Disposal DQOs.

Tank 241-T-111 was push-mode core sampled through three risers between October 22, 1991 and November 7, 1991. Core 31 was taken from riser 6 on October 22, 1991, and core 32 was taken from riser 2 on October 24 and 25, 1991. Core 33 was taken from riser 3 between November 5, 1991 and November 7, 1991.

A hydrostatic fluid of normal paraffin hydrocarbons (NPH), similar to kerosene, was used in establishing a head balance while taking these cores. Objections involving sample degradation and contamination were raised regarding the use of this fluid, and the practice has since been discontinued. For cores 31 and 33, nearly full recovery was achieved in every case.

The casks were transported to the 222-S Laboratory for characterization analysis. Some of the physical tests, organic analyses, and uranium and plutonium isotopic analyses were performed at the 325 Laboratory, operated by Battelle, Pacific Northwest Laboratory (PNL).

For cores 31 and 33, sample recovery was excellent; overall recoveries were in excess of 80 percent. Segment recoveries were based on the maximum recoverable volume for the segment regardless of solid/liquid ratio. The core recoveries reported in the data package are determined based on a visual inspection of the sample length and apparent volume at the time the samples are extruded.

Although samples for core 32 were taken from riser 2, the materials obtained at all levels appeared to be particulate suspended in an aqueous solution, with slight traces of normal paraffin-hydrocarbon contamination observed in a few samples. These samples did not correspond to the observed conditions in the tank and were considered nonrepresentative. The results of the core 32 sampling exercise were attributed to sampler failure. Because no acceptable samples were acquired, no assays were performed. Therefore, no results for core 32 will be reported. The analytical data are reported in the *Single-Shell Tank Characterization Project and Safety Analysis Project Core 31 and 33, Validation Report Tank 241-T-111* (McKinney et al. 1993).

Grab samples were obtained on March 5, 1994 (Sutey 1994). Three 100-mL supernatant samples were retrieved from riser 13 (saltwell screen) in accordance with waste compatibility program requirements (WHC 1994). The compatibility samples were taken for emergency pumping of tank 241-T-111 to tank 241-SY-102.

The samples were sent to the 222-S laboratory for analysis on March 25, 1994. Quality control (QC) analyses for the three grab samples were not conducted.

Vapor sampling to support the H & S DQO (Osborne et al. 1995) was performed on January 20, 1995 using the vapor sampling system (VSS). Air from the tank 241-T-111 headspace was withdrawn via a 6.1 m (20 ft) long heated sampling probe mounted in riser 3, and transferred through heated tubing to the VSS sampling manifold. All heated zones of the VSS were maintained at approximately 50 °C (120 °F) (Huckaby and Bratzel 1995).

Samples were collected in SUMMA™ canisters or various types of sorbent traps. Samples collected in a triple sorbent trap device were analyzed by Oak Ridge National Laboratories (ORNL) for organic vapors. Pacific Northwest Laboratory (PNL) analyzed both SUMMA and sorbent trap devices for inorganic and organic vapors. Because of differences in documenting quality assurance measures between ORNL and PNL, PNL SUMMA sample results should be considered the primary organic vapor data for tank 241-T-111.

Detailed descriptions of the sampling event are reported in *Vapor and Gas Sampling of Single-Shell Tank 241-T-111 Using the Vapor Sampling System* (Caprio 1995).

Data Quality

The usual QC assessment includes an evaluation of the appropriate standard recoveries, spike recoveries, duplicate analyses, and blanks that are performed in conjunction with the chemical analyses. All of the pertinent QC tests were conducted on the 1991 core samples, allowing a full assessment regarding the accuracy and precision of the data. The specific criteria for all QC checks were given in Hill et al. (1991). Sample and duplicate pairs that had one or more QC results outside the specified criteria were identified.

The standard and spike recovery results provide an estimate of the accuracy of the analysis. If a standard or spike recovery is above or below the given criterion, the analytical results may be biased high or low, respectively. Many analytes had minor deviations from the standard recovery criteria, but these were not substantial enough to affect the evaluations. One of the spike recoveries was outside the target level for total alpha activity. This may have been caused by high dissolved solids content on the sample mount and subsequent self-shielding. Spike recoveries outside the limits for sodium and other major inductively coupled plasma (ICP) analytes were probably due to the high dilutions required. These high dilution factors can cause poor or meaningless spike recoveries and relative percent differences (RPDs) for those ICP elements that either had very high concentrations or were close to the detection limit. All fusion-digested results require high dilutions, which affect all analytes. Low recoveries for many analytes were due to matrix effects. The high spike recoveries for silicon were caused by hydrofluoric acid in the standard matrix reacting with the glassware. High spike recoveries for calcium were probably due to the powder used on the analysts' gloves when performing the analyses (Simpson 1996).

The precision is estimated by the RPD, which is defined as the absolute value of the difference between the primary and duplicate samples, divided by their mean, times one hundred. The

RPDs were exceeded for many analytes with concentrations near the detection limit (for example, antimony, boron, and cadmium), because this adversely impacts the reproducibility of the results. Some of the high RPDs may be attributable to sample homogeneity problems. Regarding the water digestion data, most or all of those analytes with large RPDs were largely insoluble, a characteristic that probably contributed to the observed variability (Simpson 1996). None of the samples exceeded the criteria for method blanks; therefore, contamination was not a problem.

In summary, the majority of the QC results for the core samples were within the boundaries specified in Hill et al. (1991). The discrepancies mentioned here and footnoted in the data summary tables should not impact either the validity or the use of the data.

Regarding the vapor samples, the only QC criteria specified in the governing document (Burnum 1995) was that the relative standard deviation (RSD) must be less than 25 percent. The RSD is a measure of variability defined as the standard deviation divided by the mean, times one hundred.

Three inorganic gases were detected, and all of them met the QC criteria. Fourteen organic gases analyzed in SUMMA samples were defined as quantitatively measured, and all but one of these met the criteria. Eleven organic gases analyzed in triple sorbent trap samples were defined as quantitatively measured, and all but two of these met the criteria. Thirteen organic analytes were positively identified, but the results cannot be considered quantitative and, therefore, may not be accurate to within the 25 percent criteria established by Burnum (1995). Ten of these gases did not exceed their holding times, and of these ten, all but one met the QC criteria. The other three organic gases that were positively identified exceeded their holding times, but none of these exceeded the QC criteria (Huckaby and Bratzel 1995).

Clarification and Explanation of Data Tables and Figure

The 241-T-111 HTCE *Surface Levels* standard report: This graph reports the historical waste transfer activity for tank 241-T-111 on a quarterly basis and does not represent a complete waste transfer history for the tank. The transfer notations at the top of the graph are only representative and are not an exhaustive listing of waste transfers to and from the tank. For a more complete listing of historical waste transfers for tank 241-T-111, see Agnew et al. (1997b).

The *241-T-111 Analytical Results* standard report: Data used for the BBI assessment and inventory have been reviewed as directed in Sasaki (2001).

The *241-T-111 Core Profiles* Standard Report: Core profiles were not prepared at the time of the sampling event for this tank, and no Core Profiles Standard Report is available for this tank.

Unique Aspects of the Tank

Question 6: What are unique chemical, physical, historical, operational or other characteristics of this tank or its contents?

There are no unique chemical, physical, historical, operational, or other characteristics of this tank or its contents.

While not unique, the following physical descriptions of the tank waste may be of interest. The waste obtained from the 1995 core-sampling event varied both in color and in consistency. The core sample segments from riser 3 consisted of nearly black homogeneous solids, brown-nearly black homogeneous solids, and dark brown homogeneous solids. The core sample segments from riser 6 consisted of homogeneous black-brown, low viscous solids, homogeneous dark brown to black solids with the consistency of swamp mud, and homogeneous dark brown solids which gradually whitened down the segment (see *Subsampling Scheme and Sample Description* Standard Report).

The montage assembled from 1994 photographs for tank 241-T-111 is of high quality and shows a tank nearly filled with solid waste. The surface shows a cracked, moist to hard mud-like surface with a liquid pool on one side of the tank. The waste appears to be medium brown and has some depressed areas in it which probably resulted from equipment removal. Corrosion of the tank liner is indicated by the rust on the sludge around the tank perimeter. A Food Instrument Corporation (FIC) level probe, a saltwell screen, a liquid observation well, a temperature probe, and some nozzles and risers are apparent in the montage. The montage may not represent current tank contents because of stabilization efforts in 1995.

Means and Confidence Intervals

Question 7: What statistical model was used to generate the means and confidence intervals? What data was included in the calculations?

A nested analysis of variance (ANOVA) model was fit to the laboratory sample data. Mean analyte concentrations, and 95 percent confidence intervals on the mean, were estimated using results from the ANOVA. Two variance components were estimated and used in the computations. The variance components represent concentration differences between laboratory samples and between analytical replicates.

The model is:

$$Y_{ij} = \mu + L_i + A_{ij},$$

$$i=1,2,...,a;\ j=1,2,...,n_i;$$

where:

Y_{ij}	=	concentration from the jth analytical result from the ith riser,
μ	=	the mean,
L_i	=	the effect of the ith laboratory sample,
A_{ij}	=	the analytical error,
a	=	the number of laboratory samples, and
n_i	=	the number of analytical results from the ith laboratory sample.

The variable L_i is a random effect. This variable and A_{ij} are assumed to be uncorrelated and normally distributed with means zero and variances $\sigma^2(L)$, and $\sigma^2(A)$, respectively.

The restricted maximum likelihood method (REML) was used to estimate the mean concentration and standard deviation of the mean for all analytes that had 50 percent or more of their reported values greater than the detection limit. The mean concentrations and standard deviations of the mean were used to calculate the 95 percent confidence intervals. Each table in the *241-T-111 Means and Confidence Intervals Standard Report* gives the estimate of the mean, degrees of freedom, and confidence interval on the mean.

Some analytes had results that were below the detection limit. In these cases, the value of the detection limit was used for nondetected results. For analytes with a majority of results below the detection limit, a simple average is reported.

The lower and upper limits, LL (95%) and UL (95%), of a two-sided 95% confidence interval on the mean were calculated using:

$$\text{LL(95\%)}: \hat{\mu} - t_{(df,\ 0.025)} \times \hat{\sigma}(\hat{\mu})$$

$$\text{UL(95\%)}: \hat{\mu} + t_{(df,\ 0.025)} \times \hat{\sigma}(\hat{\mu}).$$

In these equations, $\hat{\mu}$ is the REML estimate of the mean concentration, $\hat{\sigma}(\hat{\mu})$ is the REML estimate of the standard deviation of the mean, and $t_{(df,\ 0.025)}$ is the quantile from Student's t distribution with *df* degrees of freedom. The degrees of freedom are the number of laboratory samples with data minus one. In cases where the lower limit of the confidence interval was negative, it was reported as zero.

The means for each data set are listed separately in the *241-T-111 Means and Confidence Intervals* Standard Report. The *Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Composite* and *Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Segment Level Data* tables refer to data obtained from analytical results from the 1991 core sampling events.

Best-Basis Inventory Derivation

Question 8: What is the source data used to derive this tank's Best-Basis inventories by mass (kg) and activity (Ci) for the standard list of 24 chemicals and 46 radionuclides? (For the latest Best-Basis Inventory derivation, see the link to the Recent Best Basis Derivation Text below. Due to periodic updates, the Recent Best Basis Derivation Text may not be consistent with other questions in the Tank Interpretive Report.)

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Best-Basis Inventory Derivation: Tank 241-T-111

The Best-Basis Inventory (BBI) effort involves developing and maintaining waste tank inventories comprising 25 chemical and 46 radionuclide components in the 177 Hanford Site underground storage tanks. These BBIs provide waste composition data necessary as part of the River Protection Project (RPP) process flowsheet modeling work, safety analyses, risk assessments, and system design for waste retrieval, treatment, and disposal operations.

Development and maintenance of the BBI is an on-going effort. The 2C sludge was identified as having negative inventories, which needed to be corrected. As a result, a re-evaluation of the BBI for tank 241-T-111 as of July 1, 2004 was performed and is documented in the following text. The following information was used in this evaluation:

- Statistical means derived from tank 241-T-111 1991 core segment solids and core composite solids sample results (Baldwin 1996).
- BBI templates for second cycle waste from the bismuth phosphate process (2C) sludge and lanthanum fluoride finishing sludge (post 1949) (224-2).
- Process estimates for total PCBs in each waste phase (Nguyen 2004).
- Process estimate for ^{243}Am, ^{242}Cm, ^{243}Cm, and ^{244}Cm distribution in the 2C sludge.

Table 8-1 represents how the available information was used to derive best-basis inventories for tank 241-T-111.

Table 8-1. Tank 241-T-111 Best Basis Inventory Source Data.

Waste Phase	Waste Type	Applicable Concentration Data[1]	Associated Density (g/mL)	Associated Multiplier	Associated Volume
Sludge[2]	224-2	1991 segment solid means (S/T111/006)	1.24	1.000	904 kL (239 kgal)
		1991 composite solid means (S/T111/007)	1.24	1.000	
		224-2 sludge template (TS/U204/009)	1.19	1.077	
		224-2 Sludge PCBs (P/T111/004)	1.24	1.000	
	2C	1991 segment solid means (S/T111/006)	1.24	1.000	787 kL (208 kgal)
		1991 composite solid means (S/T111/007)	1.24	1.000	
		2C distribution of ^{243}Am, ^{242}Cm, ^{243}Cm, and ^{244}Cm	1.24	1.000	
		2C sludge template (TS/U204/007)	1.28	0.714	
		2C Sludge PCBs (P/T111/005)	1.24	1.000	
Total tank					1,691 kL (447 kgal)

Notes:

[1]Vector handles, shown in parentheses, are unique serial identifiers for the vectors used in the BBIM database.

[2]The sludge waste phase includes both solids and interstitial liquid; the interstitial liquid volume is estimated to be 174 kL (46 kgal).

The waste phases and waste types listed in Table 8-1 are based on core sampling analytical results, and process history. The calculated ratio of soluble to insoluble constituents in the core sampling analytical results is less than 2.5, which designates the waste as representative of a sludge waste phase (Field and Bowen 2003). The waste types assigned to the sludge phase are based on process history (Anderson 1990), and supported by sampling analytical results, are 224-2 sludge and 2C sludge.

Core segment and composite analytical results were available for the solids recovered from the tank 241-T-111 1991 sampling event. Template values were used for constituents below the detection limits for sample data or constituents not measured from the sampling event. Templates are based on sampling data from tanks that contain the same waste type as tank 241-T-111, supplemented with revision 5 of the HDW model data. Multipliers were used to scale the template vectors to the sample data using the sample weight percent water and density. For the 224 sludge and 2C sludge templates, the 1991 segment solids mean weight percent water of 75.3

by gravimetric analysis and mean density of 1.24 g/mL were used to obtain multipliers of 1.077 and 0.714, respectively. A more detailed description of template data is found in Place and Higley (2004).

The mean measured 1991 core segment density value (1.24 g/mL) was used for both the 1991 segment solids and 1991 composite solids density values, as the composite density was not measured. The densities assigned to each of the waste type templates corresponds to the density reported for each of the templates.

The tank 241-T-111 total waste volume of 1,691 kL (447 kgal), was calculated from the surface level measurement taken from a manual ENRAF reading on January 22, 2001. The recorded waste height of 169.91 inches corresponds to a waste volume of 1,691 kL (447 kgal) in the tank. This is consistent with readings taken April 1, 2004. The revision 4 of the HDW model (Agnew et al. 1997) estimate of 1,734 kL (458 kgal) for the tank 241-T-111 volume is slightly higher, but generally agrees with the surface level measurement.

The HDW model (Agnew et al. 1997) predicts 136 kL (36 kgal) 224 sludge and 1,590 kL (420 kgal) 2C sludge in tank 241-T-111. Analytical information from segment lanthanum and manganese concentrations indicates that the 224 waste comprises a much larger portion of the total waste. The sludge waste type volumes were calculated based on a comparison of the manganese concentrations in the 224-2 and 2C waste type templates and in the segment solids means. Lanthanum was not used to estimate the waste volumes because the segment mean value includes analytical detection limit data for some segments. The template manganese analyte concentrations for each waste type were scaled to the sample data using the assigned multipliers, then the volumes of 224-2 and 2C waste were algebraically determined from the 224 waste and 2C template manganese values. The 224-2 sludge waste equals 53.4 volume percent of the sludge waste, or 904 kL (239 kgal). The 2C waste volume of 787 kL (208 kgal) was calculated by subtracting the 224-2 sludge volume from the total tank volume.

It was assumed that the sample analyses used in the sludge template vectors and sample vectors represented both solids and interstitial liquid. As a result, a separate interstitial liquid inventory was not determined for the sludge waste in tank 241-T-111. The tank underwent saltwell pumping in 1995, and the volume of liquid-saturated sludge (calculated using the February 21, 1995 neutron probe reading of 166.3 inches) reported in the tank 241-T-111 interim stabilization evaluation (Swaney 2001) equaled 1,654 kL (437 kgal). The January 2, 2001 neutron probe reading of 166.7 inches corresponds well with the reading from Swaney (2001). The saturated sludge volume was multiplied by the tank 241-T-111 calculated sludge porosity of 0.105 (Swaney 2001) to calculate the volume of interstitial liquid in the sludge, which equals 174 kL (46 kgal).

All inventory calculations were performed using the Best-Basis Inventory Maintenance Tool. The updated best-basis inventory values for tank 241-T-111 can be found in the *Best-Basis Inventory without Details* standard report. Radionuclides in the *Best-Basis Inventory without Details* standard report are decay-corrected to January 1, 2008. The sample-based inventories in this BBI were developed in accordance with the BBI creation rules documented in Field and Bowen (2003), with one exception. The composite silicon value was selected over the segment

silicon value in both waste types, because the composite sample values were derived from inductively coupled plasma fusion digest analysis, while the segment values were derived from the inductively coupled plasma acid digest method. The fusion digestion was considered more effective for measuring the silicon in the sludge samples, for this BBI effort. The approach for other individual analytes is described below.

The sludge inventories for uranium isotopes in each waste type were calculated using the 1991 core composite total uranium value and distributed using the 224-2 and 2C template ratios for those isotopes. The inventories for plutonium, americium, and curium isotopes in the sludge were calculated using the 1991 core composite solids $^{239/240}$Pu and ^{241}Am concentrations and distributed using the template ratios for those isotopes. The 2C sludge distribution calculations for ^{243}Am, ^{242}Cm, ^{243}Cm, and ^{244}Cm were done manually, without decay-correcting the template to the sample date because doing so causes negative concentrations in the template.

PCBs: A total PCB inventory is estimated per guidelines established in Nguyen (2004). A default PCB concentration of 25 µg/g (wet weight) was used for solids since current sample data was not available.

Changes Since Previous BBI: This update corrected negative inventories in the 2C sludge. No other volumes or concentrations were changed.

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Description of Tank 241-T-111

TANK DESCRIPTION	
Type	Single Shell
Constructed	1943-1944
In-service	10/1945
Diameter	22.9 m (75 ft)
Operating Depth	469.9 cm (185 in)
Design Capacity	2006 kL (530 kgal)
Bottom shape	dish
Ventilation	Passive
TANK STATUS (as of 7/1/2004)	
Total Waste Volume	1691 kL (447 kgal)
Supernatant Volume	NA
Retained Gas Volume	NA
Retained Gas - Sludge Volume	NA
Retained Gas - Salt Cake Volume	NA
Salt Cake Liquid Volume	NA
Salt Cake Solid Volume	NA
Sludge Volume	1691 kL (447 kgal)
Surface Level (7/1/2004)	432.4 cm (170.2 inches)
PCSACS Surface Level (11/13/2005)	432.6 cm (170.3 inches)
Temperature (7/1/2003 - 6/30/2004)	12.2°C - 22.8°C (54.0°F - 73.0°F)
Temperature (11/13/2005)	17.5°C - 20.6°C (63.5°F - 69.1°F)
Integrity	Assumed Leaker
Waste Group Designation	B
SAMPLING DATES (See Note Below)	
Core Samples	10/22/1991 - 10/25/1991
	11/5/1991 - 11/7/1991
Vapor Samples	1/20/1995
SERVICE STATUS	
Declared Inactive	1976
Interim Stabilization	February 1995
Intrusion Prevention	

Note: the date(s) shown here are taken from the sample chain of custody documents. The date(s) may be different than the dates indicated on the Core Profile standard report.

241-T-111 Risers[1,2]

Number	Diameter (Inches)	Description and Comments
R1	4	Cap Welded, Below Grade, BM
R2*	12	Blind Flange
R3*	12	12 X 4 Adapter To Accommodate Breather Filter & Observation Port
R4	4	Level Transmitter(ENRAF 854)
R5	4	Thermocouple, BM
R6*	12	Air Filter
R7	12	B-436 Liquid Observation Well
R8	4	Cut and Capped
R13	12	Saltwell Pumping
N1	3	Overflow-Inlet
N2	3	Overflow-Outlet
N3	3	Spare Nozzle Capped
N4	3	Spare Nozzle Capped
N5	3	Line V689-Nozzle Sealed In Diversion Box 241-T-153
N6	3	Spare Nozzle Capped

Notes: [1]Lipnicki(1997)
[2]H-2-73058, Rev.5

* Denotes risers tentatively available for sampling(Lipnicki 1997)

Tank 241-T-111 Best Basis Inventory Without Details
Decayed To: January 1, 2008
Effective Date: July 1, 2004
Published On: February 29, 2008
Best Basis Derivation

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
Al	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.51E+ 02 μg/g	3.93E+ 02 kg	S	
Al	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.51E+ 02 μg/g	3.42E+ 02 kg	S	
Al	**Total**		**1691 kL**		**7.36E+ 02 kg**		
Bi	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.37E+ 04 μg/g	2.31E+ 04 kg	S	
Bi	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.37E+ 04 μg/g	2.65E+ 04 kg	S	
Bi	**Total**		**1691 kL**		**4.96E+ 04 kg**		
Ca	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.78E+ 03 μg/g	1.99E+ 03 kg	S	
Ca	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.78E+ 03 μg/g	1.74E+ 03 kg	S	
Ca	**Total**		**1691 kL**		**3.73E+ 03 kg**		
Cl	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	8.48E+ 02 μg/g	9.51E+ 02 kg	S	
Cl	Sludge (Liquid & Solid)	2C (Solid)	787 kL	8.48E+ 02 μg/g	8.28E+ 02 kg	S	
Cl	**Total**		**1691 kL**		**1.78E+ 03 kg**		.

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
TIC as CO3	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	5.30E+ 03 μg/g	5.94E+ 03 kg	S	
TIC as CO3	Sludge (Liquid & Solid)	2C (Solid)	787 kL	5.30E+ 03 μg/g	5.17E+ 03 kg	S	
TIC as CO3	**Total**		**1691 kL**		**1.11E+ 04 kg**		.
Cr	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.67E+ 03 μg/g	1.87E+ 03 kg	S	
Cr	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.67E+ 03 μg/g	1.63E+ 03 kg	S	
Cr	**Total**		**1691 kL**		**3.51E+ 03 kg**		
F	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	4.51E+ 03 μg/g	5.05E+ 03 kg	S	
F	Sludge (Liquid & Solid)	2C (Solid)	787 kL	4.51E+ 03 μg/g	4.40E+ 03 kg	S	
F	**Total**		**1691 kL**		**9.45E+ 03 kg**		.
Fe	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.59E+ 04 μg/g	1.55E+ 04 kg	S	
Fe	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.59E+ 04 μg/g	1.78E+ 04 kg	S	
Fe	**Total**		**1691 kL**		**3.33E+ 04 kg**		
Hg	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.43E+ 00 μg/g	1.60E+ 00 kg	S	
Hg	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.43E+ 00 μg/g	1.39E+ 00 kg	S	
Hg	**Total**		**1691 kL**		**2.99E+ 00 kg**		.

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
K	Sludge (Liquid & Solid)	2C (Solid)	787 kL	9.40E+ 02 μg/g	9.17E+ 02 kg	S	
K	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	9.40E+ 02 μg/g	1.05E+ 03 kg	S	
K	**Total**		**1691 kL**		**1.97E+ 03 kg**		
La	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.72E+ 03 μg/g	4.17E+ 03 kg	S	
La	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.72E+ 03 μg/g	3.63E+ 03 kg	S	
La	**Total**		**1691 kL**		**7.79E+ 03 kg**		
Mn	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	7.57E+ 03 μg/g	8.49E+ 03 kg	S	
Mn	Sludge (Liquid & Solid)	2C (Solid)	787 kL	7.57E+ 03 μg/g	7.39E+ 03 kg	S	
Mn	**Total**		**1691 kL**		**1.59E+ 04 kg**		
Na	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.22E+ 04 μg/g	3.15E+ 04 kg	S	
Na	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.22E+ 04 μg/g	3.61E+ 04 kg	S	
Na	**Total**		**1691 kL**		**6.76E+ 04 kg**		
Ni	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.08E+ 02 μg/g	1.21E+ 02 kg	S	
Ni	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.08E+ 02 μg/g	1.05E+ 02 kg	S	
Ni	**Total**		**1691 kL**		**2.26E+ 02 kg**		
NO2	Sludge (Liquid & Solid)	2C (Solid)	787 kL	7.49E+ 02 μg/g	7.31E+ 02 kg	S	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
NO2	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	7.49E+ 02 μg/g	8.40E+ 02 kg	S	
NO2	**Total**		**1691 kL**		**1.57E+ 03 kg**		.
NO3	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	5.80E+ 04 μg/g	6.50E+ 04 kg	S	
NO3	Sludge (Liquid & Solid)	2C (Solid)	787 kL	5.80E+ 04 μg/g	5.66E+ 04 kg	S	
NO3	**Total**		**1691 kL**		**1.22E+ 05 kg**		.
Oxalate	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	8.45E+ 03 μg/g	9.48E+ 03 kg	C	
Oxalate	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.58E+ 03 μg/g	1.55E+ 03 kg	C	
Oxalate	**Total**		**1691 kL**		**1.10E+ 04 kg**		Based on ratio with TOC
Pb	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.64E+ 02 μg/g	2.57E+ 02 kg	S	
Pb	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.64E+ 02 μg/g	2.95E+ 02 kg	S	
Pb	**Total**		**1691 kL**		**5.53E+ 02 kg**		
PO4	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.02E+ 04 μg/g	2.95E+ 04 kg	S	
PO4	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.02E+ 04 μg/g	3.38E+ 04 kg	S	
PO4	**Total**		**1691 kL**		**6.33E+ 04 kg**		.
Si	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	5.67E+ 03 μg/g	6.35E+ 03 kg	S	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
Si	Sludge (Liquid & Solid)	2C (Solid)	787 kL	5.67E+ 03 μg/g	5.53E+ 03 kg	S	
Si	**Total**		**1691 kL**		**1.19E+ 04 kg**		
SO4	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.27E+ 03 μg/g	3.19E+ 03 kg	S	
SO4	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.27E+ 03 μg/g	3.67E+ 03 kg	S	
SO4	**Total**		**1691 kL**		**6.86E+ 03 kg**		
Sr	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.96E+ 02 μg/g	2.89E+ 02 kg	S	
Sr	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.96E+ 02 μg/g	3.32E+ 02 kg	S	
Sr	**Total**		**1691 kL**		**6.21E+ 02 kg**		
TOC	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.46E+ 03 μg/g	3.88E+ 03 kg	S	
TOC	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.46E+ 03 μg/g	3.38E+ 03 kg	S	
TOC	**Total**		**1691 kL**		**7.26E+ 03 kg**		.
UTOTAL	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.53E+ 03 μg/g	3.44E+ 03 kg	S	
UTOTAL	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.53E+ 03 μg/g	3.96E+ 03 kg	S	
UTOTAL	**Total**		**1691 kL**		**7.40E+ 03 kg**		.
Zr	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	8.37E-1 μg/g	9.38E-1 kg	S	
Zr	Sludge (Liquid & Solid)	2C (Solid)	787 kL	8.37E-1 μg/g	8.17E-1 kg	S	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
Zr	**Total**		**1691 kL**		**1.75E+ 00 kg**		Upper bounding estimate
3H	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.43E-9 μCi/g	3.69E-6 Ci	E	
3H	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.50E-7 μCi/g	1.51E-4 Ci	E	
3H	**Total**		**1691 kL**		**1.55E-4 Ci**		
14C	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.28E-6 μCi/g	1.29E-3 Ci	E	
14C	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.10E-7 μCi/g	2.26E-4 Ci	E	
14C	**Total**		**1691 kL**		**1.52E-3 Ci**		
59Ni	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	5.20E-5 μCi/g	5.83E-2 Ci	S	
59Ni	Sludge (Liquid & Solid)	2C (Solid)	787 kL	5.20E-5 μCi/g	5.07E-2 Ci	S	
59Ni	**Total**		**1691 kL**		**1.09E-1 Ci**		.
60Co	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.61E-7 μCi/g	3.64E-4 Ci	E	
60Co	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	7.68E-8 μCi/g	8.26E-5 Ci	E	
60Co	**Total**		**1691 kL**		**4.47E-4 Ci**		.
63Ni	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	5.30E-3 μCi/g	5.94E+ 00 Ci	S	
63Ni	Sludge (Liquid & Solid)	2C (Solid)	787 kL	5.30E-3 μCi/g	5.17E+ 00 Ci	S	
63Ni	**Total**		**1691 kL**		**1.11E+ 01 Ci**		.

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
79Se	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.30E-7 μCi/g	1.31E-4 Ci	E	
79Se	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.14E-8 μCi/g	2.30E-5 Ci	E	
79Se	**Total**		**1691 kL**		**1.54E-4 Ci**		
90Sr	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.71E+ 00 μCi/g	4.15E+ 03 Ci	S	
90Sr	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.71E+ 00 μCi/g	3.62E+ 03 Ci	S	
90Sr	**Total**		**1691 kL**		**7.77E+ 03 Ci**		.
90Y	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.71E+ 00 μCi/g	3.62E+ 03 Ci	C	
90Y	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.71E+ 00 μCi/g	4.15E+ 03 Ci	C	
90Y	**Total**		**1691 kL**		**7.77E+ 03 Ci**		Based on 90Sr
93Zr	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	0.00E+ 00 μCi/g	0.00E+ 00 Ci	E	
93Zr	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.51E-5 μCi/g	3.53E-2 Ci	E	
93Zr	**Total**		**1691 kL**		**3.53E-2 Ci**		
93mNb	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.22E-5 μCi/g	3.24E-2 Ci	E	
93mNb	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	0.00E+ 00 μCi/g	0.00E+ 00 Ci	E	
93mNb	**Total**		**1691 kL**		**3.24E-2 Ci**		
99Tc	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	7.92E-3 μCi/g	8.87E+ 00 Ci	S	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
99Tc	Sludge (Liquid & Solid)	2C (Solid)	787 kL	7.92E-3 μCi/g	7.73E+ 00 Ci	S	
99Tc	**Total**		**1691 kL**		**1.66E+ 01 Ci**		.
106Ru	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.05E-16 μCi/g	2.06E-13 Ci	E	
106Ru	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.57E-16 μCi/g	1.68E-13 Ci	E	
106Ru	**Total**		**1691 kL**		**3.75E-13 Ci**		
113mCd	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.17E-6 μCi/g	1.18E-3 Ci	E	
113mCd	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.23E-7 μCi/g	2.40E-4 Ci	E	
113mCd	**Total**		**1691 kL**		**1.42E-3 Ci**		
125Sb	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.89E-9 μCi/g	2.04E-6 Ci	E	
125Sb	Sludge (Liquid & Solid)	2C (Solid)	787 kL	7.53E-9 μCi/g	7.58E-6 Ci	E	
125Sb	**Total**		**1691 kL**		**9.62E-6 Ci**		
126Sn	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.35E-7 μCi/g	2.37E-4 Ci	E	
126Sn	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.99E-8 μCi/g	4.29E-5 Ci	E	
126Sn	**Total**		**1691 kL**		**2.80E-4 Ci**		
129I	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	0.00E+ 00 μCi/g	0.00E+ 00 Ci	E	
129I	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.46E-10 μCi/g	1.47E-7 Ci	E	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
129I	**Total**		**1691 kL**		**1.47E-7 Ci**		
134Cs	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.04E-12 μCi/g	1.04E-9 Ci	E	
134Cs	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	5.03E-14 μCi/g	5.41E-11 Ci	E	
134Cs	**Total**		**1691 kL**		**1.10E-9 Ci**		
137Cs	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	9.28E-2 μCi/g	1.04E+ 02 Ci	S	
137Cs	Sludge (Liquid & Solid)	2C (Solid)	787 kL	9.28E-2 μCi/g	9.06E+ 01 Ci	S	
137Cs	**Total**		**1691 kL**		**1.95E+ 02 Ci**		.
137mBa	Sludge (Liquid & Solid)	2C (Solid)	787 kL	8.76E-2 μCi/g	8.55E+ 01 Ci	C	
137mBa	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	8.76E-2 μCi/g	9.82E+ 01 Ci	C	
137mBa	**Total**		**1691 kL**		**1.84E+ 02 Ci**		Based on 137Cs
151Sm	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	6.15E-3 μCi/g	6.62E+ 00 Ci	E	
151Sm	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.14E-2 μCi/g	1.14E+ 01 Ci	E	
151Sm	**Total**		**1691 kL**		**1.81E+ 01 Ci**		
152Eu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.57E-7 μCi/g	2.59E-4 Ci	E	
152Eu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.17E-7 μCi/g	2.33E-4 Ci	E	
152Eu	**Total**		**1691 kL**		**4.93E-4 Ci**		

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
154Eu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.29E-5 μCi/g	1.39E-2 Ci	E	
154Eu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.64E-5 μCi/g	1.65E-2 Ci	E	
154Eu	**Total**		**1691 kL**		**3.04E-2 Ci**		
155Eu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	6.35E-6 μCi/g	6.40E-3 Ci	E	
155Eu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	4.50E-6 μCi/g	4.84E-3 Ci	E	
155Eu	**Total**		**1691 kL**		**1.12E-2 Ci**		
226Ra	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.43E-11 μCi/g	3.68E-8 Ci	E	
226Ra	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.11E-10 μCi/g	3.13E-7 Ci	E	
226Ra	**Total**		**1691 kL**		**3.50E-7 Ci**		
227Ac	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.36E-8 μCi/g	1.37E-5 Ci	E	
227Ac	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	7.91E-9 μCi/g	8.51E-6 Ci	E	
227Ac	**Total**		**1691 kL**		**2.23E-5 Ci**		
228Ra	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.71E-14 μCi/g	1.84E-11 Ci	C	
228Ra	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.22E-14 μCi/g	2.24E-11 Ci	C	
228Ra	**Total**		**1691 kL**		**4.08E-11 Ci**		
229Th	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.63E-12 μCi/g	2.65E-9 Ci	E	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
229Th	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.01E-12 μCi/g	2.17E-9 Ci	E	
229Th	**Total**		**1691 kL**		**4.81E-9 Ci**		
231Pa	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.36E-8 μCi/g	3.61E-5 Ci	E	
231Pa	Sludge (Liquid & Solid)	2C (Solid)	787 kL	5.76E-8 μCi/g	5.80E-5 Ci	E	
231Pa	**Total**		**1691 kL**		**9.42E-5 Ci**		
232Th	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.22E-14 μCi/g	2.24E-11 Ci	E	
232Th	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.71E-14 μCi/g	1.84E-11 Ci	E	
232Th	**Total**		**1691 kL**		**4.08E-11 Ci**		
232U	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.64E-8 μCi/g	1.84E-5 Ci	C	
232U	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.22E-8 μCi/g	1.19E-5 Ci	C	
232U	**Total**		**1691 kL**		**3.04E-5 Ci**		Based on UTOTAL and Template isotopic distributions
233U	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.09E-9 μCi/g	1.06E-6 Ci	C	
233U	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.38E-9 μCi/g	1.55E-6 Ci	C	
233U	**Total**		**1691 kL**		**2.61E-6 Ci**		Based on UTOTAL and Template isotopic distributions

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
234U	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.15E-3 μCi/g	1.29E+ 00 Ci	C	
234U	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.16E-3 μCi/g	1.13E+ 00 Ci	C	
234U	**Total**		**1691 kL**		**2.42E+ 00 Ci**		Based on UTOTAL and Template isotopic distributions
235U	Sludge (Liquid & Solid)	2C (Solid)	787 kL	5.17E-5 μCi/g	5.05E-2 Ci	C	
235U	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	5.11E-5 μCi/g	5.73E-2 Ci	C	
235U	**Total**		**1691 kL**		**1.08E-1 Ci**		Based on UTOTAL and Template isotopic distributions
236U	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.22E-5 μCi/g	1.19E-2 Ci	C	
236U	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.57E-5 μCi/g	1.76E-2 Ci	C	
236U	**Total**		**1691 kL**		**2.95E-2 Ci**		Based on UTOTAL and Template isotopic distributions
237Np	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.84E-7 μCi/g	2.86E-4 Ci	E	
237Np	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.36E-7 μCi/g	2.54E-4 Ci	E	
237Np	**Total**		**1691 kL**		**5.40E-4 Ci**		
238Pu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.03E-3 μCi/g	1.16E+ 00 Ci	C	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
238Pu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	7.43E-5 μCi/g	7.49E-2 Ci	E	
238Pu	**Total**		**1691 kL**		**1.23E+ 00 Ci**		224-2 Sludge based on 239/240Pu and Template isotopic distributions
238U	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.18E-3 μCi/g	1.15E+ 00 Ci	C	
238U	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.18E-3 μCi/g	1.32E+ 00 Ci	C	
238U	**Total**		**1691 kL**		**2.47E+ 00 Ci**		Based on UTOTAL and Template isotopic distributions
239Pu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.23E-1 μCi/g	1.38E+ 02 Ci	C	
239Pu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.26E-1 μCi/g	1.23E+ 02 Ci	C	
239Pu	**Total**		**1691 kL**		**2.61E+ 02 Ci**		Based on 239/240Pu and Template isotopic distributions
240Pu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.31E-2 μCi/g	1.28E+ 01 Ci	C	
240Pu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.55E-2 μCi/g	1.74E+ 01 Ci	C	
240Pu	**Total**		**1691 kL**		**3.02E+ 01 Ci**		Based on 239/240Pu and Template isotopic distributions

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
241Am	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	4.70E-2 μCi/g	5.26E+ 01 Ci	S	
241Am	Sludge (Liquid & Solid)	2C (Solid)	787 kL	4.67E-2 μCi/g	4.56E+ 01 Ci	S	
241Am	**Total**		**1691 kL**		**9.82E+ 01 Ci**		.
241Pu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.77E-2 μCi/g	1.72E+ 01 Ci	C	
241Pu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.44E-2 μCi/g	2.74E+ 01 Ci	C	
241Pu	**Total**		**1691 kL**		**4.46E+ 01 Ci**		Based on 239Pu and Template isotopic distributions
242Cm	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.23E-5 μCi/g	1.38E-2 Ci	C	
242Cm	Sludge (Liquid & Solid)	2C (Solid)	787 kL	9.81E-6 μCi/g	9.57E-3 Ci	E	
242Cm	**Total**		**1691 kL**		**2.34E-2 Ci**		Based on 241Am and Template isotopic distributions
242Pu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.71E-7 μCi/g	1.67E-4 Ci	C	
242Pu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.49E-7 μCi/g	2.79E-4 Ci	C	
242Pu	**Total**		**1691 kL**		**4.46E-4 Ci**		Based on 239Pu and Template isotopic distributions
243Am	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	7.38E-6 μCi/g	8.27E-3 Ci	C	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
243Am	Sludge (Liquid & Solid)	2C (Solid)	787 kL	6.17E-6 μCi/g	6.02E-3 Ci	E	
243Am	**Total**		**1691 kL**		**1.43E-2 Ci**		Based on 241Am and Template isotopic distributions
243Cm	Sludge (Liquid & Solid)	2C (Solid)	787 kL	8.51E-8 μCi/g	8.30E-5 Ci	E	
243Cm	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.30E-7 μCi/g	1.46E-4 Ci	C	
243Cm	**Total**		**1691 kL**		**2.29E-4 Ci**		Based on 241Am and Template isotopic distributions
244Cm	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.76E-6 μCi/g	3.09E-3 Ci	C	
244Cm	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.60E-6 μCi/g	1.56E-3 Ci	E	
244Cm	**Total**		**1691 kL**		**1.56E-3 Ci**		Based on 241Am and Template isotopic distributions

Tank 241-T-111 Best Basis Inventory Without Details -- Supplementals
Decayed To: January 1, 2008
Effective Date: July 1, 2004
Published On: February 29, 2008
Best Basis Derivation
The water concentration is applicable to the time of sampling and may change with time; no water inventory is calculated.

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
Ag	Sludge (Liquid & Solid)	2C (Solid)	787 kL	9.00E+ 01 μg/g	8.78E+ 01 kg	S	
Ag	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	9.00E+ 01 μg/g	1.01E+ 02 kg	S	
Ag	**Total**		**1691 kL**		**1.89E+ 02 kg**		.
As	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.27E+ 00 μg/g	3.20E+ 00 kg	S	
As	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.27E+ 00 μg/g	3.67E+ 00 kg	S	
As	**Total**		**1691 kL**		**6.87E+ 00 kg**		Upper bounding estimate
B	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.51E+ 00 μg/g	3.93E+ 00 kg	S	
B	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.51E+ 00 μg/g	3.42E+ 00 kg	S	
B	**Total**		**1691 kL**		**7.36E+ 00 kg**		Upper bounding estimate
Ba	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.50E+ 02 μg/g	1.46E+ 02 kg	S	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
Ba	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.50E+ 02 μg/g	1.68E+ 02 kg	S	
Ba	**Total**		**1691 kL**		**3.14E+ 02 kg**		.
Be	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.05E-1 μg/g	1.18E-1 kg	S	
Be	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.05E-1 μg/g	1.02E-1 kg	S	
Be	**Total**		**1691 kL**		**2.20E-1 kg**		Upper bounding estimate
Cd	Sludge (Liquid & Solid)	2C (Solid)	787 kL	5.47E+ 00 μg/g	5.34E+ 00 kg	S	
Cd	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	5.47E+ 00 μg/g	6.13E+ 00 kg	S	
Cd	**Total**		**1691 kL**		**1.15E+ 01 kg**		.
Ce	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.84E+ 01 μg/g	4.31E+ 01 kg	S	
Ce	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.84E+ 01 μg/g	3.75E+ 01 kg	S	
Ce	**Total**		**1691 kL**		**8.06E+ 01 kg**		.
Co	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.88E+ 00 μg/g	3.79E+ 00 kg	S	
Co	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.88E+ 00 μg/g	4.35E+ 00 kg	S	
Co	**Total**		**1691 kL**		**8.13E+ 00 kg**		.
CN	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.10E+ 00 μg/g	3.02E+ 00 kg	S	

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
CN	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.10E+ 00 μg/g	3.47E+ 00 kg	S	
CN	**Total**		**1691 kL**		**6.49E+ 00 kg**		.
Cu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.18E+ 01 μg/g	2.13E+ 01 kg	S	
Cu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.18E+ 01 μg/g	2.45E+ 01 kg	S	
Cu	**Total**		**1691 kL**		**4.58E+ 01 kg**		.
Mg	Sludge (Liquid & Solid)	2C (Solid)	787 kL	3.22E+ 02 μg/g	3.14E+ 02 kg	S	
Mg	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	3.22E+ 02 μg/g	3.61E+ 02 kg	S	
Mg	**Total**		**1691 kL**		**6.75E+ 02 kg**		.
Free OH	Sludge (Liquid & Solid)	2C (Solid)	787 kL	5.22E-1 μg/g	5.09E-1 kg	C	
Free OH	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	5.22E-1 μg/g	5.85E-1 kg	C	
Free OH	**Total**		**1691 kL**		**1.09E+ 00 kg**		
Aroclors (Total PCB)	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.50E+ 01 μg/g	2.44E+ 01 kg	E	
Aroclors (Total PCB)	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.50E+ 01 μg/g	2.80E+ 01 kg	E	
Aroclors (Total PCB)	**Total**		**1691 kL**		**5.24E+ 01 kg**		

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
Sb	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	2.72E+ 01 μg/g	3.05E+ 01 kg	S	
Sb	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.72E+ 01 μg/g	2.65E+ 01 kg	S	
Sb	**Total**		**1691 kL**		**5.70E+ 01 kg**		Upper bounding estimate
Se	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.49E+ 00 μg/g	1.45E+ 00 kg	S	
Se	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.49E+ 00 μg/g	1.67E+ 00 kg	S	
Se	**Total**		**1691 kL**		**3.12E+ 00 kg**		Upper bounding estimate
Th	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.56E-7 μg/g	1.68E-7 kg	E	
Th	Sludge (Liquid & Solid)	2C (Solid)	787 kL	2.01E-7 μg/g	2.03E-7 kg	E	
Th	**Total**		**1691 kL**		**3.71E-7 kg**		
Ti	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.51E+ 01 μg/g	1.48E+ 01 kg	S	
Ti	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.51E+ 01 μg/g	1.70E+ 01 kg	S	
Ti	**Total**		**1691 kL**		**3.18E+ 01 kg**		.
V	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.22E+ 01 μg/g	1.37E+ 01 kg	S	
V	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.22E+ 01 μg/g	1.19E+ 01 kg	S	
V	**Total**		**1691 kL**		**2.56E+ 01 kg**		.

Analyte	Waste Phase	Waste Type	Volume	Concentration	Inventory	Basis	Comment
Zn	Sludge (Liquid & Solid)	2C (Solid)	787 kL	6.59E+ 01 μg/g	6.43E+ 01 kg	S	
Zn	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	6.59E+ 01 μg/g	7.38E+ 01 kg	S	
Zn	**Total**		**1691 kL**		**1.38E+ 02 kg**		.
239/240Pu	Sludge (Liquid & Solid)	224-2 (Solid)	904 kL	1.39E-1 μCi/g	1.56E+ 02 Ci	S	
239/240Pu	Sludge (Liquid & Solid)	2C (Solid)	787 kL	1.39E-1 μCi/g	1.35E+ 02 Ci	S	
239/240Pu	**Total**		**1691 kL**		**2.91E+ 02 Ci**		Supplemental analyte used to calculate alpha isotopes.

The water concentration is applicable to the time of sampling and may change with time; no water inventory is calculated.

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
1,1,1-Trichloroethane	Extraction Organic (VOA)	PNL-ALO-335
1,1,2,2-Tetrachloroethane	Extraction Organic (VOA)	PNL-ALO-335
1,1,2-Trichloroethane	Extraction Organic (VOA)	PNL-ALO-335
1,1-Dichloroethane	Extraction Organic (VOA)	PNL-ALO-335
1,1-Dichloroethene	Extraction Organic (VOA)	PNL-ALO-335
1,2,4-Trichlorobenzene	Extraction Organic (SVOA)	PNL-ALO-345
1,2-Dichlorobenzene	Extraction Organic (SVOA)	PNL-ALO-345
1,2-Dichloroethane	Extraction Organic (VOA)	PNL-ALO-335
1,2-Dichloroethylene	Extraction Organic (VOA)	PNL-ALO-335
1,2-Dichloropropane	Extraction Organic (VOA)	PNL-ALO-335
1,3-Dichlorobenzene	Extraction Organic (SVOA)	PNL-ALO-345
1,4-Dichlorobenzene	Extraction Organic (SVOA)	PNL-ALO-345
2,4,5-Trichlorophenol	Extraction Organic (SVOA)	PNL-ALO-345
2,4,6-Trichlorophenol	Extraction Organic (SVOA)	PNL-ALO-345
2,4-Dichlorophenol	Extraction Organic (SVOA)	PNL-ALO-345
2,4-Dimethylphenol	Extraction Organic (SVOA)	PNL-ALO-345
2,4-Dinitrophenol	Extraction Organic (SVOA)	PNL-ALO-345
2,4-Dinitrotoluene	Extraction Organic (SVOA)	PNL-ALO-345
2,6-Dinitrotoluene	Extraction Organic (SVOA)	PNL-ALO-345
2-Butanone	Extraction Organic (VOA)	PNL-ALO-335
2-Chloronaphthalene	Extraction Organic (SVOA)	PNL-ALO-345
2-Chlorophenol	Extraction Organic (SVOA)	PNL-ALO-345
2-Hexanone	Extraction Organic (VOA)	PNL-ALO-335
2-Methylnaphthalene	Extraction Organic (SVOA)	PNL-ALO-345
2-Methylphenol	Extraction Organic (SVOA)	PNL-ALO-345
2-Nitroaniline	Extraction Organic (SVOA)	PNL-ALO-345
2-Nitrophenol	Extraction Organic (SVOA)	PNL-ALO-345
3,3 -Dichlorobenzidine	Extraction Organic (SVOA)	PNL-ALO-345
3-Nitroaniline	Extraction Organic (SVOA)	PNL-ALO-345
4,6-Dinitro-o-cresol	Extraction Organic (SVOA)	PNL-ALO-345
4-Bromophenylphenyl ether	Extraction Organic (SVOA)	PNL-ALO-345
4-Chloro-3-methylphenol	Extraction Organic (SVOA)	PNL-ALO-345
4-Chloroaniline	Extraction Organic (SVOA)	PNL-ALO-345

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
4-Chlorophenylphenyl ether	Extraction Organic (SVOA)	PNL-ALO-345
4-Methylphenol	Extraction Organic (SVOA)	PNL-ALO-345
4-Nitroaniline	Extraction Organic (SVOA)	PNL-ALO-345
4-Nitrophenol	Extraction Organic (SVOA)	PNL-ALO-345
Acenaphthene	Extraction Organic (SVOA)	PNL-ALO-345
Acenaphthylene	Extraction Organic (SVOA)	PNL-ALO-345
Acetone	Extraction Organic (VOA)	PNL-ALO-335
Aluminum	ICP Acid Digestion	LA-505-151
Aluminum	ICP Fusion	LA-505-151
Aluminum	ICP Water Digestion	LA-505-105
Americium-241	Alpha counting; Ion Exchange/Solvent Extraction: Fusion	LA-503-156
Americium-241	Gamma Energy Analysis Acid Digestion	LA-548-121
Americium-241	Gamma Energy Analysis Fusion	LA-548-121
Anthracene	Extraction Organic (SVOA)	PNL-ALO-345
Antimony	ICP Acid Digestion	LA-505-151
Antimony	ICP Fusion	LA-505-151
Antimony	ICP Water Digestion	LA-505-105
Arsenic	Acid AA (As)	PNL-ALO-214
Arsenic	ICP Acid Digestion	LA-505-151
Arsenic	ICP Fusion	LA-505-151
Arsenic	ICP TCLP Acid Digestion	LA-505-151
Arsenic	ICP Water Digestion	LA-505-105
Barium	ICP Acid Digestion	LA-505-151
Barium	ICP Fusion	LA-505-151
Barium	ICP TCLP Acid Digestion	LA-505-151
Barium	ICP Water Digestion	LA-505-105
Benzene	Extraction Organic (VOA)	PNL-ALO-335
Benzo(a)anthracene	Extraction Organic (SVOA)	PNL-ALO-345
Benzo(a)pyrene	Extraction Organic (SVOA)	PNL-ALO-345
Benzo(b)fluoranthene	Extraction Organic (SVOA)	PNL-ALO-345
Benzo(ghi)perylene	Extraction Organic (SVOA)	PNL-ALO-345
Benzo(k)fluoranthene	Extraction Organic (SVOA)	PNL-ALO-345

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
Benzoic acid	Extraction Organic (SVOA)	PNL-ALO-345
Benzyl alcohol	Extraction Organic (SVOA)	PNL-ALO-345
Beryllium	ICP Acid Digestion	LA-505-151
Beryllium	ICP Fusion	LA-505-151
Beryllium	ICP Water Digestion	LA-505-105
Bis(2-Chloroethoxy)methane	Extraction Organic (SVOA)	PNL-ALO-345
Bis(2-chloroethyl) ether	Extraction Organic (SVOA)	PNL-ALO-345
Bis(2-Chloroisopropyl) ether	Extraction Organic (SVOA)	PNL-ALO-345
Bis(2-ethylhexyl)phthalate	Extraction Organic (SVOA)	PNL-ALO-345
Bismuth	ICP Acid Digestion	LA-505-151
Bismuth	ICP Fusion	LA-505-151
Bismuth	ICP Water Digestion	LA-505-105
Boron	ICP Acid Digestion	LA-505-151
Boron	ICP Fusion	LA-505-151
Boron	ICP Water Digestion	LA-505-105
Bromodichloromethane	Extraction Organic (VOA)	PNL-ALO-335
Bromoform	Extraction Organic (VOA)	PNL-ALO-335
Bromomethane	Extraction Organic (VOA)	PNL-ALO-335
Bulk Density	Physical Properties	PHYSICAL
Butylbenzylphthalate	Extraction Organic (SVOA)	PNL-ALO-345
Cadmium	ICP Acid Digestion	LA-505-151
Cadmium	ICP Fusion	LA-505-151
Cadmium	ICP TCLP Acid Digestion	LA-505-151
Cadmium	ICP Water Digestion	LA-505-105
Calcium	ICP Acid Digestion	LA-505-151
Calcium	ICP Fusion	LA-505-151
Calcium	ICP Water Digestion	LA-505-105
Carbon disulfide	Extraction Organic (VOA)	PNL-ALO-335
Carbon tetrachloride	Extraction Organic (VOA)	PNL-ALO-335
Carbon-14	Carbon 14 Fusion	LA-348-104
Carbonate	Total Inorganic Carbon/Carbonate Water Digestion	LA-622-102
Centrifuged Solids Density	Physical Properties	PNL-ALO-501
Centrifuged Supernate Density	Physical Properties	PNL-ALO-501
Cerium	ICP Acid Digestion	LA-505-151

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
Cerium	ICP Fusion	LA-505-151
Cerium	ICP Water Digestion	LA-505-105
Cesium-137	Gamma Energy Analysis Acid Digestion	LA-548-121
Cesium-137	Gamma Energy Analysis Fusion	LA-548-121
Chloride	Ion Chromatography Water Digestion	LA-533-105
Chlorobenzene	Extraction Organic (VOA)	PNL-ALO-335
Chloroethane	Extraction Organic (VOA)	PNL-ALO-335
Chloroform	Extraction Organic (VOA)	PNL-ALO-335
Chloromethane	Extraction Organic (VOA)	PNL-ALO-335
Chromium	ICP Acid Digestion	LA-505-151
Chromium	ICP Fusion	LA-505-151
Chromium	ICP TCLP Acid Digestion	LA-505-151
Chromium	ICP Water Digestion	LA-505-105
Chrysene	Extraction Organic (SVOA)	PNL-ALO-345
Cis-1,3-Dichloropropene	Extraction Organic (VOA)	PNL-ALO-335
Cobalt	ICP Acid Digestion	LA-505-151
Cobalt	ICP Fusion	LA-505-151
Cobalt	ICP Water Digestion	LA-505-105
Cobalt-60	Gamma Energy Analysis Acid Digestion	LA-548-121
Cobalt-60	Gamma Energy Analysis Fusion	LA-548-121
Copper	ICP Acid Digestion	LA-505-151
Copper	ICP Fusion	LA-505-151
Copper	ICP Water Digestion	LA-505-105
Curium-244	Alpha counting; Ion Exchange/Solvent Extraction: Fusion	LA-503-156
Cyanide	Cyanide in Water	PNL-ALO-270
Cyanide	Cyanide Water Digestion	LA-695-102
Cyanide	Spectrophotometric Analysis for Cyanide	LA-695-102
Decahydro-naphthalene	Extraction Organic (VOA)	PNL-ALO-335
Decane	Extraction Organic (SVOA)	PNL-ALO-345
Decane	Extraction Organic (VOA)	PNL-ALO-335

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
Density	Physical Properties	PNL-ALO-501
Di-n-butylphthalate	Extraction Organic (SVOA)	PNL-ALO-345
Di-n-octylphthalate	Extraction Organic (SVOA)	PNL-ALO-345
Dibenz[a,h]anthracene	Extraction Organic (SVOA)	PNL-ALO-345
Dibenzofuran	Extraction Organic (SVOA)	PNL-ALO-345
Dibromochloromethane	Extraction Organic (VOA)	PNL-ALO-335
Diethylphthalate	Extraction Organic (SVOA)	PNL-ALO-345
Dimethyl phthalate	Extraction Organic (SVOA)	PNL-ALO-345
Dodecane	Extraction Organic (SVOA)	PNL-ALO-345
Dodecane	Extraction Organic (VOA)	PNL-ALO-335
Drainable Liquid Volume	Physical Properties	PHYSICAL
Endotherm - transition 1	DSC with Mettler	LA-514-113
Ethylbenzene	Extraction Organic (VOA)	PNL-ALO-335
Europium-154	Gamma Energy Analysis Acid Digestion	LA-548-121
Europium-154	Gamma Energy Analysis Fusion	LA-548-121
Europium-155	Gamma Energy Analysis Acid Digestion	LA-548-121
Europium-155	Gamma Energy Analysis Fusion	LA-548-121
Exotherm - transition 1	DSC with Mettler	LA-514-113
Exotherm - transition 1	DSC/TGA by SEIKO 5200	PNL-ALO-508
Extractable total organic halides	Extractible Organic Halides	PNL-ALO-320
Fluoranthene	Extraction Organic (SVOA)	PNL-ALO-345
Fluorene	Extraction Organic (SVOA)	PNL-ALO-345
Fluoride	Ion Chromatography Water Digestion	LA-533-105
Gross alpha	Alpha Radiochem Acid Digestion (Solids)	LA-508-101
Gross alpha	Alpha Radiochemistry Fusion	LA-508-101
Gross beta	Alpha Radiochemistry Fusion	LA-508-101
Heptadecane	Extraction Organic (SVOA)	PNL-ALO-345
Hexachlorobenzene	Extraction Organic (SVOA)	PNL-ALO-345
Hexachlorobutadiene	Extraction Organic (SVOA)	PNL-ALO-345
Hexachlorocyclopentadiene	Extraction Organic (SVOA)	PNL-ALO-345
Hexachloroethane	Extraction Organic (SVOA)	PNL-ALO-345
Hexadecane	Extraction Organic (SVOA)	PNL-ALO-345

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
Hexadecanoic acid	Extraction Organic (SVOA)	PNL-ALO-345
Hexone	Extraction Organic (VOA)	PNL-ALO-335
Indeno(1,2,3-cd)pyrene	Extraction Organic (SVOA)	PNL-ALO-345
Iodine-129	Iodine 129 Fusion	LA-378-103
Iron	ICP Acid Digestion	LA-505-151
Iron	ICP Fusion	LA-505-151
Iron	ICP Water Digestion	LA-505-105
Isophorone	Extraction Organic (SVOA)	PNL-ALO-345
Lanthanum	ICP Acid Digestion	LA-505-151
Lanthanum	ICP Fusion	LA-505-151
Lanthanum	ICP Water Digestion	LA-505-105
Lead	ICP Acid Digestion	LA-505-151
Lead	ICP Fusion	LA-505-151
Lead	ICP TCLP Acid Digestion	LA-505-151
Lead	ICP Water Digestion	LA-505-105
Liquid Density	Physical Properties	PHYSICAL
Liquid Mass	Physical Properties	PHYSICAL
Magnesium	ICP Acid Digestion	LA-505-151
Magnesium	ICP Fusion	LA-505-151
Magnesium	ICP Water Digestion	LA-505-105
Manganese	ICP Acid Digestion	LA-505-151
Manganese	ICP Fusion	LA-505-151
Manganese	ICP Water Digestion	LA-505-105
Mass Loss - transition 1	DSC/TGA by SEIKO 5200	PNL-ALO-508
Maximum temperature - transition 1	DSC/TGA by SEIKO 5200	PNL-ALO-508
Mercury	Cold Vapor Atomic Absorption (Hg)	LA-325-102
Mercury	Mercury by AA TCLP Acid Digestion (Solids)	LA-325-104
Methylenechloride	Extraction Organic (VOA)	PNL-ALO-335
N-Nitroso-di-n-propylamine	Extraction Organic (SVOA)	PNL-ALO-345
N-Nitrosodiphenylamine	Extraction Organic (SVOA)	PNL-ALO-345
Naphthalene	Extraction Organic (SVOA)	PNL-ALO-345
Neptunium-237	Neptunium 237 by Extraction/Alpha: Fusion	LA-933-141

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
Nickel	ICP Acid Digestion	LA-505-151
Nickel	ICP Water Digestion	LA-505-105
Nickel-59	Nickel Sampling	PNL-ALO-464
Nickel-63	Nickel Sampling	PNL-ALO-464
Nitrate	Ion Chromatography Water Digestion	LA-533-105
Nitrite	Ion Chromatography Water Digestion	LA-533-105
Nitrite	Spectrophotometric Water Digestion	LA-645-001
Nitrobenzene	Extraction Organic (SVOA)	PNL-ALO-345
Nonane	Extraction Organic (VOA)	PNL-ALO-335
Onset temperature - transition 1	DSC/TGA by SEIKO 5200	PNL-ALO-508
Pentachlorophenol	Extraction Organic (SVOA)	PNL-ALO-345
Pentadecane	Extraction Organic (SVOA)	PNL-ALO-345
Percent Water	Percent Solids/Percent Water by Gravimetric Analysis	LA-564-101
Percent Water	Thermogravimetric Analysis	LA-560-112
PH Measurement	pH Water Digestion	LA-212-103
Phenanthrene	Extraction Organic (SVOA)	PNL-ALO-345
Phenol	Extraction Organic (SVOA)	PNL-ALO-345
Phosphate	Ion Chromatography Water Digestion	LA-533-105
Phosphorus	ICP Acid Digestion	LA-505-151
Phosphorus	ICP Fusion	LA-505-151
Phosphorus	ICP Water Digestion	LA-505-105
Plutonium-238	Alpha counting; Ion Exchange/Solvent Extraction: Fusion	LA-503-156
Plutonium-239/240	Alpha counting; Ion Exchange/Solvent Extraction: Fusion	LA-503-156
Potassium	ICP Acid Digestion	LA-505-151
Potassium	ICP Fusion	LA-505-151
Potassium	ICP Water Digestion	LA-505-105
Pu238 to Pu Isotopic Percent	Mass Spectroscopy Fusion	PNL-ALO-455
Pu239 to Pu Isotopic Percent	Mass Spectroscopy Fusion	PNL-ALO-455

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
Pu240 to Pu Isotopic Percent	Mass Spectroscopy Fusion	PNL-ALO-455
Pu241 to Pu Isotopic Percent	Mass Spectroscopy Fusion	PNL-ALO-455
Pu242 to Pu Isotopic Percent	Mass Spectroscopy Fusion	PNL-ALO-455
Pyrene	Extraction Organic (SVOA)	PNL-ALO-345
Selenium	Acid AA (Se)	PNL-ALO-215
Selenium	ICP Acid Digestion	LA-505-151
Selenium	ICP Fusion	LA-505-151
Selenium	ICP TCLP Acid Digestion	LA-505-151
Selenium	ICP Water Digestion	LA-505-105
Selenium-79	Selenium 79 Fusion	LA-365-132
Silicon	ICP Acid Digestion	LA-505-151
Silicon	ICP Fusion	LA-505-151
Silicon	ICP Water Digestion	LA-505-105
Silver	ICP Acid Digestion	LA-505-151
Silver	ICP Fusion	LA-505-151
Silver	ICP TCLP Acid Digestion	LA-505-151
Silver	ICP Water Digestion	LA-505-105
Sodium	ICP Acid Digestion	LA-505-151
Sodium	ICP Fusion	LA-505-151
Sodium	ICP Water Digestion	LA-505-105
Solid Volume	Physical Properties	PHYSICAL
Solid Weight	Physical Properties	PHYSICAL
Strontium	ICP Acid Digestion	LA-505-151
Strontium	ICP Fusion	LA-505-151
Strontium	ICP Water Digestion	LA-505-105
Strontium-90	Strontium 89/90 by Beta Counting Fusion	LA-220-101
Styrene	Extraction Organic (VOA)	PNL-ALO-335
Sulfate	Ion Chromatography Water Digestion	LA-533-105
Sulfur	ICP Acid Digestion	LA-505-151
Sulfur	ICP Fusion	LA-505-151
Sulfur	ICP Water Digestion	LA-505-105
Technetium-99	Technetium 99 Fusion	LA-438-101
Temperature range maximum -	DSC/TGA by SEIKO 5200	PNL-ALO-508

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
transition 1		
Temperature range minimum - transition 1	DSC/TGA by SEIKO 5200	PNL-ALO-508
Tetrachloroethene	Extraction Organic (VOA)	PNL-ALO-335
Tetradecane	Extraction Organic (SVOA)	PNL-ALO-345
Tetradecane	Extraction Organic (VOA)	PNL-ALO-335
Tin	ICP Acid Digestion	LA-505-151
Tin	ICP Fusion	LA-505-151
Tin	ICP Water Digestion	LA-505-105
Titanium	ICP Acid Digestion	LA-505-151
Titanium	ICP Fusion	LA-505-151
Titanium	ICP Water Digestion	LA-505-105
Toluene	Extraction Organic (VOA)	PNL-ALO-335
Total alpha energy emitted from Pu-238, Pu-239, Pu-240, Pu-241	Alpha Radiochemistry Fusion	PNL-ALO-421
Total carbon	Furnace Oxidation Method	PNL-ALO-380
Total carbon	Persulfate Oxidation (TOC)	PNL-ALO-381
Total inorganic carbon	Persulfate Oxidation (TOC)	PNL-ALO-381
Total organic carbon	Furnace Oxidation (TOC) Water Digestion	LA-344-105
Total organic carbon	Furnace Oxidation Method	PNL-ALO-380
Total organic carbon	Persulfate Oxidation (TOC)	PNL-ALO-381
Trans-1, 3-Dichloropropene	Extraction Organic (VOA)	PNL-ALO-335
Trichloroethene	Extraction Organic (VOA)	PNL-ALO-335
Tridecane	Extraction Organic (SVOA)	PNL-ALO-345
Tridecane	Extraction Organic (VOA)	PNL-ALO-335
Tritium	Liquid Scintillation (Tritium) Fusion	LA-218-114
U234 to U Isotopic Percent	Mass Spectroscopy Fusion	PNL-ALO-455
U235 to U Isotopic Percent	Mass Spectroscopy Fusion	PNL-ALO-455
U236 to U Isotopic Percent	Mass Spectroscopy Fusion	PNL-ALO-455
U238 to U Isotopic Percent	Mass Spectroscopy Fusion	PNL-ALO-455
Undecane	Extraction Organic (SVOA)	PNL-ALO-345
Undecane	Extraction Organic (VOA)	PNL-ALO-335
Uranium	Laser Fluorimetry Fusion	LA-925-106
Uranium	Laser Fluorimetry Fusion	PNL-ALO-445

Tank 241-T-111 Analytical Methods and Procedures

Analyte	Method	Procedure
Vanadium	ICP Acid Digestion	LA-505-151
Vanadium	ICP Fusion	LA-505-151
Vanadium	ICP Water Digestion	LA-505-105
Vinyl acetate	Extraction Organic (VOA)	PNL-ALO-335
Vinyl chloride	Extraction Organic (VOA)	PNL-ALO-335
Volume	Physical Properties	PHYSICAL
Volume percent centrifuged solids	Physical Properties	PNL-ALO-501
Volume percent settled solids	Physical Properties	PNL-ALO-501
Weight percent centrifuged solids	Physical Properties	PNL-ALO-501
Weight percent solids	Percent Solids	PNL-ALO-504
Weight percent solids	Physical Properties	PNL-ALO-501
Weight percent undissolved solids	Physical Properties	PNL-ALO-501
Xylenes (total)	Extraction Organic (VOA)	PNL-ALO-335
Zinc	ICP Acid Digestion	LA-505-151
Zinc	ICP Fusion	LA-505-151
Zinc	ICP Water Digestion	LA-505-105
Zirconium	ICP Acid Digestion	LA-505-151
Zirconium	ICP Fusion	LA-505-151
Zirconium	ICP Water Digestion	LA-505-105

Tank 241-T-111 Subsampling Scheme and Sample Description

Sample Identification		Amount	Aggregation Level	Sample Characteristics
Sample Location	**Sample Event**			
Riser 2	Core 32: 7		Drainable Liquid	Sample not analyzed. The liquid collected was considered to be non-representative of the tank.
	Core 32: 8		Drainable Liquid	
Riser 3	Core 33: 1	0 mL	Drainable Liquid	Sampler was completely full of nearly black homogeneous solids.
		180 mL 159.16 g	Segment Solids	
	Core 33: 2	0 mL	Drainable Liquid	
		180 mL 209.59 g	Segment Solids	
	Core 33: 3	0 mL	Drainable Liquid	
		180 mL 167.9 g	Segment Solids	
	Core 33: 4	0 mL	Drainable Liquid	Sampler was ~ 75% full of dark brown-nearly black homogeneous solids but the color was slightly lighter than segment 3.
		140 mL 182.05 g	Segment Solids	
	Core 33: 5	0 mL	Drainable Liquid	Sampler was ~ 87.5% full of dark brown homogeneous solids.
		160 mL 174.3 g	Segment Solids	
	Core 33: 6	0 mL	Drainable Liquid	Sampler was nearly full of dark brown homogeneous solids.
		180 mL 217.37 g	Segment Solids	
	Core 33: 7	0 mL	Drainable Liquid	
		180 mL 196.91 g	Segment Solids	
	Core 33: 8	0 mL	Drainable Liquid	
		180 mL 199.8 g	Segment Solids	
	Core 33: 9	0 mL	Drainable Liquid	Sampler was completely full of dark brown solids at the top but the bottom 5-6 inches was light colored.
		180 mL 191.01 g	Segment Solids	

Tank 241-T-111 Subsampling Scheme and Sample Description

Sample Identification		Amount	Aggregation Level	Sample Characteristics
Sample Location	**Sample Event**			
Riser 6	Core 31: 1	0 mL	Drainable Liquid	Collected ~ 50 mLs of homogeneous, black-brown, low viscous solids. The entire sample was used for VOA and DSC/TGA analysis.
		50 mL 18.74 g	Segment Solids	
	Core 31: 2	0 mL	Drainable Liquid	Sampler was full of homogeneous, dark brown to black solids with the consistency of "swamp mud".
		180 mL 178.68 g	Segment Solids	
	Core 31: 3	0 mL	Drainable Liquid	Sampler was full of homogeneous, dark brown solids with the consistency of "swamp mud".
		180 mL 162.2 g	Segment Solids	
	Core 31: 4	0 mL	Drainable Liquid	Most of the sampler was full of homogeneous, dark brown to black solids with the consistency of "swamp mud". The top 1/8 inch of the extruder was filled with a more "liquidy" material than the rest.
		180 mL 153.47 g	Segment Solids	
	Core 31: 5	0 mL	Drainable Liquid	Sampler was full of homogeneous, dark brown solids with the consistency of "swamp mud".
		180 mL 190.94 g	Segment Solids	
	Core 31: 7	0 mL	Drainable Liquid	
		180 mL 198.97 g	Segment Solids	
	Core 31: 8	0 mL	Drainable Liquid	
		180 mL 186.44 g	Segment Solids	
	Core 31: 9	0 mL	Drainable Liquid	Sampler was full of homogeneous, dark brown solids which gradually whiten down the segment. The material had the consistency of "swamp mud".
		133.43 g	Segment Upper Half	
		69.65 g	Segment Lower Half	

241-T-111 Sample Breakdown Diagrams

No data available

241-T-111 Rheology Report

No data available

241-T-111 Means and Confidence Intervals

Solid Data

Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Composite (Sampling Dates -- October 22, 1991 - October 25, 1991, November 5, 1991 - November 7, 1991)

Analyte	Method	Mean	df	LL	UL	Units
Aluminum	ICP:A	5.41E+ 02	3	3.32E+ 02	7.51E+ 02	µg/g
Aluminum	ICP:F	5.70E+ 02	3	3.86E+ 02	7.54E+ 02	µg/g
Aluminum	ICP:W	1.09E+ 01	3	5.12E+ 00	1.67E+ 01	µg/g
Americium-241	Alpha Spec:F	4.26E-2	3	3.63E-2	4.89E-2	µCi/g
Americium-241	GEA:F	4.24E-2	3	3.73E-2	4.76E-2	µCi/g
Ammonium*	Distillation:W (NH3)	< 4.50E+ 03	n/a	n/a	n/a	µg/g
Antimony*	ICP:A	3.14E+ 01	3	1.84E+ 01	4.43E+ 01	µg/g
Antimony*	ICP:F	< 9.35E+ 01	n/a	n/a	n/a	µg/g
Antimony*	ICP:W	< 1.77E+ 01	n/a	n/a	n/a	µg/g
Arsenic*	AA:A (As)	< 3.27E+ 00	n/a	n/a	n/a	µg/g
Arsenic*	ICP:A	< 3.14E+ 00	n/a	n/a	n/a	µg/g
Arsenic*	ICP:F	< 1.50E+ 01	n/a	n/a	n/a	µg/g
Arsenic*	ICP:TCLP/A	< 1.50E-1	n/a	n/a	n/a	µg/mL
Arsenic*	ICP:W	< 3.00E+ 00	n/a	n/a	n/a	µg/g
Barium	ICP:A	6.90E+ 01	3	4.85E+ 01	8.96E+ 01	µg/g
Barium	ICP:F	6.46E+ 01	3	5.40E+ 01	7.53E+ 01	µg/g
Barium*	ICP:TCLP/A	2.93E-2	2	1.48E-3	5.70E-2	µg/mL
Barium*	ICP:W	4.46E-1	3	2.72E-1	6.20E-1	µg/g
Beryllium*	ICP:A	< 1.05E-1	n/a	n/a	n/a	µg/g
Beryllium*	ICP:F	< 5.00E-1	n/a	n/a	n/a	µg/g
Beryllium*	ICP:W	< 9.99E-2	n/a	n/a	n/a	µg/g
Bismuth	ICP:A	2.59E+ 04	3	2.13E+ 04	3.06E+ 04	µg/g
Bismuth	ICP:F	2.36E+ 04	3	1.80E+ 04	2.91E+ 04	µg/g
Bismuth	ICP:W	2.02E+ 02	3	9.64E+ 01	3.07E+ 02	µg/g
Boron	ICP:A	2.80E+ 01	3	2.22E+ 01	3.39E+ 01	µg/g
Boron*	ICP:F	3.92E+ 00	3	2.23E+ 00	5.61E+ 00	µg/g
Boron	ICP:W	4.07E+ 00	3	2.34E+ 00	5.80E+ 00	µg/g
Cadmium	ICP:A	5.81E+ 00	3	2.57E+ 00	9.05E+ 00	µg/g
Cadmium	ICP:F	8.12E+ 00	3	5.19E+ 00	1.10E+ 01	µg/g
Cadmium*	ICP:TCLP	< 2.31E-2	n/a	n/a	n/a	µg/mL

Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Composite (Sampling Dates -- October 22, 1991 - October 25, 1991, November 5, 1991 - November 7, 1991)

Analyte	Method	Mean	df	LL	UL	Units
	/A					
Cadmium*	ICP:W	< 4.00E-1	n/a	n/a	n/a	µg/g
Calcium	ICP:A	1.88E+ 03	3	1.01E+ 03	2.75E+ 03	µg/g
Calcium	ICP:F	2.42E+ 03	3	1.88E+ 03	2.96E+ 03	µg/g
Calcium	ICP:W	6.16E+ 01	3	4.33E+ 01	7.99E+ 01	µg/g
Carbon-14*	C14:F	< 2.44E-4	n/a	n/a	n/a	µCi/g
Carbonate*	Acid Decomposition	< 8.31E+ 02	n/a	n/a	n/a	µg/g
Cerium	ICP:A	3.37E+ 01	3	2.73E+ 01	4.01E+ 01	µg/g
Cerium*	ICP:F	< 5.05E+ 01	n/a	n/a	n/a	µg/g
Cerium*	ICP:W	< 1.01E+ 01	n/a	n/a	n/a	µg/g
Cesium-137	GEA:F	1.66E-1	3	5.86E-2	2.74E-1	µCi/g
Chloride	IC:W	4.50E+ 02	3	3.83E+ 02	5.16E+ 02	µg/g
Chromium	ICP:A	1.98E+ 03	3	1.74E+ 03	2.22E+ 03	µg/g
Chromium	ICP:F	1.80E+ 03	3	1.67E+ 03	1.92E+ 03	µg/g
Chromium	ICP:TCLP/A	8.34E+ 00	2	6.60E+ 00	1.01E+ 01	µg/mL
Chromium	ICP:W	2.18E+ 02	3	2.02E+ 02	2.34E+ 02	µg/g
Cobalt	ICP:A	4.30E+ 00	3	6.25E-1	7.97E+ 00	µg/g
Cobalt	ICP:F	1.15E+ 01	3	9.19E+ 00	1.39E+ 01	µg/g
Cobalt*	ICP:W	< 8.17E-1	n/a	n/a	n/a	µg/g
Cobalt-60*	GEA:F	< 3.64E-4	n/a	n/a	n/a	µCi/g
Copper	ICP:A	3.35E+ 01	3	0.00E+ 00	8.28E+ 01	µg/g
Copper	ICP:F	2.93E+ 01	3	1.81E+ 01	4.04E+ 01	µg/g
Copper*	ICP:W	< 4.00E-1	n/a	n/a	n/a	µg/g
Cyanide*	Spectrophotometer - 580 nm	< 4.32E+ 00	n/a	n/a	n/a	µg/g
Europium-154*	GEA:F	< 1.32E-3	n/a	n/a	n/a	µCi/g
Europium-155*	GEA:F	< 2.19E-3	n/a	n/a	n/a	µCi/g
Exotherm - transition 1	DSC	2.55E+ 01	1	0.00E+ 00	8.65E+ 01	J/g
Fluoride	IC:W	2.30E+ 03	3	8.14E+ 02	3.79E+ 03	µg/g
Gross alpha	Proportional Counting: F	3.73E-1	3	3.44E-1	4.02E-1	µCi/g
Gross beta	Proportional Counting:	1.51E+ 01	3	4.25E+ 00	2.60E+ 01	µCi/g

Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Composite (Sampling Dates -- October 22, 1991 - October 25, 1991, November 5, 1991 - November 7, 1991)

Analyte	Method	Mean	df	LL	UL	Units
	F					
Iodine-129*	I129:F	< 1.91E-2	n/a	n/a	n/a	µCi/g
Iron	ICP:A	1.85E+ 04	3	1.64E+ 04	2.06E+ 04	µg/g
Iron	ICP:F	1.80E+ 04	3	1.43E+ 04	2.18E+ 04	µg/g
Iron	ICP:W	1.28E+ 02	3	7.34E+ 01	1.82E+ 02	µg/g
Lanthanum	ICP:A	4.22E+ 03	3	3.19E+ 03	5.24E+ 03	µg/g
Lanthanum	ICP:F	4.11E+ 03	3	3.05E+ 03	5.16E+ 03	µg/g
Lanthanum	ICP:W	1.10E+ 01	3	3.83E+ 00	1.82E+ 01	µg/g
Lead	ICP:A	3.47E+ 02	3	4.43E+ 01	6.49E+ 02	µg/g
Lead	ICP:F	3.65E+ 02	3	1.85E+ 02	5.45E+ 02	µg/g
Lead	ICP:TCLP/A	4.99E-1	2	2.40E-2	9.75E-1	µg/mL
Lead*	ICP:W	6.85E+ 00	3	5.55E+ 00	8.15E+ 00	µg/g
Magnesium	ICP:A	3.77E+ 02	3	2.27E+ 02	5.27E+ 02	µg/g
Magnesium	ICP:F	3.55E+ 02	3	1.98E+ 02	5.12E+ 02	µg/g
Magnesium*	ICP:W	3.64E+ 00	3	2.90E+ 00	4.38E+ 00	µg/g
Manganese	ICP:A	6.33E+ 03	3	5.91E+ 03	6.74E+ 03	µg/g
Manganese	ICP:F	6.28E+ 03	3	5.85E+ 03	6.72E+ 03	µg/g
Manganese	ICP:W	2.47E+ 01	3	1.23E+ 01	3.72E+ 01	µg/g
Mercury	CVAA (Hg)	1.43E+ 00	3	8.75E-1	1.98E+ 00	µg/g
Neptunium-237*	TIOA-TTA Extract/Alpha:F	< 3.24E-2	n/a	n/a	n/a	µCi/g
Nickel	ICP:A	1.32E+ 02	3	8.99E+ 01	1.73E+ 02	µg/g
Nickel*	ICP:W	< 1.70E+ 00	n/a	n/a	n/a	µg/g
Nickel-59	Ni:F	5.09E-5	4	2.70E-5	7.48E-5	µCi/g
Nickel-63	Ni:F	5.82E-3	4	3.12E-3	8.51E-3	µCi/g
Nitrate	IC:W	4.12E+ 04	3	3.57E+ 04	4.68E+ 04	µg/g
Nitrite*	IC:W	8.97E+ 02	3	6.19E+ 02	1.18E+ 03	µg/g
Nitrite	Spectrophotometric:W	7.93E+ 02	3	4.95E+ 02	1.09E+ 03	µg/g
Percent Water	DSC/TGA	7.65E+ 01	3	6.71E+ 01	8.59E+ 01	%
Percent Water	Gravimetric Analysis	7.60E+ 01	3	7.43E+ 01	7.77E+ 01	%
PH Measurement	pH:W	1.00E+ 01	7	9.84E+ 00	1.01E+ 01	unitless
Phosphate	IC:W	1.55E+ 04	3	1.29E+ 04	1.81E+ 04	µg/g
Phosphorus	ICP:A	1.03E+ 04	3	9.21E+ 03	1.14E+ 04	µg/g
Phosphorus	ICP:F	1.04E+ 04	3	8.61E+ 03	1.22E+ 04	µg/g

Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Composite (Sampling Dates -- October 22, 1991 - October 25, 1991, November 5, 1991 - November 7, 1991)

Analyte	Method	Mean	df	LL	UL	Units
Phosphorus	ICP:W	5.68E+ 03	3	5.24E+ 03	6.12E+ 03	µg/g
Plutonium-238*	Alpha Spec:F	< 1.05E-2	n/a	n/a	n/a	µCi/g
Plutonium-239/240	Alpha Spec:F	1.39E-1	3	1.29E-1	1.48E-1	µCi/g
Potassium	ICP:A	1.14E+ 03	3	9.84E+ 02	1.29E+ 03	µg/g
Potassium*	ICP:F	< 5.60E+ 01	n/a	n/a	n/a	µg/g
Potassium	ICP:W	7.19E+ 02	3	6.30E+ 02	8.08E+ 02	µg/g
Pu238 to Pu Isotopic Percent	Mass Spec.:F	7.50E-3	3	1.22E-3	1.38E-2	mass%
Pu239 to Pu Isotopic Percent	Mass Spec.:F	9.67E+ 01	3	9.65E+ 01	9.68E+ 01	mass%
Pu240 to Pu Isotopic Percent	Mass Spec.:F	3.24E+ 00	3	3.07E+ 00	3.40E+ 00	mass%
Pu241 to Pu Isotopic Percent	Mass Spec.:F	6.35E-2	3	1.40E-2	1.13E-1	mass%
Pu242 to Pu Isotopic Percent	Mass Spec.:F	3.46E-2	3	0.00E+ 00	7.23E-2	mass%
Selenium*	AA:A (Se)	< 1.49E+ 00	n/a	n/a	n/a	µg/g
Selenium*	ICP:A	< 8.36E+ 00	n/a	n/a	n/a	µg/g
Selenium*	ICP:F	< 3.80E+ 01	n/a	n/a	n/a	µg/g
Selenium*	ICP:TCLP /A	8.38E-1	2	0.00E+ 00	1.95E+ 00	µg/mL
Selenium*	ICP:W	< 7.69E+ 00	n/a	n/a	n/a	µg/g
Selenium-79*	Se79:F	< 9.39E-5	n/a	n/a	n/a	µCi/g
Silicon	ICP:A	4.69E+ 02	3	3.72E+ 02	5.65E+ 02	µg/g
Silicon	ICP:F	5.67E+ 03	3	5.23E+ 03	6.10E+ 03	µg/g
Silicon	ICP:W	5.72E+ 02	3	4.12E+ 02	7.31E+ 02	µg/g
Silver	ICP:A	1.26E+ 02	3	0.00E+ 00	2.90E+ 02	µg/g
Silver	ICP:F	1.28E+ 02	3	0.00E+ 00	2.93E+ 02	µg/g
Silver*	ICP:TCLP /A	5.36E-2	2	0.00E+ 00	1.50E-1	µg/mL
Silver*	ICP:W	7.15E-1	3	2.28E-1	1.20E+ 00	µg/g
Sodium	ICP:A	3.69E+ 04	3	3.43E+ 04	3.94E+ 04	µg/g
Sodium	ICP:F	3.70E+ 04	3	3.23E+ 04	4.16E+ 04	µg/g
Sodium	ICP:W	3.30E+ 04	3	2.99E+ 04	3.60E+ 04	µg/g
Strontium	ICP:A	3.00E+ 02	3	2.60E+ 02	3.41E+ 02	µg/g
Strontium	ICP:F	2.98E+ 02	3	2.73E+ 02	3.23E+ 02	µg/g
Strontium	ICP:W	1.96E+ 00	3	1.15E+ 00	2.78E+ 00	µg/g
Strontium-90	Sr89/90:F	5.41E+ 00	3	1.95E+ 00	8.87E+ 00	µCi/g
Sulfate	IC:W	3.54E+ 03	3	3.21E+ 03	3.88E+ 03	µg/g

Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Composite (Sampling Dates -- October 22, 1991 - October 25, 1991, November 5, 1991 - November 7, 1991)

Analyte	Method	Mean	df	LL	UL	Units
Sulfur	ICP:A	1.21E+ 03	3	1.13E+ 03	1.30E+ 03	µg/g
Sulfur	ICP:F	1.23E+ 03	3	1.02E+ 03	1.43E+ 03	µg/g
Sulfur	ICP:W	1.15E+ 03	3	1.05E+ 03	1.25E+ 03	µg/g
Technetium-99	Tc99:F	7.92E-3	3	2.39E-3	1.34E-2	µCi/g
Tin*	ICP:A	2.52E+ 00	3	6.62E-1	4.39E+ 00	µg/g
Tin*	ICP:F	< 7.99E+ 00	n/a	n/a	n/a	µg/g
Tin*	ICP:W	< 1.60E+ 00	n/a	n/a	n/a	µg/g
Titanium	ICP:A	1.95E+ 01	3	0.00E+ 00	4.13E+ 01	µg/g
Titanium	ICP:F	4.79E+ 01	3	2.54E+ 00	9.33E+ 01	µg/g
Titanium*	ICP:W	< 4.00E-1	n/a	n/a	n/a	µg/g
Total alpha energy emitted from Pu-238,Pu-239,Pu-240,Pu-241	Alpha:F	4.67E-1	3	2.07E-1	7.27E-1	µCi/g
Total organic carbon*	Furnace Oxidation: W	3.12E+ 03	3	1.77E+ 03	4.47E+ 03	µg/g
Tritium*	Liquid Scintillation:F	< 3.15E-4	n/a	n/a	n/a	µCi/g
U234 to U Isotopic Percent	Mass Spec.:F	6.66E-3	3	4.00E-3	9.33E-3	mass%
U235 to U Isotopic Percent	Mass Spec.:F	6.75E-1	3	6.69E-1	6.81E-1	mass%
U236 to U Isotopic Percent	Mass Spec.:F	7.06E-3	3	4.76E-3	9.37E-3	mass%
U238 to U Isotopic Percent	Mass Spec.:F	9.93E+ 01	3	9.93E+ 01	9.93E+ 01	mass%
Uranium	Laser Fluorimetry:F	3.53E+ 03	7	2.62E+ 03	4.44E+ 03	µg/g
Vanadium	ICP:A	1.45E+ 01	3	6.71E+ 00	2.23E+ 01	µg/g
Vanadium	ICP:F	1.47E+ 01	3	1.17E+ 01	1.76E+ 01	µg/g
Vanadium*	ICP:W	6.26E-1	3	3.86E-1	8.66E-1	µg/g
Weight percent solids	Percent Solids	3.01E+ 01	3	2.55E+ 01	3.48E+ 01	%
Zinc	ICP:A	6.50E+ 01	3	1.58E+ 01	1.14E+ 02	µg/g
Zinc	ICP:F	1.06E+ 02	3	9.77E+ 01	1.15E+ 02	µg/g
Zinc*	ICP:W	< 3.00E-1	n/a	n/a	n/a	µg/g
Zirconium*	ICP:A	< 8.38E-1	n/a	n/a	n/a	µg/g
Zirconium*	ICP:F	< 4.00E+ 00	n/a	n/a	n/a	µg/g

Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Composite (Sampling Dates -- October 22, 1991 - October 25, 1991, November 5, 1991 - November 7, 1991)

Analyte	Method	Mean	df	LL	UL	Units
Zirconium*	ICP:W	< 7.99E-1	n/a	n/a	n/a	µg/g

* a "less than" value was used in the calculation

Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Segment Level Data (Sampling Dates -- October 22, 1991 - October 25, 1991, November 5, 1991 - November 7, 1991)

Analyte	Method	Mean	df	LL	UL	Units
Aluminum	ICP:A	3.51E+ 02	10	2.11E+ 02	4.91E+ 02	µg/g
Americium-241	GEA:A	4.72E-2	9	1.16E-2	8.28E-2	µCi/g
Americium-241	GEA:F	2.86E-2	1	2.61E-2	3.11E-2	µCi/g
Antimony*	ICP:A	< 2.72E+ 01	n/a	n/a	n/a	µg/g
Arsenic*	ICP:A	< 3.87E+ 00	n/a	n/a	n/a	µg/g
Barium	ICP:A	1.50E+ 02	10	3.86E+ 01	2.61E+ 02	µg/g
Beryllium*	ICP:A	< 1.29E-1	n/a	n/a	n/a	µg/g
Bismuth	ICP:A	2.37E+ 04	10	1.55E+ 04	3.18E+ 04	µg/g
Boron*	ICP:A	< 3.51E+ 00	n/a	n/a	n/a	µg/g
Bulk Density	Physical Properties	1.12E+ 00	9	1.06E+ 00	1.18E+ 00	g/mL
Cadmium	ICP:A	5.47E+ 00	10	1.65E+ 00	9.28E+ 00	µg/g
Calcium	ICP:A	1.78E+ 03	10	7.64E+ 02	2.79E+ 03	µg/g
Centrifuged Solids Density	Physical Properties	1.09E+ 06	1	8.94E+ 05	1.28E+ 06	µg/mL
Centrifuged Supernate Density	Physical Properties	1.28E+ 06	1	5.18E+ 05	2.04E+ 06	µg/mL
Cerium*	ICP:A	3.84E+ 01	10	2.92E+ 01	4.76E+ 01	µg/g
Cesium-137	GEA:A	1.33E-1	9	2.63E-2	2.40E-1	µCi/g
Cesium-137	GEA:F	1.00E-2	1	6.33E-3	1.37E-2	µCi/g
Chloride	IC:W	8.48E+ 02	1	0.00E+ 00	2.06E+ 03	µg/g
Chromium	ICP:A	1.67E+ 03	10	1.18E+ 03	2.16E+ 03	µg/g
Cobalt	ICP:A	3.88E+ 00	10	2.79E+ 00	4.97E+ 00	µg/g
Cobalt-60*	GEA:A	< 1.31E-3	n/a	n/a	n/a	µCi/g
Cobalt-60*	GEA:F	< 8.15E-5	n/a	n/a	n/a	µCi/g
Copper	ICP:A	2.18E+ 01	10	3.23E-1	4.33E+ 01	µg/g
Cyanide*	CN:W	4.90E-2	1	0.00E+ 00	2.27E-1	µg/g
Cyanide	Spectrophotometer - 580 nm	3.10E+ 00	3	1.95E+ 00	4.25E+ 00	µg/g
Cyanide*	Spectrophotometer - 580 nm:W	3.02E+ 01	3	0.00E+ 00	8.07E+ 01	µg/g
Density	Physical	1.24E+ 06	1	6.63E+ 05	1.81E+ 06	µg/mL

Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Segment Level Data (Sampling Dates -- October 22, 1991 - October 25, 1991, November 5, 1991 - November 7, 1991)

Analyte	Method	Mean	df	LL	UL	Units
	Properties					
Europium-154*	GEA:A	< 4.62E-3	n/a	n/a	n/a	µCi/g
Europium-154*	GEA:F	< 2.35E-4	n/a	n/a	n/a	µCi/g
Europium-155*	GEA:A	< 6.05E-3	n/a	n/a	n/a	µCi/g
Europium-155*	GEA:F	< 2.03E-4	n/a	n/a	n/a	µCi/g
Exotherm - transition 1	DSC	3.63E+ 02	13	1.02E+ 02	6.24E+ 02	J/g
Exotherm - transition 1	DSC/TGA	8.67E+ 02	1	4.75E+ 02	1.26E+ 03	J/g
Fluoride	IC:W	4.51E+ 03	1	1.14E+ 03	7.87E+ 03	µg/g
Gross alpha	Proportional Counting: A	3.91E-1	9	2.57E-1	5.25E-1	µCi/g
Gross alpha	Proportional Counting: F	1.68E-1	1	0.00E+ 00	3.59E-1	µCi/g
Iron	ICP:A	1.59E+ 04	10	1.43E+ 04	1.75E+ 04	µg/g
Lanthanum*	ICP:A	3.72E+ 03	10	2.44E+ 03	4.99E+ 03	µg/g
Lead	ICP:A	2.64E+ 02	10	4.61E+ 01	4.81E+ 02	µg/g
Magnesium	ICP:A	3.22E+ 02	10	1.63E+ 02	4.80E+ 02	µg/g
Manganese	ICP:A	7.57E+ 03	10	2.14E+ 03	1.30E+ 04	µg/g
Nickel	ICP:A	1.08E+ 02	10	6.54E+ 01	1.50E+ 02	µg/g
Nitrate	IC:W	5.80E+ 04	1	1.73E+ 04	9.87E+ 04	µg/g
Nitrite	IC:W	7.49E+ 02	1	0.00E+ 00	1.93E+ 03	µg/g
Percent Water	DSC/TGA	6.84E+ 01	23	5.56E+ 01	8.13E+ 01	%
Percent Water	Gravimetric Analysis	7.53E+ 01	17	7.00E+ 01	8.07E+ 01	%
Phosphate	IC:W	2.75E+ 04	1	1.10E+ 04	4.40E+ 04	µg/g
Phosphorus	ICP:A	9.85E+ 03	10	6.62E+ 03	1.31E+ 04	µg/g
Potassium	ICP:A	9.40E+ 02	10	6.45E+ 02	1.23E+ 03	µg/g
Selenium*	ICP:A	< 1.00E+ 01	n/a	n/a	n/a	µg/g
Silicon	ICP:A	4.23E+ 02	10	3.83E+ 02	4.63E+ 02	µg/g
Silver	ICP:A	9.00E+ 01	10	0.00E+ 00	2.24E+ 02	µg/g
Sodium	ICP:A	3.22E+ 04	10	2.74E+ 04	3.71E+ 04	µg/g
Solid Density	Physical Properties	1.06E+ 06	15	9.87E+ 05	1.13E+ 06	µg/mL
Solid Weight	Physical Properties	1.71E+ 02	34	1.55E+ 02	1.87E+ 02	g
Strontium	ICP:A	2.96E+ 02	10	2.01E+ 02	3.91E+ 02	µg/g

Tank 241-T-111 95 Percent Two-Sided Confidence Interval for the Mean Concentration for Solid Segment Level Data (Sampling Dates -- October 22, 1991 - October 25, 1991, November 5, 1991 - November 7, 1991)

Analyte	Method	Mean	df	LL	UL	Units
Sulfate	IC:W	5.12E+ 03	1	9.60E+ 01	1.01E+ 04	µg/g
Sulfur	ICP:A	1.09E+ 03	10	8.90E+ 02	1.29E+ 03	µg/g
Tin	ICP:A	1.72E+ 01	10	1.25E+ 01	2.20E+ 01	µg/g
Titanium*	ICP:A	1.51E+ 01	10	0.00E+ 00	3.36E+ 01	µg/g
Total carbon	Persulfate Oxidation	4.52E+ 03	1	3.38E+ 03	5.66E+ 03	µg/g
Total inorganic carbon	Persulfate Oxidation	1.06E+ 03	1	1.71E+ 02	1.95E+ 03	µg/g
Total organic carbon*	Furnace Oxidation: W	2.25E+ 03	7	8.32E+ 02	3.66E+ 03	µg/g
Total organic carbon	Persulfate Oxidation	3.46E+ 03	1	3.21E+ 03	3.71E+ 03	µg/g
Vanadium	ICP:A	1.22E+ 01	10	4.80E+ 00	1.96E+ 01	µg/g
Weight percent centrifuged solids	Physical Properties	7.16E+ 01	1	1.70E+ 01	1.26E+ 02	%
Weight percent solids	Physical Properties	2.59E+ 01	1	0.00E+ 00	6.97E+ 01	%
Zinc	ICP:A	6.59E+ 01	10	0.00E+ 00	1.33E+ 02	µg/g
Zirconium*	ICP:A	< 1.02E+ 00	n/a	n/a	n/a	µg/g

* a "less than" value was used in the calculation

241-T-111 Means and Confidence Intervals

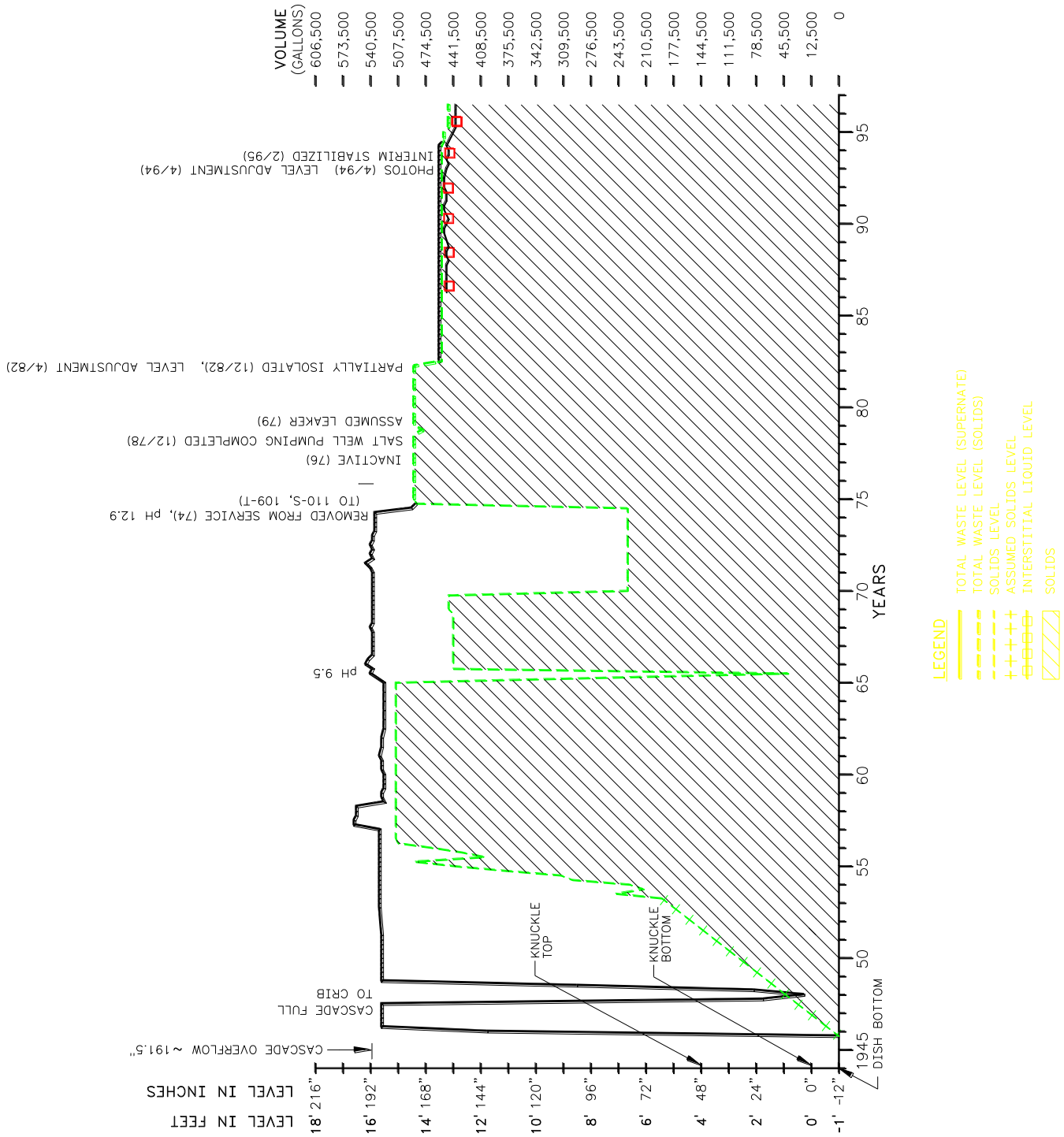
Liquid Data

No data available

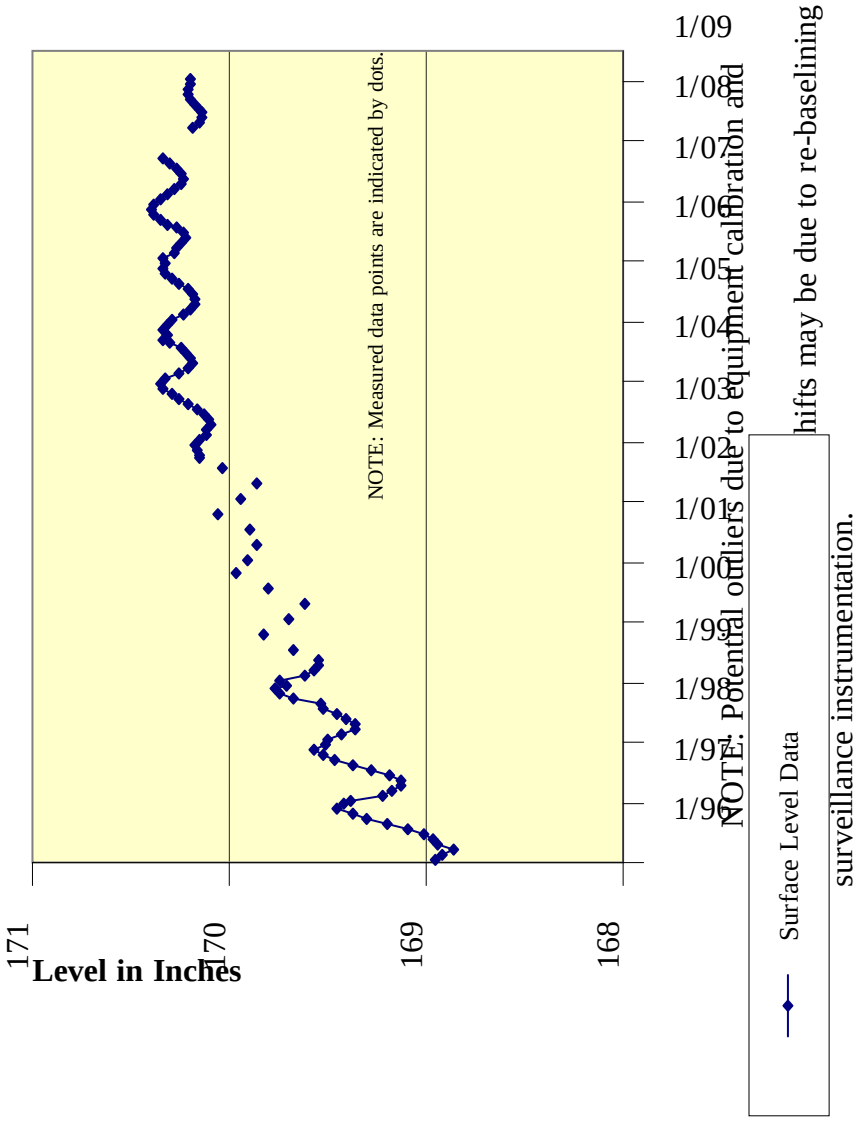
Tank 241-T-111 Transfers (1994 to present)

No transfers

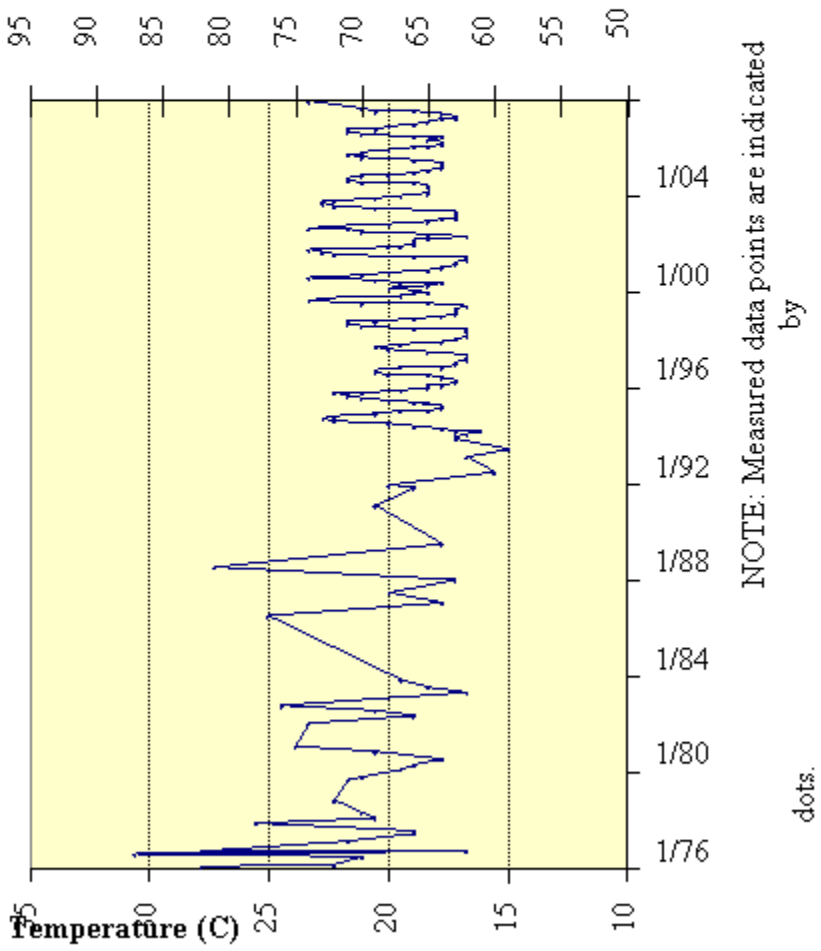
241-T-111 HTCE Surface Levels



241-T-111 Average Monthly Tank Surface Level (after 1/1/96 only)



241-T-111 Tank Temperature Profile



241-T-111 Core Profiles

No data available

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
242-A Evaporator Data Quality Objectives	Data Quality Objectives	12/4/2003	ALL	3	DQO Evaportator Rev 3 FINAL.doc
A History Of The 200 Area Tank Farms	History of 200 Area Tank Farms	6/1/1990	ALL		A History of the 200 Area Tank Farms.htm
Acrobat Version Of Historical Tank Content Estimate For The Northwest Quadrant Of The Hanford 200 West Area	HTCE Quadrant Summary Documents	5/2/1997	NW Quadrant	1	Nw_intro.pdf
Aerial Photo Of T Farm	HTCE Photos		T Farm	n/a	T-farm.htm
Analysis Plan for Tank Archive Samples for the Retrieval Performance Evaluation Process Data Quality Objectives	Tank Sampling and Analysis Plans	3/20/2002	ALL	0	RPP-10284 Rev. 0.doc
Appendix F - Drywell Overview Data For T Farm	HTCE Quadrant Summary Documents	3/1/1995	T Farm	0	Es241t1.dwg
Best Basis Inventory Process Requirements	Best-Basis Inventory	10/11/2004	ALL	7	RPP-7625 Rev 7 - Final.doc
Best-Basis Inventory Derivation: Tank 241-T-111	Recent Best Basis Derivation Text	4/14/2004	241-T-111		T-111TIR8 FY04 Q4 - final Rev 2.doc
Best-Basis Wash And Leach Factor Analysis	Best-Basis Inventory	1/4/1999	ALL	0A	D198211771.rms D198211763.rms

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Bibliographic Citations Of Process Aids (Whc-Ip-0711) Useful To Characterization Authors	Miscellaneous Characterization Documents	6/13/1997	ALL	0	procaids.wp5
Characterization Data Needs for Development, Design and Operation of Retrieval Equipment Developed through the DQO Process	Data Quality Objectives	7/31/1996	ALL	1	WHC-SD-WM-DQO-008.pdf
Chemistry Control Analysis Plan for Tank Archive Samples	Tank Sampling and Analysis Plans	2/27/2002	ALL	0-A	RPP-9906 Rev 0.doc RPP-9906 Rev. 0 Tbl 4-1 4-2.xls RPP-9906 Rev. 0A.doc RPP-9906 Rev. 0A Tbls 4-1 & 4-2.xls

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Compatibility Grab Sampling And Analysis Plan For 1997	Tank Sampling and Analysis Plans	1/15/1998	ALL	0L	TSAP115R0.rms TSAP115R0A.rms TSAP115R0B.rms TSAP115R0C.rms TSAP115R0D.rms TSAP115R0E.rms TSAP115R0F.rms TSAP115R0G.rms TSAP115R0H.rms TSAP115R0I.rms TSAP115R0J.rms TSAP115R0K.rms TSAP115R0L.rms
Compatibility Grab Sampling And Analysis Plan For 1998	Tank Sampling and Analysis Plans	9/17/1998	ALL	1	TSAP150R1A.rms TSAP150R1.rms TSAP150R1B.rms TSAP150R1C.rms

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Compatibility Grab Sampling And Analysis Plan For 1999	Tank Sampling and Analysis Plans	2/11/1999	ALL	0	HNF-3528R0.rms HNF-3528R0A.rms HNF-3528R0B.rms HNF-3528R0C.rms HNF-3528R0D.rms HNF-3528R0E.rms HNF-3528R0F.rms

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Compatibility Grab Sampling And Analysis Plan For Fiscal Year 2000	Tank Sampling and Analysis Plans	3/20/2000	ALL	0D	RPP-5570 tables 3-1 and 3-2.xls RPP-5570 R0A.doc RPP-5570 rev 0.doc RPP-5570 Rev 0B.doc RPP-5570 rev 0C.doc RPP-5570Rev.0D.doc RPP-5570Rev.0-Dtbs3-1&3-2.xls RPP-5570R0.rms RPP-5570R0A.rms RPP-5570R0B.rms RPP-5570R0C.rms RPP-5570R.0E.doc RPP-5570Rev.0F.doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Compatibility Grab Sampling and Analysis Plan for Fiscal Year 2001	Tank Sampling and Analysis Plans	1/3/2001	ALL	0-E	RPP-7023Rev0.doc RPP-7023 tbl 3-1 & 3-2.xls RPP-7023R0A.rms RPP-7023_rev0B.doc RPP-7023 rev 0-C tables 3-1 and 3-2.xls RPP-7023 rev 0-D tables 3-1 and 3-2.xls RPP-7023_rev0E.doc RPP-7023 Rev.0F.doc RPP-7023 Rev.0G.doc RPP-7023 Rev.0H.doc
Compatibility Grab Sampling and Analysis Plan for Fiscal Year 2002	Tank Sampling and Analysis Plans	5/31/2002	ALL	1	RPP-9417 Rev. 0.doc RPP-9417 Rev 0 Tbls.xls RPP-9417 Rev.1.doc RPP-9417 Rev. 1- tb.xls
Component Closure Action Data Quality Objectives for the C-200 Series Tanks	Data Quality Objectives	7/17/2003	ALL	0	DQO C-200 Series Component Clo Rev 0 FINAL.doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Data Quality Objective for Tank Farms Waste Compatibility Program	Data Quality Objectives	12/9/2003	ALL	7	DQO Comp FINAL Rev 7.doc
Data Quality Objectives for Evaluation of Ammonia in the Double-Shell Tanks	Data Quality Objectives	12/8/2003	ALL	0	DQO Ammonia vapor in DST FINAL Rev 0.doc
Data Quality Objectives for Regulatory Requirements for Dangerous Waste Sampling and Analysis	Data Quality Objectives	7/2/1999	ALL	1	HNF-SD-WM-DQO-025.pdf
Data Quality Objectives for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis	Data Quality Objectives	7/6/1999	ALL	1	WHC-SD-WM-DQO-021.pdf
Data Quality Objectives for Regulatory Requirements for Wastewater Effluents Sampling and Analysis	Data Quality Objectives	3/28/1996	ALL	0	WHC-SD-WM-DQO-024.pdf
Data Quality Objectives for Supplemental Treatment Evaluation of Saltcake Waste in Tank 241-S-112	Data Quality Objectives	9/15/2003	ALL	0	DQO Supp Treatment S-112 FINAL Rev 0 .doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Data Quality Objectives for Tank 241-U-107 Proof-of-Concept	Data Quality Objectives	11/26/2002	ALL	2	DQO U-107 Final Rev 2.doc
Data Quality Objectives for Tank Hazardous Vapor Safety Screening	Data Quality Objectives	11/15/1995	ALL	2	WHC-SD-WM-DQO-002.pdf
Data Quality Objectives for TWRS Privatization Phase 1: Tank Waste Transfer Control	Data Quality Objectives	6/5/2001	ALL	2	DQO Tank Transfer Final Rev 2.doc
Data Quality Objectives to Confirm Tank T is an Appropriate Feed Source for High Level Waste Feed Batch X	Data Quality Objectives	9/9/2002	ALL	3	HNF-1558 Rev.3.pdf
Data Quality Objectives to Confirm Tank T is an Appropriate Feed Source for Low-Activity Waste Feed Batch X	Data Quality Objectives	9/9/2002	ALL	3	HNF-1796 Rev.3.pdf
Data Quality Objectives to Support PCB Management in the Double-Shell Tanks	Data Quality Objectives	6/13/2002	ALL	3	DQO PCB FINAL Rev 3.doc
Data Quality Objectives to Support the Saltcake Dissolution Retrieval Demonstration in Tank 241-S-112	Data Quality Objectives	9/12/2001	ALL	1	DQO S-112 Final Rev 1.DOC

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Double Shell Tanks Chemistry Control Sampling and Analysis Plan for Fiscal Year 2002	Tank Sampling and Analysis Plans	4/29/2002	ALL	3	RPP-8970 Rev. 0.doc RPP-8970 Rev. 0 Tbl 4-1.xls RPP-8970 Rev.1.doc RPP-8970 Rev. 1Tbls 4-1.xls RPP-8970 Rev.2 .doc RPP-8970 Rev. 2 Tbls 4-1.xls RPP-8970 Rev. 3.doc RPP-8970 Rev. 3-Tbs 4-1.xls
Double-Shell Tank Chemistry Control Sampling And Analysis Plan for Fiscal Year 2003	Tank Sampling and Analysis Plans	2/5/2003	ALL	2	RPP-12225 Rev 0 .doc RPP-12225 Rev. 0 Tbl 4-1.xls RPP-12225 Rev 1.doc RPP-12225, Rev. 1 Tbls 4-1.xls RPP-12225 Rev. 2.doc RPP-12225 Rev. 2 Tbl 4-1.xls
Double-Shell Tanks Chemistry Control Data Quality Objectives	Data Quality Objectives	8/19/2004	ALL	5	DQO Chemistry Control Final Rev 5.doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Fiscal Year PCB Analysis Plan for Tank Archive Samples	Tank Sampling and Analysis Plans	9/30/2002	ALL	1	RPP-10070 Rev 1.doc RPP-10070 Rev. 1-Tbls 2-2 & 2-3.xls RPP-10070 Rev 0.doc RPP-10070 Rev 0-Tbls 3-1 and 3-2.xls RPP-10070 Rev. 1A.doc RPP-10070 Rev. 1A-Tbes 2-2 & 2-3.xls

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Generalized Feed Delivery Descriptions and Tank Specific Flowsheets	RPP Mission Flowsheets	10/25/2001	ALL	0	Appendix E1.doc Appendix G1.doc Appendix H.doc D177GrH.dwg RPP-8218 Rev 0 cover.doc fig1-1.doc fig3-1.TIF fig3-2.TIF fig3-3.tif fig3-4.tif fig3-5.XLS fig3-6.XLS Figure 2-1.vsd figure4-1.XLS figure4-2.XLS Table 1-1.xls ATTQ7NPF.xls RPP-8218 R0.doc
Generic Tank Profile Diagram	TCR Graphics		ALL		Generic Tank Profile.doc
Hanford Tank Chemical And Radionuclide Inventories: Hdw Model Rev. 4 (Text Portion)	Los Alamos National Laboratory Documents	1/1/1997	ALL	4	Rev4Text.doc
Hanlon Tables E-5 And E-6 In Spreadsheet Form	Miscellaneous Characterization Documents	9/7/2000	ALL	0	allhanlon.xls ATTKYIUS.xls

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Hdw Rev 4 Final Inventory Tables (Nw Quadrant)	Los Alamos National Laboratory Documents	2/5/1997	NW Quadrant	4	inventoryrev4_nw.xls
Historical Tank Content Estimate For The Northwest Quadrant Of The Hanford 200 West Area	HTCE Quadrant Summary Documents	3/1/1995	NW Quadrant	0	htcerev0.nw.htm
HTCE Quadrant Summary (Rev 0) Glossary	HTCE Quadrant Summary Documents	6/1/1994	ALL	0	Glosary.a
HTCE Quadrant Summary (Rev 1) Glossary	HTCE Quadrant Summary Documents	6/1/1996	ALL	1	Gloss_a.wpd
HTCE Supporting Documents (Appendix A, B, And D)	HTCE Quadrant Summary Documents	5/2/1997	T Farm	1	Gloss_t.wpd Refre_t.wpd Ttotal1.xls Ttotal2.xls
HTCE Supporting Documents (Appendix C And F)	HTCE Quadrant Summary Documents	5/2/1997	241-T-111	1	Itkse104.dwg T-111.dwg t111lh.xls t111rsr.xls
HTCE Surface Level History for Tank 241-T-111	HTCE Surface Level History	10/23/1998	241-T-111	N/A	T111lh.doc
Inventorytablesrev4.Xls (Agnew Hdw Model Rev 4 Inventory Tables)	Los Alamos National Laboratory Documents	2/5/1997	ALL	4	No Attachments -- see Metadata
Lanl Hanford Document Server	Los Alamos National Laboratory Documents		ALL		lanlserver.htm

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Letter of Intent for River Protection Project (RPP) Characterization Program	Tank Sampling and Analysis Plans	2/25/2000	ALL	0	D8223292.rms RPP-5539+ Letter+ of+ Instruction
Low-Activity and High-Level Waste Feed Processing Data Quality Objectives	Data Quality Objectives	4/1/1999	ALL	0	PNNL-12163.pdf
METEOROLOGICAL INFLUENCES ON VAPOR INCIDENTS IN THE 200 EAST AND 200 WEST TANK FARMS, FROM CALENDAR YEARS 2001 TO 2004	Vapor Characterization Documents	6/11/2004	ALL		MIVR 6-14 skm.pdf 7G130-JMF 04-002.pdf Distribution.pdf
Methodology For Uncertainty Estimation Of Hanford Tank Chemical And Radionuclide Inventories And Concentrations	Best-Basis Inventory	2/27/1998	ALL	NA	PNNL.11842.final.doc
Organic Complexant Topical Report	Miscellaneous Characterization Documents	6/26/1997	ALL	1	97204463NEW.rms
Particle Size Analysis of HLW Tank Sludges	Particle Size Analysis	3/4/2002	ALL	0	HNF-8862 Rev. 0.obd
PCB Analysis Plan for Tank Archive Samples	Tank Sampling and Analysis Plans	3/22/2001	ALL	0	RPP-7684 Rev. 0.doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project	Data Quality Objectives	12/1/1998	ALL	0	PNNL-12040.pdf
Retrieval Performance Evaluation Process Data Quality Objectives	Data Quality Objectives	4/25/2001	ALL	0	DQO RPE DQO FINAL.doc
Sampling And Analysis Plan For Flammable Gases In Inactive Miscellaneous Underground Storage Tanks	Tank Sampling and Analysis Plans	2/1/2000	ALL	0	RPP-5658 Rev. 0.doc RPP-5658R0.rms
Screening For Organic Solvents In Hanford Waste Tanks Using Total Non-Methane Organic Compound Vapor Concentrations	Miscellaneous Characterization Documents	2/1/1997	Tank Vapor Document		Quarter1.fnl
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes	Best-Basis Inventory	9/30/1998	ALL	Rev. 0B	Ti-740b.pt1 Ti-740b.ref TI-740b.apk
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes (Appendices A-E)	Best-Basis Inventory	8/28/1997	ALL	0	Ti-740.apa Ti-740.apb Ti-740.apc Ti-740.apd Ti-740.ape
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes (Appendices F-J)	Best-Basis Inventory	8/28/1997	ALL	0	Ti-740.apf Ti-740.apg Ti-740.aph Ti-740.api Ti-740.apj

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes (Body 1 And 2)	Best-Basis Inventory	8/28/1997	ALL	0	Ti-740.pt1 Ti-740.pt2
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes (Body 3 And Ref)	Best-Basis Inventory	8/28/1998	ALL	0	Ti-740.pt3 Ti-740.ref
Status Report: Pretreatment Chemistry Evaluation -- Wash And Leach Factors For The Single-Shell Tank Waste Inventory	Enhanced Sludge Washing	9/1/1996	Enhanced Sludge Washing Tanks		D197203511.rms
Summary of Sampling and Analytical Methods and Issues	Vapor Characterization Documents	7/9/2004	ALL	0	Summary of Sampling and Analytical Methods and Issues.doc
Summary Of Uncertainty Estimation Results For Hanford Tank Chemical And Radionuclide Inventories	Best-Basis Inventory	9/30/1998	ALL	NA	PNNL.12003.final.doc
Tank 241-C-106 Component Closure Action Data Quality Objectives	Data Quality Objectives	8/21/2003	ALL	0	DQO C-106 Comp Clos Rev 0 FINAL.doc
Tank 241-T-111 Characterization Report	Tank Characterization Reports/Best-Basis Tank Inventories	4/6/1996	241-T-111	0	Tcrt111.r0

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Tank 241-T-111 Risers	Tank Riser Information	4/30/1998	241-T-111		T111RIS.DOC
Tank 241-T-111 TCR Graphics	TCR Graphics		241-T-111		T111A22.WP6 T111GPH.WP6 T111RIS.XLS T111TMP.BMP
Tank 241-T-111 TCR Graphics- Plan View	TCR Graphics	4/30/1998	241-T-111		T111PLN.DOC
Tank Characterization Report For Single-Shell Tank 241-T-111	Tank Characterization Reports/Best-Basis Tank Inventories	3/4/1997	241-T-111	1	Sd5400a.apd Sd-540r1.wp5
Tank Characterization Report For Single-Shell Tank 241-T-111	Tank Characterization Reports/Best-Basis Tank Inventories	8/25/1997	241-T-111	1A	T-111.ECN
Tank Characterization Report For Single-Shell Tank 241-T-111	Tank Characterization Reports/Best-Basis Tank Inventories	9/18/1998	241-T-111	Rev. 1B	T-111.wpd
Tank Layering Model, Rev 4 (Tlm Part Of Hdw Rev 4)	Los Alamos National Laboratory Documents	1/1/1997	ALL	4	tlmRev4.xls
Tank Safety Screening Data Quality Objectives	Data Quality Objectives	8/31/1995	ALL	2	WHC-SD-WM-SP-004.pdf

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Tank Sampling and Analysis Plan for 241-U-301B	Tank Sampling and Analysis Plans	6/13/2003	ALL	0	RPP-16723 - U301B TSAP Rev 0.doc RPP-16723 Rev 0 Tables 4-1 and 4-2.xls
Tank Sampling and Analysis Plan for Fiscal Year 2004 PCB Analysis Plan For Tank Archive Samples	Tank Sampling and Analysis Plans	7/23/2003	ALL	2	RPP-10070 Rev 2.doc RPP-10070 Rev 2-Tables 2-2 and 2-3.xls
Tank Sampling And Analysis Plan For Vapor Tanks	Tank Sampling and Analysis Plans	8/14/2000	ALL	0-A	RPP-6264 Rev 0.doc RPP-6264 Rev 0A.doc
Tank-241-BY-Tank Safety Status Evaluation	Miscellaneous Characterization Documents	6/1/1998	ALL	0B	HNF-2177 Tank Safety Evaluations Rev 0B.doc
Test Plan For Measuring Ventilation Rates And Combustible Gas Levels In Rpp Active Catch Tanks	Tank Sampling and Analysis Plans	11/3/2000	ALL	4B	HNF-4082-Rev. 3.doc HNF-4082R3.rms HNF-4082-Rev4.doc HNF-4082-Rev4-A.doc HNF-4082-Rev4-B.doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
The Sort On Radioactive Waste Type Model: A Method To Sort Single-Shell Tanks Into Characteristic Groups	Miscellaneous Characterization Documents	3/1/1995	ALL	2	877b 877b-1 877b-2 877b-3 877b-4 877b-5 877b-6 877app1 877b-di 877b-7 97234634NEW.rms
Waste Surface Photograph Mosaic For Tank 241-T-111	HTCE Photos	4/13/1994	241-T-111	n/a	t-111.htm
Waste Tank Risers Available For Sampling - Table Updates	Tank Riser Information	2/17/1999	ALL		Rinspect.xls Historyx.xls Tanks8.xls
Wstrs Document Portion For T-111	Los Alamos National Laboratory Documents	2/5/1997	241-T-111	4	T111wstr.xls
Wstrsrev4.Xls (Agnew Wstrs Model Rev4 Data)	Los Alamos National Laboratory Documents	2/5/1997	ALL	4	No Attachments -- see Metadata

Word is the best general viewer for all of the documents found in these searches. However, document files ending in .RMS require RMIS Viewprint software which is only available to Hanford Local Area Network users. If you try to open one of these documents without the software, you will receive an error message. However, by clicking on the document title you can read a description of the document. If after reading the document description you desire a copy of a document you cannot view, contact Anne Weaver at 509 376-1418 (ANNE_L_WEAVER@RL.GOV) and a copy will be sent to you.

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
242-A Evaporator Data Quality Objectives	Data Quality Objectives	12/4/2003	ALL	3	DQO Evaportator Rev 3 FINAL.doc
A History Of The 200 Area Tank Farms	History of 200 Area Tank Farms	6/1/1990	ALL		A History of the 200 Area Tank Farms.htm
Acrobat Version Of Historical Tank Content Estimate For The Northwest Quadrant Of The Hanford 200 West Area	HTCE Quadrant Summary Documents	5/2/1997	NW Quadrant	1	Nw_intro.pdf
Aerial Photo Of T Farm	HTCE Photos		T Farm	n/a	T-farm.htm
Analysis Plan for Tank Archive Samples for the Retrieval Performance Evaluation Process Data Quality Objectives	Tank Sampling and Analysis Plans	3/20/2002	ALL	0	RPP-10284 Rev. 0.doc
Appendix F - Drywell Overview Data For T Farm	HTCE Quadrant Summary Documents	3/1/1995	T Farm	0	Es241t1.dwg
Best Basis Inventory Process Requirements	Best-Basis Inventory	10/11/2004	ALL	7	RPP-7625 Rev 7 - Final.doc
Best-Basis Inventory Derivation: Tank 241-T-111	Recent Best Basis Derivation Text	4/14/2004	241-T-111		T-111TIR8 FY04 Q4 - final Rev 2.doc
Best-Basis Wash And Leach Factor Analysis	Best-Basis Inventory	1/4/1999	ALL	0A	D198211771.rms D198211763.rms

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Bibliographic Citations Of Process Aids (Whc-Ip-0711) Useful To Characterization Authors	Miscellaneous Characterization Documents	6/13/1997	ALL	0	procaids.wp5
Characterization Data Needs for Development, Design and Operation of Retrieval Equipment Developed through the DQO Process	Data Quality Objectives	7/31/1996	ALL	1	WHC-SD-WM-DQO-008.pdf
Chemistry Control Analysis Plan for Tank Archive Samples	Tank Sampling and Analysis Plans	2/27/2002	ALL	0-A	RPP-9906 Rev 0.doc RPP-9906 Rev. 0 Tbl 4-1 4-2.xls RPP-9906 Rev. 0A.doc RPP-9906 Rev. 0A Tbls 4-1 & 4-2.xls

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Compatibility Grab Sampling And Analysis Plan For 1997	Tank Sampling and Analysis Plans	1/15/1998	ALL	0L	TSAP115R0.rms TSAP115R0A.rms TSAP115R0B.rms TSAP115R0C.rms TSAP115R0D.rms TSAP115R0E.rms TSAP115R0F.rms TSAP115R0G.rms TSAP115R0H.rms TSAP115R0I.rms TSAP115R0J.rms TSAP115R0K.rms TSAP115R0L.rms
Compatibility Grab Sampling And Analysis Plan For 1998	Tank Sampling and Analysis Plans	9/17/1998	ALL	1	TSAP150R1A.rms TSAP150R1.rms TSAP150R1B.rms TSAP150R1C.rms

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Compatibility Grab Sampling And Analysis Plan For 1999	Tank Sampling and Analysis Plans	2/11/1999	ALL	0	HNF-3528R0.rms HNF-3528R0A.rms HNF-3528R0B.rms HNF-3528R0C.rms HNF-3528R0D.rms HNF-3528R0E.rms HNF-3528R0F.rms

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Compatibility Grab Sampling And Analysis Plan For Fiscal Year 2000	Tank Sampling and Analysis Plans	3/20/2000	ALL	0D	RPP-5570 tables 3-1 and 3-2.xls RPP-5570 R0A.doc RPP-5570 rev 0.doc RPP-5570 Rev 0B.doc RPP-5570 rev 0C.doc RPP-5570Rev.0D.doc RPP-5570Rev.0-Dtbs3-1&3-2.xls RPP-5570R0.rms RPP-5570R0A.rms RPP-5570R0B.rms RPP-5570R0C.rms RPP-5570R.0E.doc RPP-5570Rev.0F.doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Compatibility Grab Sampling and Analysis Plan for Fiscal Year 2001	Tank Sampling and Analysis Plans	1/3/2001	ALL	0-E	RPP-7023Rev0.doc RPP-7023 tbl 3-1 & 3-2.xls RPP-7023R0A.rms RPP-7023_rev0B.doc RPP-7023 rev 0-C tables 3-1 and 3-2.xls RPP-7023 rev 0-D tables 3-1 and 3-2.xls RPP-7023_rev0E.doc RPP-7023 Rev.0F.doc RPP-7023 Rev.0G.doc RPP-7023 Rev.0H.doc
Compatibility Grab Sampling and Analysis Plan for Fiscal Year 2002	Tank Sampling and Analysis Plans	5/31/2002	ALL	1	RPP-9417 Rev. 0.doc RPP-9417 Rev 0 Tbls.xls RPP-9417 Rev.1.doc RPP-9417 Rev. 1- tb.xls
Component Closure Action Data Quality Objectives for the C-200 Series Tanks	Data Quality Objectives	7/17/2003	ALL	0	DQO C-200 Series Component Clo Rev 0 FINAL.doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Data Quality Objective for Tank Farms Waste Compatibility Program	Data Quality Objectives	12/9/2003	ALL	7	DQO Comp FINAL Rev 7.doc
Data Quality Objectives for Evaluation of Ammonia in the Double-Shell Tanks	Data Quality Objectives	12/8/2003	ALL	0	DQO Ammonia vapor in DST FINAL Rev 0.doc
Data Quality Objectives for Regulatory Requirements for Dangerous Waste Sampling and Analysis	Data Quality Objectives	7/2/1999	ALL	1	HNF-SD-WM-DQO-025.pdf
Data Quality Objectives for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis	Data Quality Objectives	7/6/1999	ALL	1	WHC-SD-WM-DQO-021.pdf
Data Quality Objectives for Regulatory Requirements for Wastewater Effluents Sampling and Analysis	Data Quality Objectives	3/28/1996	ALL	0	WHC-SD-WM-DQO-024.pdf
Data Quality Objectives for Supplemental Treatment Evaluation of Saltcake Waste in Tank 241-S-112	Data Quality Objectives	9/15/2003	ALL	0	DQO Supp Treatment S-112 FINAL Rev 0 .doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Data Quality Objectives for Tank 241-U-107 Proof-of-Concept	Data Quality Objectives	11/26/2002	ALL	2	DQO U-107 Final Rev 2.doc
Data Quality Objectives for Tank Hazardous Vapor Safety Screening	Data Quality Objectives	11/15/1995	ALL	2	WHC-SD-WM-DQO-002.pdf
Data Quality Objectives for TWRS Privatization Phase 1: Tank Waste Transfer Control	Data Quality Objectives	6/5/2001	ALL	2	DQO Tank Transfer Final Rev 2.doc
Data Quality Objectives to Confirm Tank T is an Appropriate Feed Source for High Level Waste Feed Batch X	Data Quality Objectives	9/9/2002	ALL	3	HNF-1558 Rev.3.pdf
Data Quality Objectives to Confirm Tank T is an Appropriate Feed Source for Low-Activity Waste Feed Batch X	Data Quality Objectives	9/9/2002	ALL	3	HNF-1796 Rev.3.pdf
Data Quality Objectives to Support PCB Management in the Double-Shell Tanks	Data Quality Objectives	6/13/2002	ALL	3	DQO PCB FINAL Rev 3.doc
Data Quality Objectives to Support the Saltcake Dissolution Retrieval Demonstration in Tank 241-S-112	Data Quality Objectives	9/12/2001	ALL	1	DQO S-112 Final Rev 1.DOC

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Double Shell Tanks Chemistry Control Sampling and Analysis Plan for Fiscal Year 2002	Tank Sampling and Analysis Plans	4/29/2002	ALL	3	RPP-8970 Rev. 0.doc RPP-8970 Rev. 0 Tbl 4-1.xls RPP-8970 Rev.1.doc RPP-8970 Rev. 1Tbls 4-1.xls RPP-8970 Rev.2 .doc RPP-8970 Rev. 2 Tbls 4-1.xls RPP-8970 Rev. 3.doc RPP-8970 Rev. 3-Tbs 4-1.xls
Double-Shell Tank Chemistry Control Sampling And Analysis Plan for Fiscal Year 2003	Tank Sampling and Analysis Plans	2/5/2003	ALL	2	RPP-12225 Rev 0 .doc RPP-12225 Rev. 0 Tbl 4-1.xls RPP-12225 Rev 1.doc RPP-12225, Rev. 1 Tbls 4-1.xls RPP-12225 Rev. 2.doc RPP-12225 Rev. 2 Tbl 4-1.xls
Double-Shell Tanks Chemistry Control Data Quality Objectives	Data Quality Objectives	8/19/2004	ALL	5	DQO Chemistry Control Final Rev 5.doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Fiscal Year PCB Analysis Plan for Tank Archive Samples	Tank Sampling and Analysis Plans	9/30/2002	ALL	1	RPP-10070 Rev 1.doc RPP-10070 Rev. 1-Tbls 2-2 & 2-3.xls RPP-10070 Rev 0.doc RPP-10070 Rev 0-Tbls 3-1 and 3-2.xls RPP-10070 Rev. 1A.doc RPP-10070 Rev. 1A-Tbes 2-2 & 2-3.xls

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Generalized Feed Delivery Descriptions and Tank Specific Flowsheets	RPP Mission Flowsheets	10/25/2001	ALL	0	Appendix E1.doc Appendix G1.doc Appendix H.doc D177GrH.dwg RPP-8218 Rev 0 cover.doc fig1-1.doc fig3-1.TIF fig3-2.TIF fig3-3.tif fig3-4.tif fig3-5.XLS fig3-6.XLS Figure 2-1.vsd figure4-1.XLS figure4-2.XLS Table 1-1.xls ATTQ7NPF.xls RPP-8218 R0.doc
Generic Tank Profile Diagram	TCR Graphics		ALL		Generic Tank Profile.doc
Hanford Tank Chemical And Radionuclide Inventories: Hdw Model Rev. 4 (Text Portion)	Los Alamos National Laboratory Documents	1/1/1997	ALL	4	Rev4Text.doc
Hanlon Tables E-5 And E-6 In Spreadsheet Form	Miscellaneous Characterization Documents	9/7/2000	ALL	0	allhanlon.xls ATTKYIUS.xls

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Hdw Rev 4 Final Inventory Tables (Nw Quadrant)	Los Alamos National Laboratory Documents	2/5/1997	NW Quadrant	4	inventoryrev4_nw.xls
Historical Tank Content Estimate For The Northwest Quadrant Of The Hanford 200 West Area	HTCE Quadrant Summary Documents	3/1/1995	NW Quadrant	0	htcerev0.nw.htm
HTCE Quadrant Summary (Rev 0) Glossary	HTCE Quadrant Summary Documents	6/1/1994	ALL	0	Glosary.a
HTCE Quadrant Summary (Rev 1) Glossary	HTCE Quadrant Summary Documents	6/1/1996	ALL	1	Gloss_a.wpd
HTCE Supporting Documents (Appendix A, B, And D)	HTCE Quadrant Summary Documents	5/2/1997	T Farm	1	Gloss_t.wpd Refre_t.wpd Ttotal1.xls Ttotal2.xls
HTCE Supporting Documents (Appendix C And F)	HTCE Quadrant Summary Documents	5/2/1997	241-T-111	1	Itkse104.dwg T-111.dwg t111lh.xls t111rsr.xls
HTCE Surface Level History for Tank 241-T-111	HTCE Surface Level History	10/23/1998	241-T-111	N/A	T111lh.doc
Inventorytablesrev4.Xls (Agnew Hdw Model Rev 4 Inventory Tables)	Los Alamos National Laboratory Documents	2/5/1997	ALL	4	No Attachments -- see Metadata
Lanl Hanford Document Server	Los Alamos National Laboratory Documents		ALL		lanlserver.htm

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Letter of Intent for River Protection Project (RPP) Characterization Program	Tank Sampling and Analysis Plans	2/25/2000	ALL	0	D8223292.rms RPP-5539+ Letter+ of+ Instruction
Low-Activity and High-Level Waste Feed Processing Data Quality Objectives	Data Quality Objectives	4/1/1999	ALL	0	PNNL-12163.pdf
METEOROLOGICAL INFLUENCES ON VAPOR INCIDENTS IN THE 200 EAST AND 200 WEST TANK FARMS, FROM CALENDAR YEARS 2001 TO 2004	Vapor Characterization Documents	6/11/2004	ALL		MIVR 6-14 skm.pdf 7G130-JMF 04-002.pdf Distribution.pdf
Methodology For Uncertainty Estimation Of Hanford Tank Chemical And Radionuclide Inventories And Concentrations	Best-Basis Inventory	2/27/1998	ALL	NA	PNNL.11842.final.doc
Organic Complexant Topical Report	Miscellaneous Characterization Documents	6/26/1997	ALL	1	97204463NEW.rms
Particle Size Analysis of HLW Tank Sludges	Particle Size Analysis	3/4/2002	ALL	0	HNF-8862 Rev. 0.obd
PCB Analysis Plan for Tank Archive Samples	Tank Sampling and Analysis Plans	3/22/2001	ALL	0	RPP-7684 Rev. 0.doc

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project	Data Quality Objectives	12/1/1998	ALL	0	PNNL-12040.pdf
Retrieval Performance Evaluation Process Data Quality Objectives	Data Quality Objectives	4/25/2001	ALL	0	DQO RPE DQO FINAL.doc
Sampling And Analysis Plan For Flammable Gases In Inactive Miscellaneous Underground Storage Tanks	Tank Sampling and Analysis Plans	2/1/2000	ALL	0	RPP-5658 Rev. 0.doc RPP-5658R0.rms
Screening For Organic Solvents In Hanford Waste Tanks Using Total Non-Methane Organic Compound Vapor Concentrations	Miscellaneous Characterization Documents	2/1/1997	Tank Vapor Document		Quarter1.fnl
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes	Best-Basis Inventory	9/30/1998	ALL	Rev. 0B	Ti-740b.pt1 Ti-740b.ref TI-740b.apk
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes (Appendices A-E)	Best-Basis Inventory	8/28/1997	ALL	0	Ti-740.apa Ti-740.apb Ti-740.apc Ti-740.apd Ti-740.ape
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes (Appendices F-J)	Best-Basis Inventory	8/28/1997	ALL	0	Ti-740.apf Ti-740.apg Ti-740.aph Ti-740.api Ti-740.apj

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes (Body 1 And 2)	Best-Basis Inventory	8/28/1997	ALL	0	Ti-740.pt1 Ti-740.pt2
Standard Inventories Of Chemicals And Radionuclides In Hanford Site Tank Wastes (Body 3 And Ref)	Best-Basis Inventory	8/28/1998	ALL	0	Ti-740.pt3 Ti-740.ref
Status Report: Pretreatment Chemistry Evaluation -- Wash And Leach Factors For The Single-Shell Tank Waste Inventory	Enhanced Sludge Washing	9/1/1996	Enhanced Sludge Washing Tanks		D197203511.rms
Summary of Sampling and Analytical Methods and Issues	Vapor Characterization Documents	7/9/2004	ALL	0	Summary of Sampling and Analytical Methods and Issues.doc
Summary Of Uncertainty Estimation Results For Hanford Tank Chemical And Radionuclide Inventories	Best-Basis Inventory	9/30/1998	ALL	NA	PNNL.12003.final.doc
Tank 241-C-106 Component Closure Action Data Quality Objectives	Data Quality Objectives	8/21/2003	ALL	0	DQO C-106 Comp Clos Rev 0 FINAL.doc
Tank 241-T-111 Characterization Report	Tank Characterization Reports/Best-Basis Tank Inventories	4/6/1996	241-T-111	0	Tcrt111.r0

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Metadata	Document Type	Date	Scope	Revision	Attachments
Tank 241-T-111 Risers	Tank Riser Information	4/30/1998	241-T-111		T111RIS.DOC
Tank 241-T-111 TCR Graphics	TCR Graphics		241-T-111		T111A22.WP6 T111GPH.WP6 T111RIS.XLS T111TMP.BMP
Tank 241-T-111 TCR Graphics- Plan View	TCR Graphics	4/30/1998	241-T-111		T111PLN.DOC
Tank Characterization Report For Single-Shell Tank 241-T-111	Tank Characterization Reports/Best-Basis Tank Inventories	3/4/1997	241-T-111	1	Sd5400a.apd Sd-540r1.wp5
Tank Characterization Report For Single-Shell Tank 241-T-111	Tank Characterization Reports/Best-Basis Tank Inventories	8/25/1997	241-T-111	1A	T-111.ECN
Tank Characterization Report For Single-Shell Tank 241-T-111	Tank Characterization Reports/Best-Basis Tank Inventories	9/18/1998	241-T-111	Rev. 1B	T-111.wpd
Tank Layering Model, Rev 4 (Tlm Part Of Hdw Rev 4)	Los Alamos National Laboratory Documents	1/1/1997	ALL	4	tlmRev4.xls
Tank Safety Screening Data Quality Objectives	Data Quality Objectives	8/31/1995	ALL	2	WHC-SD-WM-SP-004.pdf

Tank 241-T-111 Data Source Reference List

Metadata	Document Type	Date	Scope	Revision	Attachments
Tank Sampling and Analysis Plan for 241-U-301B	Tank Sampling and Analysis Plans	6/13/2003	ALL	0	RPP-16723 - U301B TSAP Rev 0.doc RPP-16723 Rev 0 Tables 4-1 and 4-2.xls
Tank Sampling and Analysis Plan for Fiscal Year 2004 PCB Analysis Plan For Tank Archive Samples	Tank Sampling and Analysis Plans	7/23/2003	ALL	2	RPP-10070 Rev 2.doc RPP-10070 Rev 2-Tables 2-2 and 2-3.xls
Tank Sampling And Analysis Plan For Vapor Tanks	Tank Sampling and Analysis Plans	8/14/2000	ALL	0-A	RPP-6264 Rev 0.doc RPP-6264 Rev 0A.doc
Tank-241-BY-Tank Safety Status Evaluation	Miscellaneous Characterization Documents	6/1/1998	ALL	0B	HNF-2177 Tank Safety Evaluations Rev 0B.doc
Test Plan For Measuring Ventilation Rates And Combustible Gas Levels In Rpp Active Catch Tanks	Tank Sampling and Analysis Plans	11/3/2000	ALL	4B	HNF-4082-Rev. 3.doc HNF-4082R3.rms HNF-4082-Rev4.doc HNF-4082-Rev4-A.doc HNF-4082-Rev4-B.doc

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Metadata	Document Type	Date	Scope	Revision	Attachments
The Sort On Radioactive Waste Type Model: A Method To Sort Single-Shell Tanks Into Characteristic Groups	Miscellaneous Characterization Documents	3/1/1995	ALL	2	877b 877b-1 877b-2 877b-3 877b-4 877b-5 877b-6 877app1 877b-di 877b-7 97234634NEW.rms
Waste Surface Photograph Mosaic For Tank 241-T-111	HTCE Photos	4/13/1994	241-T-111	n/a	t-111.htm
Waste Tank Risers Available For Sampling - Table Updates	Tank Riser Information	2/17/1999	ALL		Rinspect.xls Historyx.xls Tanks8.xls
Wstrs Document Portion For T-111	Los Alamos National Laboratory Documents	2/5/1997	241-T-111	4	T111wstr.xls
Wstrsrev4.Xls (Agnew Wstrs Model Rev4 Data)	Los Alamos National Laboratory Documents	2/5/1997	ALL	4	No Attachments -- see Metadata

Word is the best general viewer for all of the documents found in these searches. However, document files ending in .RMS require RMIS Viewprint software which is only available to Hanford Local Area Network users. If you try to open one of these documents without the software, you will receive an error message. However, by clicking on the document title you can read a description of the document. If after reading the document description you desire a copy of a document you cannot view, contact Anne Weaver at 509 376-1418 (ANNE_L_WEAVER@RL.GOV) and a copy will be sent to you.

Tank 241-T-111 Dilution and Mixing Studies

No data available

Tank 241-T-111 Dilution and Mixing Studies

No data available

Standard Acronym Definitions

Acronym	Definition
%	percent
1C	first cycle decontamination waste
AEA	alpha energy analysis
ANOVA	analysis of variance
AT	alpha total
BBI	Best-basis inventory
BBIM	Best-basis inventory maintenance
BD	below detection limit
BNFL	British Nuclear Fuel Limited, Inc.
BPE	barometric pressure estimate
Btu/hr	British thermal units per hour
BYSltCk	saltcake blend from ITS in BY Tank Farm
CAS	Chemical Abstract Services
CC	concentrated complexant
CEO	change engineering order
CGM	combustible gas meter
CHG	CH2M Hill Hanford Group, Inc.
Ci	curies
CI	confidence interval
Ci/g	curies per gram
Ci/L	curies per liter
cm	centimeter
cm^3	cubic centimeter
cP	centipoise
CRW1	REDOX cladding waste
CWHT	concentrated waste holding tank
DCB	decachlorobyphenyl
df	degrees of freedom
dl	drainable liquid
DOE	U.S. Department of Energy
DQO	data quality objectives
DSA	data source access
DSC	differential scanning calorimetry
DSS	double-shell slurry
DSSF	double-shell slurry feed

Standard Acronym Definitions

Acronym	Definition
DST	double-shell tank
E	engineering assessment-based
EB	evaporator bottoms
Ecology	Washington State Department of Ecology
EVAP	evaporator feed waste
FIC	Food Instrument Corporation
FP	fission product waste from cesium and strontium recovery in B-Plant
ft	feet
ft^2	square feet
ft^3/hr	cubic feet per hour
ft^3/min	cubic feet per minute
g	gram
g/cc	grams per cubic centimeter
g/cm^3	grams per cubic centimeter
g/gal	grams per gallon
g/L	grams per liter
g/mL	grams per milliliter
GC	gas chromatographs
GCS	gas characterization system
GEA	gravimetric energy analysis
GRE	gas release event
μC/mL	micrograms of carbon per milliliter
μCi/g	microcuries per gram
μCi/gal	microcuries per gallon
μCi/L	microcuries per liter
μCi/mL	microcuries per milliliter
μeq/g	microequivalents per gram
μeq/mL	microequivalents per milliliter
μg	microgram
μg/g	micrograms per gram
μg/ml	micrograms per milliliter
μgC/g	micrograms of carbon per gram
μmol	micromole
μmol/L	micromoles per liter

Standard Acronym Definitions

Acronym	Definition
HDW	Hanford defined waste
HHF	Hydrostatic head fluid
HLAN	Hanford local area network
HTCE	historical tank content estimate
IC	ion chromatography
ICP	inductively coupled plasma spectroscopy
ICP/AES	inductively coupled plasma/atomic emission spectrometry
ICP/MS	inductively coupled plasma/mass spectroscopy
IH	Industrial Hygiene
in.	inch
IS	insufficient sample
ITS	in-tank solidification
IX	ion exchange waste
J/g	joules per gram
kg	kilogram
kgal	kilogallon
kL	kiloliter
kW	kilowatt
LANL	Los Alamos National Laboratory
LAW	low activity waste
LCS	laboratory control standard
LEL	lower explosive limit
LFL	lower flammability limit
LH	lower half
LL	lower limit
LMHC	Lockheed Martin Hanford Corporation
LOI	letter of instruction
LOW	liquid observation well
m	meter
M	Hanford defined waste model-based
M/L	moles per liter
MDA	minimum detectable activity
mg	milligram
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter

Standard Acronym Definitions

Acronym	Definition
MIT	multi-functional instrument tree
mL	milliliter
mm	millimeter
MOU	memorandum of understanding
mRad/hr	millirad per hour
MRQ	minimum reportable quantity
m^2	square meter
m^3	cubic meter
m^3/hr	cubic meters per hour
MW	metal waste
n/a	not applicable
n/d	not detected
n/d	not determined
N/D	not determined
n/r	not reported
NA	not available
NCPLX	non-complexed
NF	not found
NR	not reported
NR	not required
NR	not requested
ORNL	Oak Ridge National Laboratory
ORP	Office of River Protection
OVM	organic vapor monitor
OWW	organic wash waste
PCB	polychlorinated biphenyl
pH	potential of hydrogen
PHMC	Project Hanford Management Contractor
PNNL	Pacific Northwest National Laboratory
ppm	parts per million
ppmv	parts per million by volume
PRSST	propagating reactive system screening test
PUREX	Plutonium Uranium Extraction
QC	quality control
R1	REDOX high-level waste generated from 1952 to 1957

Standard Acronym Definitions

Acronym	Definition
rad/hr	radiation absorbed dose per hour
REDOX	Reduction and Oxidation
REML	restricted maximum likelihood estimation methods
RGS	retained gas sampler
RPD	relative percent difference
RPP	River Protection Project
RR	re-run
RSD	relative standard deviation
S	sample-based
SACS	Surveillance Analysis Computer System
SAP	sampling and analysis plan
SD	standard deviation
SHMS	standard hydrogen monitoring systems
SMM	supernatant mixing model
SMMS	supernatant mixing model saltcake
SMMS1	SMM 242-S evaporator saltcake generated from 1973 until 1976
SMMS2	SMM 242-S evaporator saltcake generated from 1977 until 1980
SpG	specific gravity
^{o}C	degrees centigrade
^{o}F	degrees Fahrenheit
SST	single-shell tank
STP	standard temperature and pressure
SU	supernatant
SVOA	semi-volatile organic analysis
SWLIQ	dilute, non-complexed waste from 200-E Area single-shell tanks
T1SltCk	242-T evaporator saltcake waste, 1951 to 1955
TB	total beta
TBP	tributyl phosphate
TCD	tank characterization database
TCP	tank characterization plan
TCR	tank characterization report
TCX	tetrachloro-m-xylene
TGA	thermogravimetric analysis
TIC	total inorganic carbon
TIR	tank interpretive report

Standard Acronym Definitions

Acronym	Definition
TLM	tank layer model
TOC	total organic carbon
TRU	transuranic
TSAP	Tank Sampling and Analysis Plan
TWINS	Tank Waste Information Network System
TWRS	Tank Waste Remediation System
UH	upper half
UL	upper limit
VFI	void fraction instrument
VIDON	Visual Image Digital Object Network
vol%	volume percent
VSS	vapor sampling system
W	watts
W/Ci	watts per curie
W/L	watts per liter
WHC	Westinghouse Hanford Company
WIT	Waste Disposal Integration Team
WSTRS	waste status and transaction record summary
wt%	weight percent