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Tank Characterization Report for Single-Shell Tanks 241-T-201, 241-T-202, 241-T-203, and 241-T-204

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Abstract: This document summarizes the information on the historical uses, present status, and the sampling and analysis results of waste stored in Tanks 241-T-201, 241-T-202, 241-T-203, and 241-T-204. This report supports the requirements of the Tri-Party Agreement Milestone M-44-15B.

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Tank Characterization Report for Single-Shell Tanks 241-T-201, -T-202, -T-203, and -T-204

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Lockheed Martin Hanford Corp.

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LIST OF TERMS

Btu/hr	British thermal units per hour
Ci	curie
Ci/L	curies per liter
CI	confidence interval
cm	centimeter
DQO	data quality objective
DSC	differential scanning calorimetry
ft	feet
ft^2	square feet
g	gram
g/cm^3	grams per cubic centimeter
g/L	grams per liter
g/mL	grams per milliliter
GEA	gamma energy analysis
HDW	Hanford defined waste
HTCE	historical tank content estimate
IC	ion chromatography
ICP	inductively coupled plasma
ICP/AES	inductively coupled plasma/atomic emission spectroscopy
in.	inch
J/g	joules per gram
kg	kilogram
kg/L	kilograms per liter
kgal	kilogallon
kL	kiloliter
kW	kilowatt
LFL	lower flammability limit
LL	lower limit
m	meter
mg	milligram
m^2	square meters
M	moles
mL	milliliter
MOU	Memorandum of Understanding
mm	millimeter
n/a	not applicable
NA	not available
NR	not requested
n/r	not reported
PHMC	Project Hanford Management Contractor

LIST OF TERMS (Continued)

ppm	parts per million
QC	quality control
RPD	relative percent difference
SMM	supernatant mixing model
SpG	specific gravity
TCR	tank characterization report
TGA	thermogravimetric analysis
TIC	total inorganic carbon
TLM	tank layer model
TOC	total organic carbon
TWRS	Tank Waste Remediation System
UL	upper limit
W	watt
WSTRS	Waste Status and Transaction Record Summary
wt%	weight percent
%	percent
°C	degrees Celsius
°F	degrees Fahrenheit
μCi/g	microcuries per gram
μCi/mL	microcuries per milliliter
μeq/g	microequivalents per gram
μg/g	micrograms per gram

1.0 INTRODUCTION

A major function of the Tank Waste Remediation System (TWRS) is to characterize waste in support of waste management and disposal activities at the Hanford Site. Analytical data from sampling and analysis, in addition to other available information about a tank are compiled and maintained in a tank characterization report (TCR). This report and its appendices serve as the TCR for the single-shell tank series consisting of tanks 241-T-201, -T-202, -T-203, and -T-204.

The objectives of this report are 1) to use characterization data in response to technical issues associated with T-200 series tank waste and 2) to provide a standard characterization of this waste in terms of a best-basis inventory estimate. Section 2.0 summarizes the response to technical issues, Section 3.0 shows the best-basis inventory estimate, Section 4.0 makes recommendations about the safety status of the tank and additional sampling needs. The appendices contain supporting data and information. This report supports the requirements of the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1997) Milestone M-44-15B, change request M-44-97-03, to "issue characterization deliverables consistent with *Waste Information Requirements Document* developed for 1998."

1.1 SCOPE

The characterization information in this report originated from sample analyses and known historical sources. The results of recent sample events will be used to fulfill the requirements of the data quality objectives (DQOs). The sampling and analytical protocols for each tank are documented in a specific tank sampling and analysis plan (Hu [1997], Bell [1997], Schreiber [1997c], and Winkleman [1997]). The results of the 1997 sampling events are reported in the specific laboratory data package for each tank (Nuzum [1997a], Esch [1997], Steen [1997], and Nuzum [1997b]). Other information can be used to support conclusions derived from these results.

Appendix A contains historical information for tanks 241-T-201 to T-204, including surveillance information, records pertaining to waste transfers and tank operations, and expected tank contents derived from a process knowledge-based computer program. Appendix B summarizes sampling events (see Table 1-1), sample data obtained before 1989, and the most current sampling results. The laboratory analyses performed on each tank satisfied the data requirements specified in Brown et al. (1997). Appendix C reports the statistical analysis and numerical manipulation of data used in issue resolution. Appendix D contains the evaluation to establish the best basis for the inventory estimate and the statistical analysis performed for this evaluation. Appendix E is a bibliography that resulted from an in-depth literature search of all known information sources applicable to tanks 241-T-201, -T-202, -T-203, and -T-204. The reports listed in Appendix E are available in the Tank Characterization and Safety Resource Center.

Table 1-1. Summary of Recent Sampling.

Sample	Phase	Location	Segmentation	% Recovery
Combustible gas test (Each tank)	Gas	Tank headspace, Riser 3, 4.6 m (15 ft) below top of riser	n/a	n/a
Push Core 192 241-T-201	Solid/liquid	Riser 3	8 segments; 5 liquid, 3 solid. Upper half and lower half on solids	90%
Push Core 191 241-T-202	Solid/sludge	Riser 3	5 segments, upper half and lower half	91%
Push Core 190 241-T-203	Solid/sludge	Riser 3	9 segments, upper half and lower half	98%
Push Core 188 241-T-204	Solid/sludge	Riser 3	10 segments, upper half and lower half	88%

Note:
n/a = not applicable

1.2 TANK BACKGROUND

Tanks 241-T-201, T-202, T-203, and T-204 are located in the 200 West Area T Tank Farm on the Hanford Site. Tank 241-T-201 is not part of any tank cascade. Tanks 241-T-202, T-203, and T-204 are not cascaded but are connected together by tie lines. The tanks went into service in 1952, receiving lanthanum fluoride (224) waste from T-Plant. The tanks were filled later that year. The only other transfer of waste associated with these tanks occurred in 1976 and 1977 when liquids were pumped from the tanks in support of stabilization efforts. Final stabilization occurred in 1981 (Brevick et al. 1997).

Table 1-2 summarizes the description of tanks 241-T-201, T-202, T-203, and T-204, based on Hanlon (1997). Each tank has an operating capacity of 208 kL (55 kgal). These tanks are not on the Watch List (Public Law 101-510).

Table 1-2. Description of T-200 Series Tanks.

TANK DESCRIPTION				
Type				Single-shell
Constructed				1943-1944
In service				1952
Diameter				6.1 m (20 ft)
Operating depth				7.8 m (25.5 ft)
Capacity				208 kL (55 kgal)
Bottom shape				Dish
Ventilation				Passive
TANK STATUS				
	241-T-201	241-T-202	241-T-203	241-T-204
Waste classification	Noncomplexed	Noncomplexed	Noncomplexed	Noncomplexed
Total waste volume	110 kL (29 kgal)	79 kL (21 kgal)	132 kL (35 kgal)	144 kL (38 kgal)
Supernatant volume	3.8 kL (1 kgal)	0 kL (0 kgal)	0 kL (0 kgal)	0 kL (0 kgal)
Sludge volume	106 kL (28 kgal)	79 kL (21 kgal)	132 kL (35 kgal)	144 kL (38 kgal)
Drainable interstitial liquid volume	11 kL (3 kgal)	8 kL (2 kgal)	15 kL (4 kgal)	15 kL (4 kgal)
Waste surface level	4.1 m (162 in.)	2.7 m (105 in.)	4.7 m (188 in.)	4.9 m (194 in.)
Avg. temperature[1]	17 °C (62 °F)	17 °C (62 °F)	17 °C (62 °F)	17 °C (63 °F)
Integrity	Sound	Sound	Sound	Sound
Watch List	None	None	None	None
SAMPLING DATE				
Core samples	4/24/97[2]	4/21/97[2]	4/16/97[2]	3/27/97[2]
SERVICE STATUS				
Declared inactive	1976	1976	1976	1976
Interim stabilization	1981	1981	1981	1981
Intrusion prevention	1981	1981	1981	1981

Note:

[1]From March 1975 to April 1997

[2]Dates are shown in mm/dd/yy format.

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2.0 RESPONSE TO TECHNICAL ISSUES

Four technical issues have been identified for the T-200 series tanks (Brown et al. 1997 and Schreiber 1997b).

- **Safety screening:** Does the waste pose or contribute to any recognized potential safety problems?
- **Hazardous vapor screening:** Do hazardous storage conditions exist associated with gases and vapors in the tank?
- **Organic complexants:** Does the possibility exist for a point source ignition in the waste followed by a propagation of the reaction in the solid/liquid phase of the waste?
- **Organic solvents:** Does an organic solvent pool exist that may cause a fire or ignition of organic solvents in entrained waste solids?

Brown et al. (1997) provides the types of sampling and analysis used to address the above issues. Data from the analysis of push core samples, tank vapor space measurements, and available historical information provided the means to respond to the technical issues. Sections 2.1 and 2.2 present the response. See Appendix B for sample and analysis data for each tank.

2.1 SAFETY SCREENING

The data needed to screen the waste in the T-200 series tanks for potential safety problems are documented in *Tank Safety Screening Data Quality Objective* (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 condition is addressed separately below.

2.1.1 Exothermic Conditions (Energetics)

The first requirement outlined in the safety screening DQO (Dukelow et al. 1995) is to ensure that there are not sufficient exothermic constituents (organic or ferrocyanide) in the T-200 series tanks to pose a safety hazard. Because of this requirement, energetics in all four T-200 tanks (241-T-201, -T-202, -T-203, and -T-204) waste were evaluated. The safety screening DQO required that the waste sample profile be tested for energetics every 24 cm (9.5 in.) to determine whether the energetics exceeded the safety threshold limit. The threshold limit for energetics is 480 J/g on a dry weight basis.

Results obtained using differential scanning calorimetry (DSC) indicated that no sample obtained from any of the T-200 series tanks had mean exothermic reactions (on a dry-weight basis) exceeding the safety screening DQO limit. The maximum dry weight exotherm observed was 16.7 J/g from tank 241-T-203, core 190, segment 9, lower half. Because of the low number of exothermic observations and their small magnitude, 95 percent confidence intervals on the means were not calculated. The other T-200 series tanks did not have any measurable energetics, therefore, no confidence interval could be calculated. These results indicate there is no energetics safety issue associated with these tanks.

2.1.2 Flammable Gas

Headspace measurements were taken from the sampling riser (riser 3 for each T-200 tank) before taking the push core samples. Flammable gas was not detected in any of the tank headspaces (0 percent of the lower flammability limit [LFL]) before sampling the four T-200 series tanks. These results are below the safety screening limit of 25 percent of the LFL, indicating no flammable gas safety issue associated with the tanks. Appendix B provides data for the March and April 1997 combustible gas measurement .

2.1.3 Criticality

The safety screening DQO threshold for criticality, based on the total alpha activity, is 1 g/L. Because total alpha activity is measured in μCi/g instead of g/L, the 1 g/L limit is converted into units of μCi/g by assuming that all alpha decay originates from ^{239}Pu. The safety limit threshold is 1 g ^{239}Pu per liter of waste.

Table 2-1. T-200 Criticality Thresholds and Results.

Issue	Primary Decision Variable	Decision Criteria Threshold	Maximum Analytical Result (μCi/g)	95% Upper Confidence Level of the Mean
Criticality	Total alpha	41 μCi/g	T-201: 1.15 T-202: 0.295 T-203: 0.278 T-204: 0.208	T-201: 1.63 T-202: 0.409 T-203: 0.469 T-204: 0.549

Assuming that all alpha is from ^{239}Pu and assuming a typical density of 1.27 g/mL, 1 g/L of ^{239}Pu is 48.4 μCi/g of alpha activity. The largest total alpha activity result was 1.15 μCi/g (core 192, segment 4, lower half). The highest upper limit to a 95 percent confidence interval on the mean observed in the T-200 tanks was 1.63 μCi/g, found in the same sample, indicating that the potential for a criticality event is extremely low. Therefore, criticality is not a concern for this tank. Appendix C contains the method used to calculate confidence limits and computational results.

2.2 HAZARDOUS VAPOR SAFETY SCREENING

The data required to support vapor screening are documented in *Data Quality Objective for Tank Hazardous Vapor Safety Screening* (Osborne and Buckley 1995). The vapor screening DQO addresses two issues: 1) does the vapor headspace exceed 25 percent of the LFL, and if so, what are the principal fuel components; and 2) does the potential exist for worker hazards associated with the toxicity of constituents in any fugitive vapor emissions from these tanks?

2.2.1 Flammable Gas

This is the same requirement as the safety screening flammability requirement. As noted previously, flammable gas was not detected in any of the T-200 tank headspaces (0 percent of the LFL) before sampling. Tanks 241-T-201, -T-202, and -T-204 are in Flammable Gas Facility Group 2; tank 241-T-203 is considered Flammable Gas Facility Group 3. There is no flammable gas hazard associated with these tanks.

2.2.2 Toxicity

The toxicity issue has been closed for all tanks (Hewitt 1996). Data from the March/April vapor surveillance sampling event indicates that for these four tanks, the ammonia level was 0 parts per million, and total organic carbon (TOC) was 0 parts per million. There is no vapor toxicity issue associated with these tanks.

2.3 ORGANIC COMPLEXANTS

The data required to support the issue of organic complexants are documented in *Memorandum of Understanding for the Organic Complexant Safety Issue Data Requirements* (Schreiber 1997b). Energetics by DSC and moisture analyses were conducted to address the organic complexants issue. All moisture analyses show the water content for these tanks is greater than 50 percent. Because no exotherms were detected by DSC analyses for tanks 241-T-201, -T-202, and -T-204, no further data were required to address the issue. According to the logic in Schreiber (1997b), these tanks are safe with respect to the organic complexants issue.

In tank 241-T-203, very small magnitude exotherms were observed. However, fewer than 25 percent of the samples examined had exotherms, very low levels of TOC were observed, and the water content was greater than 50 percent; therefore, this tank also is considered safe with respect to the organics complexant issue (Schreiber 1997a).

2.4 ORGANIC SOLVENTS

The data required to support the organic solvent screening issue are documented in the *Data Quality Objective to Support Resolution of the Organic Solvent Safety Issue* (Meacham et al. 1997). The DQO requires tank headspace samples be analyzed for total nonmethane organic compounds to determine whether the organic extractant pool in the tank is a hazard. The purpose of this assessment is to ensure that an organic solvent pool fire or ignition of organic solvents cannot occur. Analytical results showed no organics of any type were present in the headspace for any T-200 series tank. However, the tanks have not been sampled according to the protocols described in Meacham et al. (1997); therefore, no safety designation with regard to the organic solvent issue can be made.

2.5 OTHER TECHNICAL ISSUES

A factor in assessing tank safety is the heat generation and temperature of the waste. Heat is generated in the tanks from radioactive decay. Estimates of each tank's heat load based on the 1997 sample event can be made from sample data collected. Based on the analytical results, each tank had a heat load of less than 2 W, because of the very low fission product content of this waste.

The heat load estimates based on the tank process history ranged from 0.165 W for tank 241-T-202 to 0.298 W for tank 241-T-204 (Agnew et al. 1997). The heat load estimate based on the tank headspace temperature ranged from 14 W (48 Btu/hr) for tank 241-T-201 to 1,375 W (4,690 Btu/hr) for tank 241-T-203 (Kummerer 1995). The 1,375 W estimate for tank 241-T-203 does not correspond with the other tank information and appears to be based on an errant thermocouple reading. All of these heat load estimates are quite low and are well below the limit of 11,700 W (40,000 Btu/hr) that separates high- and low-heat-load tanks (Smith 1986).

Analysis of process history information suggests that the waste in each T-200 series tank is similar to the waste in other T-200 series tanks. It is also similar in composition to the B-200 series tanks. The sampling and analysis of the T-200 series tanks was designed to take advantage of this prior information. Both waste tank groups received lanthanum fluoride (224) waste only the B-200 series tanks received lanthanum fluoride (224) from B Plant, the T-200 series tanks received it from T Plant. The composition of this waste is distinctive from the other wastes in single-shell tanks. It has relatively high (weight percent) concentrations of lanthanum, bismuth, and manganese present, and low concentrations of fission products (usually near or below detection limits). The separations process did not vary from plant to plant, and no other transactions took place between these tanks and the rest of tank farms to alter or confound the waste stream composition; therefore, the variation in the waste in the T-200 series tanks is believed to be relatively small.

The construction and fill method for each group of tanks (B-200 and T-200) appears similar. One tank in each group (241-B-201 and 241-T-201, respectively) was piped separately and received waste from a different path than others in the group. The other three tanks in each series were connected together by means of tie lines that allowed waste to transfer from one tank to another as they filled. Because of this configuration, waste in tanks 241-B-201 and 241-T-201 was anticipated to be different in composition from others in the group but still identifiable as lanthanum fluoride (224) waste.

Taking advantage of this prior information, the sampling and analysis of the T-200 series tanks was based on one core. Comprehensive composition information was obtained from the core composites from each tank and compared to predicted mean estimates and 90 percent prediction intervals derived from the B-200 series tank data (Engel et al. 1997). The spatial variability of the waste in the T-200 series tanks was assumed to be that observed in the B-200 series tanks.

The results of the comparison were generally quite favorable. Prediction intervals for 17 analytes were compared with analytical results from the four T-200 tanks. Table 2-2 shows the results. A "1" indicates that the mean core composite result fell within the prediction interval. A "0" indicates that the mean core composite result fell outside the prediction interval.

Table 2-2. Comparisons of T-200 Analytical Results with Prediction Intervals. (2 sheets)

Analyte	-T-201 Result Within Interval	-T-202 Result Within Interval	-T-203 Result Within Interval	-T-204 Result Within Interval	Total Within Interval
Al	1	1	1	1	4/4
Bi	0	1	1	1	3/4
Ca	1	1	1	1	4/4
Cr	0	1	1	0	2/4
^{137}Cs	1	1	1	1	4/4
Fe	1	1	1	1	4/4
F	1	1	1	1	4/4
H_2O	1	1	1	1	4/4

Table 2-2. Comparisons of T-200 Analytical Results with Prediction Intervals. (2 sheets)

Analyte	-T-201 Result Within Interval	-T-202 Result Within Interval	-T-203 Result Within Interval	-T-204 Result Within Interval	Total Within Interval
La	0	1	1	1	3/4
Mn	0	1	1	1	3/4
Na	1	1	1	1	4/4
Ni	1	1	1	1	4/4
NO_3	1	1	1	1	4/4
PO_4	1	1	1	1	4/4
CO_3	1	1	1	1	4/4
TOC	1	1	1	1	4/4
U	1	1	1	1	4/4
Total within interval	13/17	17/17	17/17	16/17	63/68
Percent within interval	76.5	100	100	94.1	92.6

In addition to having over 90 percent of the results fall within the prediction interval, 60 percent of the observations were within 50 percent of the predicted means, suggesting an identifiable process with distinct characteristics. Aluminum, calcium, and TOC concentrations in the B-200 series tanks were much higher than those observed in T-200 tanks, suggesting a difference attributable to each plant's operation. Bismuth, lanthanum, and manganese were observed to be higher in both tanks 241-B-201 and 241-T-201 than the other B-200 and T-200 tanks. Differences observed in tanks 241-B-201 and 241-T-201 as compared to the other B-200 and T-200 series tanks were anticipated because of the separate piping connection to their respective plants.

2.6 SUMMARY

The results of all analyses performed to address potential safety issues showed that primary analyte(s) did not exceed safety decision threshold limits. The waste had little exothermic activity, had low total alpha concentration, no hazardous or flammable vapors were detected, and essentially no heat from radionuclide decay. The composition of the waste generally matched that expected from process history and the results from the B-200 series tanks. Table 2-3 summarizes the analyses results.

Table 2-3. Summary of Technical Issues.

Issue	Sub-issue	Result
Safety screening	Energetics	No exotherms approaching or exceeding the threshold value were observed in any sample.
	Flammable gas	Vapor measurement reported 0 percent of lower flammability limit (combustible gas meter).
	Criticality	All analyses well below 41 μCi/g total alpha.
Hazardous vapor	Flammability	See safety screening - flammable gas
	Toxicity	The toxicity issue has been closed for all tanks.[1]
Organic Complexant	TOC	All measurements are less than 500 μg/g (wet).
	Water content	All measurements are greater than 50 percent.
Organic Solvents	Total nonmethane Hydrocarbons	No samples taken.

Note:

Hewitt (1966)

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3.0 BEST-BASIS STANDARD INVENTORY ESTIMATE

Information about the chemical and/or physical properties of tank wastes is used to perform safety analyses, engineering evaluations, and risk assessments associated with waste management activities, as well as to address regulatory issues. Waste management activities include overseeing tank farm operations and identifying, monitoring, and resolving safety issues associated with these operations and with the tank wastes. Disposal activities involve designing equipment, processes, and facilities for retrieving wastes and processing the wastes into a form that is suitable for long-term storage.

Chemical inventory information generally is derived using three approaches: 1) component inventories are estimated using the results of sample analyses, 2) component inventories are calculated using process knowledge and analytical information derived from related tanks, and 3) component inventories are predicted using a model based on process knowledge and historical information. The most recent model was developed by Los Alamos National Laboratory (Agnew et al. 1997). Information derived from these different approaches is inconsistent.

An effort is underway to provide waste inventory estimates that will serve as standard characterization information for the various waste management activities (Hodgson and LeClair 1996). Appendix D contains the complete narrative regarding the derivation of the inventory estimates shown in Tables 3-1 and 3-2.

Table 3-1. Best-Basis Inventory Estimates for Nonradioactive Components in T-200 Series Tanks (Effective May 31, 1997). (2 sheets)

	Total Inventory (kg)					
Analyte	T-201	T-202	T-203	T-204	Basis (S, M, C or E)[1]	Comment
Al	14.0	7.12	9.17	9.33	S	
Bi	16,600	4,040	7,940	8,960	S	
Ca	173	30.6	56.4	35.9	S	
Cl	151	68.3	107	117	S	
TIC as CO_3	564	1,025	1,290	1,220	S	
Cr	746	371	618	781	S	
F	708	647	1,030	1,030	S	
Fe	1,380	751	1,110	703	S	
Hg	0	0	0	0	M	
K	671	704	1,120	1,070	S	

Table 3-1. Best-Basis Inventory Estimates for Nonradioactive Components in T-200 Series Tanks (Effective May 31, 1997). (2 sheets)

Analyte	Total Inventory (kg)				Basis (S, M, C or E)[1]	Comment
	T-201	T-202	T-203	T-204		
La	3,470	1,240	1,910	2,000	S	
Mn	6,180	1,460	2,620	2,450	S	
Na	4,500	3,540	5,670	5,530	S	
Ni	87.8	13.0	24.1	42.0	S	
NO_2	43.8	51.7	48.1	49.4	S	
NO_3	6,730	6,470	10,500	9,610	S	
OH	14,600	3,640	6,690	6,640	C	
Pb	29.6	5.72	3.39	54.0	S	
PO_4	1,940	721	1,190	1,310	S	
Si	259	184	261	261	S	
SO_4	38.6	109	71.4	63.2	S	
Sr	156	50.0	90.8	87.0	S	
TOC	42.4	34.2	68.4	54.3	S	
U_{TOTAL}	8.12	10.1	10.2	11.0	M, S, M, M	
Zr	0	0.2	0	0	S	

Note:

[1]S = Sample-based (see Appendix B), M = HDW model-based, E = Engineering assessment-based, and C = calculated by charge balance; includes oxides as hydroxides, not including CO_3, NO_2, NO_3, PO_4, SO_4 and SiO_3

Table 3-2. Best-Basis Inventory Estimate for Radioactive Components in T-200 Series Tanks Decayed to January 1, 1994 (Effective May 31, 1997). (2 sheets)

Analyte	Total Inventory (Ci)				Basis (S, M, or E)[1]	Comment
	T-201	T-202	T-203	T-204		
^{3}H	2.86E+00	2.02E+00	3.34E+00	3.57E+00	E	Based on B-201
^{14}C	4.41E-02	3.11E-02	5.15E-02	5.50E-02	E	Based on B-201
^{59}Ni	9.56E-04	6.76E-04	1.12E-03	1.19E-03	E	Based on B-201
^{60}Co	2.73E-01	1.93E-01	3.19E-01	3.41E-01	E	Based on B-201
^{63}Ni	2.62E-02	1.85E-02	3.06E-02	3.27E-02	E	Based on B-201
^{79}Se	3.68E-05	2.76E-05	4.60E-05	5.00E-05	M	
^{90}Sr	2.17E+01	2.70E-01	4.61E-01	8.82E-01	S	
^{90}Y	2.17E+01	2.70E-01	4.61E-01	8.82E-01	S	Based on ^{90}Sr
^{93m}Nb	1.45E-04	1.08E-04	1.81E-04	1.96E-04	M	
^{93}Zr	1.75E-04	1.31E-04	2.18E-04	2.37E-04	M	
^{99}Tc	1.21E-03	9.09E-04	1.51E-03	1.64E-03	M	
^{106}Ru	4.20E-11	3.15E-11	5.25E-11	5.70E-11	M	
^{113m}Cd	4.89E-04	3.67E-04	6.12E-04	6.64E-04	M	
^{125}Sb	6.46E-05	4.84E-05	8.07E-05	8.77E-05	M	
^{126}Sn	5.55E-05	4.16E-05	6.94E-05	7.53E-05	M	
^{129}I	2.29E-06	1.72E-06	2.86E-06	3.10E-06	M	
^{134}Cs	3.32E-01	2.35E-01	3.88E-01	4.14E-01	E	Based on B-201
^{137m}Ba	6.60E+00	2.88E+00	3.05E+00	1.40E+00	S	Based on ^{137}Cs
^{137}Cs	6.98E+00	3.04E+00	3.22E+00	1.48E+00	S	
^{151}Sm	0.139	0.104	0.174	0.189	M	
^{152}Eu	1.82E-04	1.37E-04	2.28E-04	2.47E-04	M	
^{154}Eu	6.11E-01	4.32E-01	7.14E-01	7.62E-01	E	Based on B-201
^{155}Eu	4.57E-01	3.23E-01	5.34E-01	5.71E-01	E	Based on B-201
^{226}Ra	8.22E-09	6.16E-09	1.03E-08	1.12E-08	M	
^{227}Ac	4.34E-08	3.25E-08	5.42E-08	5.89E-08	M	
^{228}Ra	5.28E-13	3.96E-13	6.61E-13	7.17E-13	M	
^{229}Th	1.02E-10	7.67E-11	1.28E-10	1.39E-10	M	
^{231}Pa	1.00E-07	7.51E-08	1.25E-07	1.36E-07	M	
^{232}Th	4.62E-14	3.46E-14	5.77E-14	6.27E-14	M	

Table 3-2. Best-Basis Inventory Estimate for Radioactive Components in T-200 Series Tanks Decayed to January 1, 1994 (Effective May 31, 1997). (2 sheets)

Analyte	Total Inventory (Ci)				Basis (S, M, or E)[1]	Comment
	T-201	T-202	T-203	T-204		
^{232}U	5.36E-08	4.02E-08	6.70E-08	7.27E-08	M	
^{233}U	2.45E-09	1.83E-09	3.06E-09	3.32E-09	M	
^{234}U	2.67E-03	2.00E-03	3.34E-03	3.63E-03	M	
^{235}U	1.19E-04	8.92E-05	1.49E-04	1.61E-04	M	
^{236}U	2.33E-05	1.75E-05	2.91E-05	3.16E-05	M	
^{237}Np	7.51E-06	5.63E-06	9.39E-06	1.02E-05	M	
^{238}Pu	4.85E-01	3.43E-01	5.67E-01	6.06E-01	E	Based on B-201
^{238}U	2.71E-03	3.30E-03	3.39E-03	3.68E-03	M, S, M, M,	
^{239}Pu	9.96E+01	2.07E+01	3.05E+01	2.36E+01	S/E	Based on Alpha[2]
^{240}Pu	6.40E+00	1.30E+00	1.40E+00	1.50E+00	E	Based on Alpha[2]
^{241}Am	4.32E+00	3.06E+00	5.85E+00	4.25E+00	E, E, S, S	Engineering based on B-201
^{241}Pu	1.35E-02	1.01E-02	1.68E-02	1.83E-02	M	
^{242}Cm	3.70E-06	2.78E-06	4.63E-06	5.03E-06	M	
^{242}Pu	6.23E-08	4.67E-08	7.79E-08	8.45E-08	M	
^{243}Am	3.08E-09	2.31E-09	3.86E-09	4.19E-09	M	
^{243}Cm	7.98E-08	5.99E-08	9.98E-08	1.08E-07	M	
^{244}Cm	7.84E-08	5.88E-08	9.80E-08	1.06E-07	M	

Notes:

[1]S=sample-based, M=HDW model-based, and E=engineering assessment-based

[2]Assumed total alpha was plutonium-based,and the ratio of ^{239}Pu to ^{240}Pu was 94 percent to 6 percent. The other plutonium contributors estimated by the HDW model fell within the uncertainty of the measurement.

4.0 RECOMMENDATIONS

All analytical results for the safety screening DQO were far below safety notification limits. No hazardous or flammable vapors were detected. The sampling and analysis activities performed for the T-200 tank series (241-T-201, T-202, T-203, and T-204) are considered to have met all program requirements. The organic complexant, organic solvent, and flammable gas safety issues are expected to be closed in Fiscal Year 1998 as described in Milestone M-40-09. The Project Hanford Management Contractor (PHMC) TWRS Safety Program has determined that additional sampling is not required to close these issues for these tanks.

Table 4-1 summarizes the PHMC TWRS Program review status and acceptance of the sampling and analysis results reported in this TCR. All DQO issues required to be addressed by sampling and analysis are listed in column 1 of Table 4-1. Column 2 indicates by "yes" or "no" whether the DQO requirements were met by the sampling and analysis activities performed. Column 3 indicates concurrence and acceptance by the program in PHMC TWRS that is responsible for the DQO that the sampling and analysis activities performed adequately meet the needs of the DQO. A "yes" or "no" in column 3 indicates acceptance or disapproval of the sampling and analysis information in the TCR. The waste was sampled and analyzed in accordance with the safety screening DQO and accepted by the responsible TWRS program.

Table 4-1. Acceptance of Tanks 241-T-201, T-202, T-203, and T-204 Sampling and Analysis.

Issue	Evaluation Performed	Program[1] Acceptance
Safety screening DQO	Yes	Yes
Hazardous vapor screening DQO	Yes	Yes
Organic complexant MOU	Yes	Yes
Organic solvent DQO	Yes[2]	Yes[2]

Notes:

MOU = Memorandum of Understanding

[1]PHMC TWRS Program Office

[2]Documentation regarding the resolution of the organic solvent issue is pending. No further sampling in support of this issue is currently scheduled.

Table 4-2 summarizes the status of PHMC TWRS Program review and acceptance of the evaluations and other characterization information contained in this report. The evaluations outlined in this report include those to determine whether the tank is safe, conditionally safe, or unsafe; and the best-basis inventory evaluation. Column 1 lists the different evaluations performed in this report. Columns 2 and 3 are in the same format as Table 4-1. The manner in which concurrence and acceptance are summarized is also the same as that in Table 4-1.

The safety categorization of the T-200 series tanks is listed as "safe" in Table 4-2, even though two cores were not obtained from each tank. The data from the B-200 series tanks used in interpreting the T-200 information, the available process information, and the consistency of the data between T-200 tanks did not indicate any safety problems and were considered sufficient by the PHMC TWRS Program Office to meet the intent of the safety screening DQO.

One final comment regarding the safety screening DQO needs to be made. The one-sided confidence intervals that were used to determine whether or not ^{239}Pu is below the DQO stated threshold limit were performed solely on each individual sample as required by the DQO.

Table 4-2. Acceptance of Evaluation of Characterization Data and Information for T-200 Series Tanks.

Issue	Evaluation Performed	TWRS[1] Program Acceptance
Safety categorization: SAFE	Yes	Yes

Note:
[1]PHMC TWRS Program Office

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APPENDIX A

HISTORICAL TANK INFORMATION

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APPENDIX A

HISTORICAL TANK INFORMATION

Appendix A describes the T-200 series tanks (241-T-201, -T-202, -T-203, and -T-204) based on historical information. For this report, historical information includes information about the fill history, waste types, surveillance, or modeling data about the tanks. This information is necessary for providing a balanced, comprehensive assessment of the sampling and analytical results.

This appendix contains the following information:

- **Section A1.0**: Current tank status, including the current waste levels and the tank stabilization and isolation status
- **Section A2.0**: Information about the tank design
- **Section A3.0**: Process knowledge about the tank, the waste transfer history, and the estimated contents of the tank based on modeling data
- **Section A4.0**: Surveillance data for the T-200 series tanks including surface-level readings, temperatures, and a description of the waste surface based on photographs
- **Section A5.0**: Appendix A References

A1.0 CURRENT TANK STATUS

As of July 31, 1997, tanks 241-T-201, -T-202, -T-203, and -T-204 contained an estimated 110, 79, 132, and 144 kL (29, 21, 35, and 38 kgal), respectively of noncomplexed waste (Hanlon 1997). The waste volumes were estimated using a manual tape surface-level gauge or a combination of manual tape, photographic evaluation, and sludge measurement devices. Table A1-1 shows the estimated volumes of the waste phases found in the tank. The solids volume for each tank was last updated in 1978 or 1981.

All tanks are sound and were declared inactive in 1976. Pumping to remove liquids started in 1977. The tanks were finally interim stabilized in 1981; intrusion prevention (interim isolation) was also completed in 1981. The final stabilization designation was made administratively; therefore a small amount of liquid remained in tank 241-T-201. These tanks are passively ventilated, and none are on the Watch List (Public Law 101-510).

Table A1-1. Tank Contents Status Summary.

Waste Type	241-T-201 kL (kgal)	241-T-202 kL (kgal)	241-T-203 kL (kgal)	241-T-204 kL (kgal)
Total waste	110 (29)	79 (21)	132 (35)	144 (38)
Supernatant	3.8 (1)	0 (0)	0 (0)	0 (0)
Sludge	106 (28)	79 (21)	132 (35)	144 (38)
Saltcake	0 (0)	0 (0)	0 (0)	0 (0)
Drainable interstitial liquid	11 (3)	8 (2)	15 (4)	15 (4)
Drainable liquid remaining	15 (4)	8 (2)	15 (4)	15 (4)
Pumpable liquid remaining	0 (0)	0 (0)	0 (0)	0 (0)

A2.0 TANK DESIGN AND BACKGROUND

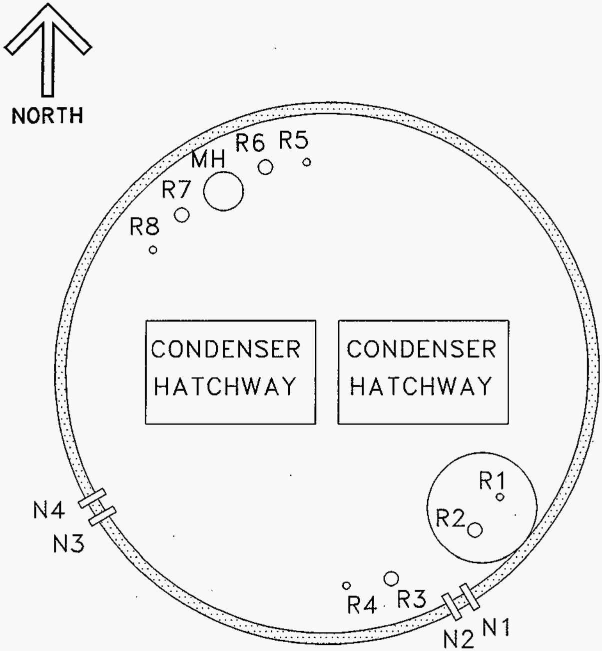
The 241-T Tank Farm is a first generation tank farm. Built between 1943 and 1944, it consists of twelve 2,010 kL (530 kgal) tanks(241-T-101 to -T-112) and four 208 kL (55 kgal) tanks (241-T-201 to -T-204). The tanks were designed for nonboiling waste with a maximum fluid temperature of 104 °C (220 °F). Equipment to monitor and access the waste is sparse. A typical T Farm 200 series tank contains several risers that provide surface level access to the underground tank.

The T-200 series tanks are constructed of 0.3-m (1-ft) thick reinforced concrete with a 0.64-cm (0.25-in.) thick mild carbon steel liner on the bottom and sides and a 30-cm (12-in.) thick flat concrete top (Brevick et al. 1997a). The carbon steel liner has a 7.49 m (24.6 ft) operating depth, is 6.1 m (20 ft) in diameter, and has a 15 cm (6 in.) dished bottom with a 0.9 m (3 ft) radius knuckle. The tanks are set on a reinforced concrete foundation. At the time of construction, the tanks were waterproofed on the sides with tar and a cement-like mixture. The tanks are covered with approximately 3.5 m (11.5 ft) of overburden. The T-200 series tanks have 8 risers. Usually two to three risers are available for intrusive tank activities. The risers range in diameter from 10 cm (4 in.) to 30 cm (12 in.).

The four T-200 series tanks are at roughly the same elevation. Tank 241-T-201 is piped separately from the other T-200 series tanks and received waste directly from T Plant. Tanks 241-T-204, T-203, and T-202 are connected to each other by a 7.6-cm (3-in.)-diameter line that enables waste transfers from one tank to the other. Because there is no vertical offset in the connection from one tank to the others, the tanks are not cascaded but rather tied together.

Figure A2-1 shows the riser configuration. Table A2-1 lists T-200 series tank risers, their diameters, and a brief description. Risers 3 and 7 (30.5 cm [12 in.]in diameter) are available for use in all of the T-200 series tanks. Riser 8 (10 cm [4 in.] in diameter) is available for use in tanks 241-T-201, -T-202, and -T-203. Figures A2-2, A2-3, A2-4, and A2-5 shows a cross section of each tank with an approximate waste level and a schematic of the tank equipment.

Figure A2-1. Generic Riser Configuration for T-200 Series Tanks.



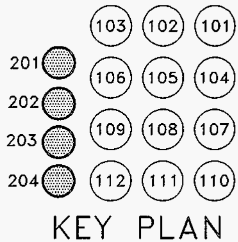


Table A2-1. Tank 241-T-200 Series Tanks Risers and Nozzles.[1] (2 sheets)

Number	Diameter (in.)	Tank	Description and Comments
1	4	all	Not used; weather covered
2	12	all	Salt well; weather covered
3[2]	12	T-201	Not used; available for sampling
		T-202 T-203 T-204	Blind flange; available for sampling
4	4	all	Level gauge
5	4	T-201 T-202 T-203	Thermocouple
		T-204	Blind flange
6	12	all	Air filter
7[2]	12	all	B-222 Observation port
8[2]	4	T-201 T-202 T-203	Thermocouple
		T-204	Blind flange
N1	3	T-201	Line V-711 blanked in diversion box 241-T-252
		T-202	Line V-713 blanked in diversion box 241-T-252
		T-203	Line V-715 blanked in diversion box 241-T-252
		T-204	Line V-717 blanked in diversion box 241-T-252
N2	3	T-201	Line V-712 blanked in diversion box 241-T-252
		T-202	Line V-714 blanked in diversion box 241-T-252
		T-203	Line V-716 blanked in diversion box 241-T-252
		T-204	Line V-718 blanked in diversion box 241-T-252

Table A2-1. Tank 241-T-200 Series Tanks Risers and Nozzles.[1] (2 sheets)

Number	Diameter (in.)	Tank	Description and Comments
N3	3	T-201	Not used; capped
		T-202 T-203	Inlet
		T-204	Not used
N4	3	T-201	Line to sump 216-T-32
		T-202 T-203	Overflow
		T-204	Inlet

Notes:

[1]Brevick et al. (1997a), Alstad (1993), Lipnicki (1997), and Tran (1993)

[2]Denotes riser tentatively available for sampling. Applies to all T-200 series tanks except for riser 8, which is not tentatively available for sampling for tank 241-T-204.

Figure A2-2. Tank 241-T-201 Cross Section and Schematic.

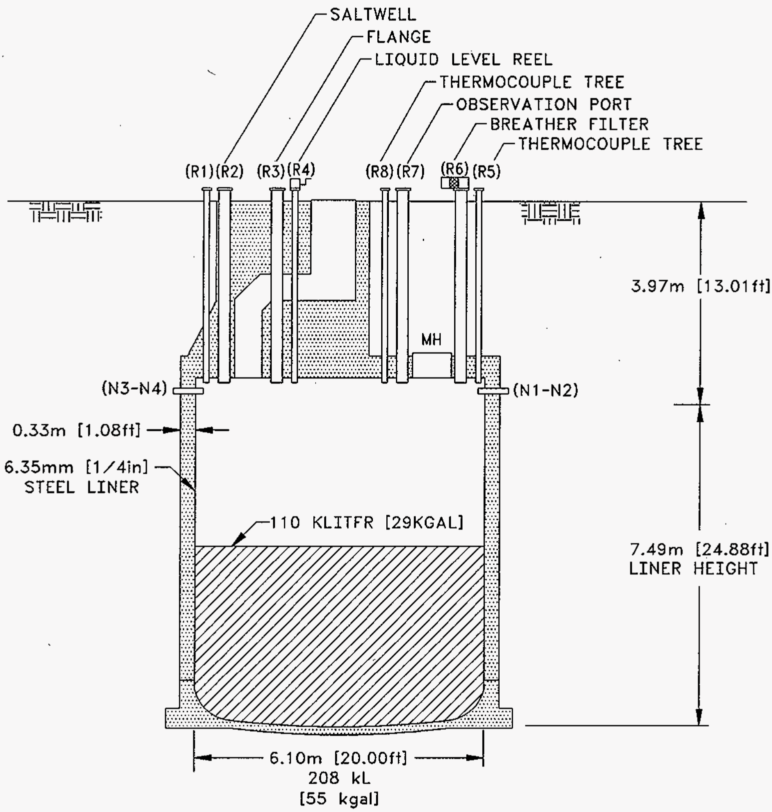


Figure A2-3. Tank 241-T-202 Cross Section and Schematic.

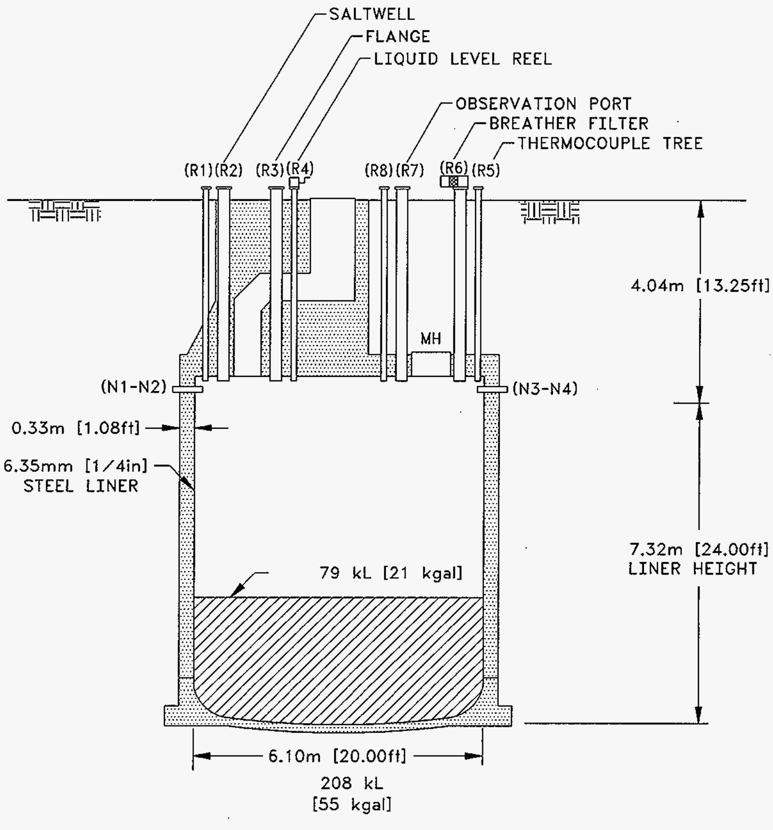


Figure A2-4. Tank 241-T-203 Cross Section and Schematic.

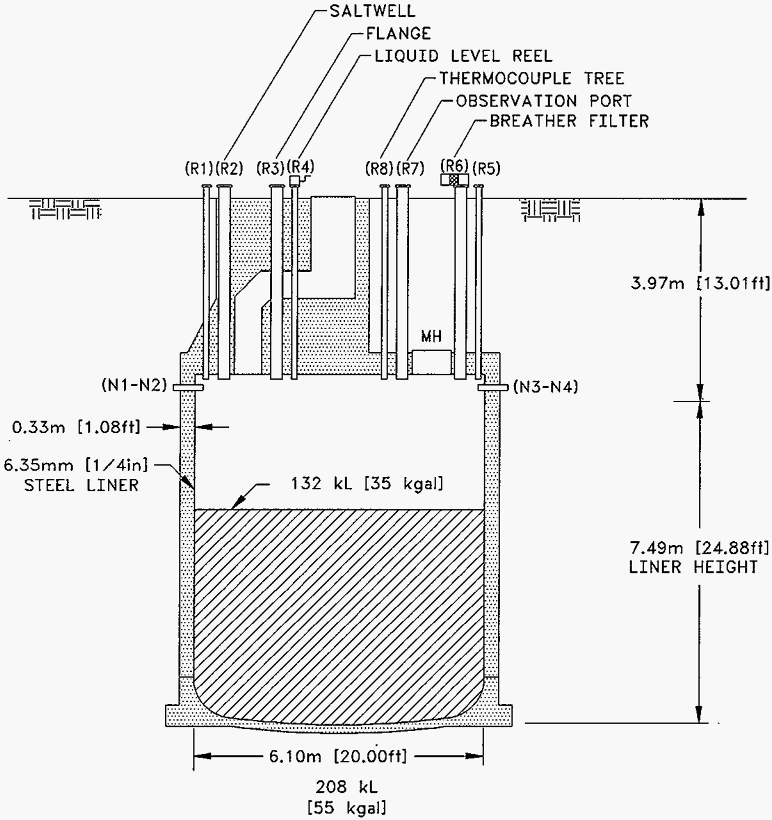
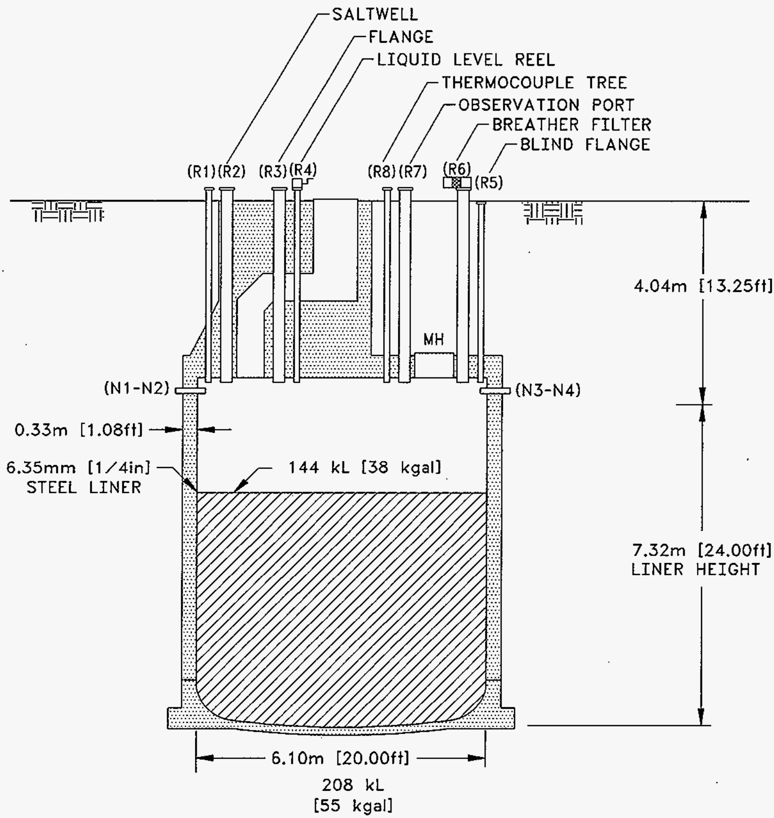


Figure A2-5. Tank 241-T-204 Cross Section and Schematic.



A3.0 PROCESS KNOWLEDGE

The sections below provide information about the transfer history of the T-200 series tanks, describe the process wastes that made up the transfers, and estimate the current tank contents based on transfer history.

A3.1 WASTE TRANSFER HISTORY

Table A3-1 summarizes the waste transfer history of tanks 241-T-201 to -T-204. Tanks 241-T-201, -T-202, -T-203, and -T-204 are located in the 200 West Area T Tank Farm on the Hanford Site. Tank 241-T-201 is not part of any tank cascade. Tanks 241-T-202, -T-203, and -T-204 are not cascaded but are connected together by tie lines The tanks went into service in 1952, receiving lanthanum fluoride (224) waste from T-Plant. The tanks were filled later that year. The only other transfers of waste associated with these tanks occurred in 1976, 1977, and 1981 when liquids were pumped from the tank in support of stabilization efforts.

Table A3-1. Tank 241-T-201, -T-202, -T-203, and -T-204 Major Transfers.[1] (2 sheets)

Transfer Source	Transfer Destination	Waste Type	Time Period	Estimated Waste Volume	
				kL	kgal
T Plant	241-T-201	LaF_3 (224)	1952	2,720	718
241-T-201	Cribs	Supernatant	1952	(2,510)	(663)
241-T-201	241-T-101	Supernatant	1976	(83)	(22)
241-T-201	Salt well pump	Supernatant	1976-77	(15)	(4)
241-T-203	241-T-202	LaF_3 (224)	1952	2,036	538
241-T-202	Cribs	Supernatant	1952	(1,828)	(483)
241-T-202	241-T-101	Supernatant	1976	(102)	(27)
241-T-202	Salt well pump	Supernatant	1976-77	(27)	(7)
241-T-204	241-T-203	LaF_3 (224)	1952	3,395	897
241-T-203	Cribs	Supernatant	1952	(3,187)	(842)

Table A3-1. Tank 241-T-201, -T-202, -T-203, and -T-204 Major Transfers.[1] (2 sheets)

Transfer Source	Transfer Destination	Waste Type	Time Period	Estimated Waste Volume	
				kL	kgal
241-T-203	241-T-101	Supernatant	1976	(34)	(9)
241-T-203	Salt well Pump	Supernatant	1976-77	(42)	(11)
T Plant	241-T-204	LaF_3 (224)	1952	3,687	974
241-T-201	Cribs	Supernatant	1952	(3,478)	(919)
241-T-201	241-T-101	Supernatant	1976	(23)	(6)
241-T-201	Salt well Pump	Supernatant	1976-77	(42)	(11)

Note:

[1]Agnew (1997b)

A3.2 HISTORICAL ESTIMATION OF TANK CONTENTS

The historical transfer data used for this estimate are from the following sources:

- The *Waste Status and Transaction Record Summary: WSTRS, Rev. 4*, (Agnew et al. 1997b) is a tank-by-tank quarterly summary spreadsheet of waste transactions.

- The *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4* (Agnew et al. 1997a) contains the Hanford defined waste (HDW) list, the supernatant mixing model (SMM), the tank layer model (TLM), and the historical tank content estimate (HTCE).

- The HDW list is comprised of approximately 50 waste types defined by concentration for major analyses/compounds for sludge and supernatant layers.

- The TLM defines the sludge and saltcake layers in each tank using waste composition and waste transfer information.

- The SMM is a subroutine within the HDW model that calculates the volume and composition of certain supernatant blends and concentrates.

Using these records, the TLM defines the sludge and saltcake layers in each tank. The SMM uses information from the WSTRS, the TLM, and the HDW list to describe the supernatants and concentrates in each tank. Together the WSTRS, TLM, SMM, and HDW list determine the inventory estimate for each tank. These model predictions are considered estimates that require further evaluation using analytical data.

Based on Agnew et al. (1997a), all T-200 tanks contain only lanthanum fluoride (224) waste. Figure A3-1 is a graphical representation of the estimated waste type and volume for the tank layer. The historical tank content estimate model predicts this waste is mostly water, and contains over 1 weight percent of sodium, nitrate, iron, oxalate, fluoride, hydroxide, and carbonate. Additionally, over 0.1 weight percent of bismuth, calcium, potassium, phosphate, and a trace quantity of plutonium are anticipated to be found. Very low concentrations of cesium and strontium are expected in this waste. Table A3-2 shows the historical estimate of the expected waste constituents and their concentrations.

Figure A3-1. Tank Layer Model.

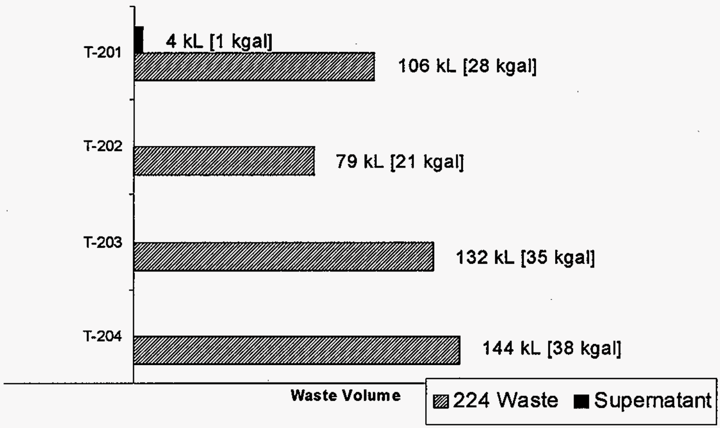


Table A3-2. 241-T-201 Historical Tank Inventory Estimate.[1, 2] (4 sheets)

Total Inventory Estimate					
Physical Properties				**-95 CI**	**+95 CI**
Total waste	1.32E+05 kg (29.0 kgal)				
Heat load	2.20E-04 kW (0.750 Btu/hr)			1.64E-04	2.71E-04
Bulk density[3]	1.20 (g/cm^3)			1.15	1.26
Water wt%[3]	69.5			63.2	75.9
TOC wt% C (wet)[3]	2.05			1.98	2.08
Chemical Constituents	***M***	**ppm**	**kg**[4]	**-95 CI**	**+95 CI**
Na^+	4.09	7.83E+04	1.03E+04	2.92	5.87
Al^{3+}	0	0	0	0	0
Fe^{3+} (total Fe)	0.350	1.63E+04	2.15E+03	0.329	0.372
Cr^{3+}	5.84E-03	253	33.3	4.37E-03	7.20E-03
Bi^{3+}	5.36E-02	9.34E+03	1.23E+03	1.60E-02	7.50E-02
La^{3+}	3.26E-03	378	49.8	2.44E-03	4.02E-03
Hg^{2+}	0	0	0	0	0
Zr (as $ZrO(OH)_2$)	0	0	0	0	0
Pb^{2+}	0	0	0	0	0
Ni^{2+}	1.37E-03	67.2	8.85	1.03E-03	6.38E-03
Sr^{2+}	0	0	0	0	0
Mn^{4+}	4.38E-03	200	26.4	3.27E-03	5.40E-03
Ca^{2+}	0.236	7.88E+03	1.04E+03	0.152	0.320
K^+	0.198	6.46E+03	851	0.148	0.245
OH^-	1.06	1.51E+04	1.99E+03	1.000	1.13
NO^{3-}	1.18	6.11E+04	8.05E+03	0.885	1.46
NO^{2-}	3.09E-03	119	15.6	1.70E-03	4.79E-03
CO_3^{2-}	0.236	1.18E+04	1.55E+03	0.152	0.320
PO_4^{3-}	8.11E-02	6.42E+03	846	3.66E-02	0.109
SO_4^{2-}	2.58E-03	206	27.2	1.93E-03	3.18E-03
Si (as SiO_3^{2-})	0	0	0	0	0
F^-	0.975	1.54E+04	2.03E+03	0.173	2.79
Cl^-	2.29E-02	676	89.1	1.71E-02	2.83E-02

Table A3-2. 241-T-201 Historical Tank Inventory Estimate.[1, 2] (4 sheets)

Total Inventory Estimate					
Chemical Constituents (Cont'd)	***M***	**ppm**	**kg**[4]	**-95 CI**	**+95 CI**
$C_6H_5O_7^{3-}$	0	0	0	0	0
$EDTA^{4-}$	0	0	0	0	0
$HEDTA^{3-}$	0	0	0	0	0
$Glycolate^{-}$	0	0	0	0	0
$Acetate^{-}$	0	0	0	0	0
$Oxalate^{2-}$	1.03	7.52E+04	9.90E+03	0.978	1.05
DBP	0	0	0	0	0
Butanol	0	0	0	0	0
NH_3	1.18E-07	1.68E-03	2.21E-04	5.05E-08	2.17E-07
$Fe(CN)_6^{4-}$	0	0	0	0	0
Radiological Constituents	**Ci/L**	**µCi/g**	**Ci**[5]	**-95 CI (Ci/L)**	**+95 CI (Ci/L)**
^{3}H	5.13E-09	4.27E-06	5.63E-04	2.84E-09	7.79E-09
^{14}C	1.59E-09	1.32E-06	1.75E-04	1.19E-09	1.96E-09
^{59}Ni	4.52E-10	3.76E-07	4.96E-05	3.38E-10	2.10E-09
^{63}Ni	4.17E-08	3.47E-05	4.57E-03	3.11E-08	1.94E-07
^{60}Co	5.10E-10	4.25E-07	5.60E-05	3.82E-10	6.29E-10
^{79}Se	3.35E-10	2.79E-07	3.68E-05	2.51E-10	4.14E-10
^{90}Sr	1.66E-04	0.138	18.2	1.24E-04	2.05E-04
^{90}Y	1.66E-04	0.138	18.2	1.24E-04	2.05E-04
^{93}Zr	1.59E-09	1.33E-06	1.75E-04	1.19E-09	1.96E-09
^{93m}Nb	1.32E-09	1.10E-06	1.45E-04	9.85E-10	1.62E-09
^{99}Tc	1.10E-08	9.20E-06	1.21E-03	8.25E-09	1.36E-08
^{106}Ru	3.83E-16	3.19E-13	4.20E-11	2.86E-16	4.72E-16
^{113m}Cd	4.46E-09	3.71E-06	4.89E-04	3.33E-09	5.50E-09
^{125}Sb	5.88E-10	4.90E-07	6.46E-05	4.40E-10	7.26E-10
^{126}Sn	5.06E-10	4.21E-07	5.55E-05	3.78E-10	6.24E-10
^{129}I	2.08E-11	1.74E-08	2.29E-06	1.56E-11	2.57E-11
^{134}Cs	2.54E-11	2.11E-08	2.78E-06	1.90E-11	3.13E-11

Table A3-2. 241-T-201 Historical Tank Inventory Estimate.[1,2] (4 sheets)

Total Inventory Estimate					
Radiological Constituents (Cont'd)	Ci/L	μCi/g	Ci[5]	-95 CI (Ci/L)	+95 CI (Ci/L)
^{137}Cs	1.88E-04	0.157	20.7	1.41E-04	2.32E-04
^{137m}Ba	1.78E-04	0.148	19.6	1.33E-04	2.20E-04
^{151}Sm	1.27E-06	1.06E-03	0.139	9.49E-07	1.56E-06
^{152}Eu	1.66E-09	1.38E-06	1.82E-04	1.65E-09	1.67E-09
^{154}Eu	8.19E-09	6.82E-06	8.99E-04	6.12E-09	1.01E-08
^{155}Eu	1.50E-07	1.25E-04	1.64E-02	1.49E-07	1.51E-07
^{226}Ra	7.49E-14	6.24E-11	8.22E-09	5.60E-14	9.23E-14
^{228}Ra	4.81E-18	4.01E-15	5.28E-13	4.77E-18	4.85E-18
^{227}Ac	3.95E-13	3.29E-10	4.34E-08	2.95E-13	4.87E-13
^{231}Pa	9.12E-13	7.60E-10	1.00E-07	6.82E-13	1.12E-12
^{229}Th	9.31E-16	7.76E-13	1.02E-10	9.23E-16	9.39E-16
^{232}Th	4.21E-19	3.51E-16	4.62E-14	3.15E-19	5.19E-19
^{232}U	4.88E-13	4.07E-10	5.36E-08	3.65E-13	6.02E-13
^{233}U	2.23E-14	1.86E-11	2.45E-09	1.67E-14	2.75E-14
^{234}U	2.43E-08	2.03E-05	2.67E-03	1.82E-08	3.00E-08
^{235}U	1.08E-09	9.02E-07	1.19E-04	8.10E-10	1.34E-09
^{236}U	2.12E-10	1.77E-07	2.33E-05	1.59E-10	2.62E-10
^{238}U	2.47E-08	2.06E-05	2.71E-03	1.85E-08	3.05E-08
^{237}Np	6.84E-11	5.70E-08	7.51E-06	5.11E-11	8.44E-11
^{238}Pu	2.92E-09	2.43E-06	3.21E-04	2.18E-09	3.60E-09
^{239}Pu	4.23E-07	3.52E-04	4.64E-02	3.16E-07	5.21E-07
^{240}Pu	3.71E-08	3.09E-05	4.07E-03	2.77E-08	4.58E-08
^{241}Pu	1.23E-07	1.02E-04	1.35E-02	9.17E-08	1.51E-07
^{242}Pu	5.67E-13	4.73E-10	6.23E-08	4.24E-13	7.00E-13
^{241}Am	3.46E-09	2.88E-06	3.80E-04	2.59E-09	4.26E-09
^{243}Am	2.81E-14	2.34E-11	3.08E-09	2.10E-14	3.47E-14
^{242}Cm	3.38E-11	2.81E-08	3.70E-06	3.35E-11	3.40E-11
^{243}Cm	7.27E-13	6.06E-10	7.98E-08	7.21E-13	7.33E-13
^{244}Cm	7.14E-13	5.95E-10	7.84E-08	5.34E-13	8.81E-13

Table A3-2. 241-T-201 Historical Tank Inventory Estimate.[1,2] (4 sheets)

Total Inventory Estimate					
Totals	M	μg/g	kg	-95 CI (M or g/L)	+95 CI (M or g/L)
Radiological Constituents (Cont'd)	Ci/L	μCi/g	Ci[5]	-95 CI (Ci/L)	+95 CI (Ci/L)
Pu	6.97E-06 (g/L)	----	7.65E-04	5.21E-06	8.59E-06
U	3.11E-04	61.7	8.13	2.33E-04	3.84E-04

Notes:

CI = confidence interval

[1]Agnew et al. (1997a)

[2]These predictions have not been validated and should be used with caution.

[3]This is the volume average for density, mass average water wt%, and TOC wt% carbon.

[4]Differences exist among the inventories in this column and the inventories calculated from the two sets of concentrations.

[5]Unknowns in tank solids inventory are assigned by the TLM.

Table A3-3. 241-T-202 Historical Tank Inventory Estimate.[1, 2] (4 sheets)

Total Inventory Estimate					
Physical Properties				-95 CI	+95 CI
Total waste	9.60E+04 (kg) (21.0 kgal)				
Heat load	1.65E-04 (kW) (0.563 Btu/hr)			1.23E-04	2.03E-04
Bulk density[3]	1.21 (g/cm^3)			1.15	1.26
Water wt%[3]	68.6			62.1	75.2
TOC wt% C (wet)[3]	2.11			2.03	2.14
Chemical Constituents	*M*	ppm	kg[4]	-95 CI	+95 CI
Na^+	4.23	8.06E+04	7.74E+03	3.03	6.08
Al^{3+}	0	0	0	0	0
Fe^{3+} (total Fe)	0.363	1.68E+04	1.61E+03	0.341	0.385
Cr^{3+}	6.05E-03	260	25.0	4.52E-03	7.46E-03
Bi^{3+}	5.55E-02	9.61E+03	923	1.66E-02	7.77E-02
La^{3+}	3.38E-03	389	37.3	2.53E-03	4.17E-03
Hg^{2+}	0	0	0	0	0
Zr (as $ZrO(OH)_2$)	0	0	0	0	0
Pb^{2+}	0	0	0	0	0
Ni^{2+}	1.42E-03	69.2	6.64	1.06E-03	6.61E-03
Sr^{2+}	0	0	0	0	0
Mn^{4+}	4.54E-03	206	19.8	3.39E-03	5.59E-03
Ca^{2+}	0.244	8.11E+03	779	0.157	0.332
K^+	0.205	6.65E+03	638	0.154	0.253
OH^-	1.10	1.55E+04	1.49E+03	1.04	1.17
NO^{3-}	1.23	6.29E+04	6.04E+03	0.917	1.51
NO^{2-}	3.20E-03	122	11.7	1.76E-03	4.97E-03
CO_3^{2-}	0.244	1.21E+04	1.17E+03	0.157	0.332
PO_4^{3-}	8.40E-02	6.61E+03	634	3.79E-02	0.113
SO_4^{2-}	2.67E-03	212	20.4	1.99E-03	3.29E-03
Si (as SiO_3^{2-})	0	0	0	0	0
F^-	1.01	1.59E+04	1.53E+03	0.180	2.89
Cl^-	2.37E-02	696	66.8	1.77E-02	2.93E-02

Table A3-3. 241-T-202 Historical Tank Inventory Estimate.[1, 2] (4 sheets)

Total Inventory Estimate					
Chemical Constituents (Cont'd)	***M***	**ppm**	**kg[4]**	**-95 CI**	**+95 CI**
$C_6H_5O_7^{3-}$	0	0	0	0	0
$EDTA^{4-}$	0	0	0	0	0
$HEDTA^{3-}$	0	0	0	0	0
$Glycolate^-$	0	0	0	0	0
$Acetate^-$	0	0	0	0	0
$Oxalate^{2-}$	1.06	7.74E+04	7.43E+03	1.01	1.09
DBP	0	0	0	0	0
Butanol	0	0	0	0	0
NH_3	1.23E-07	1.73E-03	1.66E-04	5.23E-08	2.25E-07
$Fe(CN)_6^{4-}$	0	0	0	0	0
Radiological Constituents	**Ci/L**	**μCi/g**	**Ci[5]**	**-95 CI (Ci/L)**	**+95 CI (Ci/L)**
^{3}H	5.31E-09	4.40E-06	4.22E-04	2.94E-09	8.07E-09
^{14}C	1.65E-09	1.36E-06	1.31E-04	1.23E-09	2.03E-09
^{59}Ni	4.68E-10	3.88E-07	3.72E-05	3.50E-10	2.17E-09
^{63}Ni	4.32E-08	3.57E-05	3.43E-03	3.23E-08	2.01E-07
^{60}Co	5.29E-10	4.38E-07	4.20E-05	3.95E-10	6.52E-10
^{79}Se	3.47E-10	2.88E-07	2.76E-05	2.60E-10	4.28E-10
^{90}Sr	1.72E-04	0.142	13.7	1.29E-04	2.12E-04
^{90}Y	1.72E-04	0.142	13.7	1.29E-04	2.12E-04
^{93}Zr	1.65E-09	1.37E-06	1.31E-04	1.23E-09	2.03E-09
^{93m}Nb	1.36E-09	1.13E-06	1.08E-04	1.02E-09	1.68E-09
^{99}Tc	1.14E-08	9.47E-06	9.09E-04	8.55E-09	1.41E-08
^{106}Ru	3.96E-16	3.28E-13	3.15E-11	2.96E-16	4.89E-16
^{113m}Cd	4.62E-09	3.82E-06	3.67E-04	3.45E-09	5.69E-09
^{125}Sb	6.10E-10	5.05E-07	4.84E-05	4.56E-10	7.52E-10
^{126}Sn	5.24E-10	4.34E-07	4.16E-05	3.92E-10	6.46E-10
^{129}I	2.16E-11	1.79E-08	1.72E-06	1.61E-11	2.66E-11
^{134}Cs	2.63E-11	2.17E-08	2.09E-06	1.96E-11	3.24E-11

Table A3-3. 241-T-202 Historical Tank Inventory Estimate.[1, 2] (4 sheets)

Total Inventory Estimate					
Radiological Constituents (Cont'd)	Ci/L	μCi/g	Ci[5]	-95 CI (Ci/L)	+95 CI (Ci/L)
^{137}Cs	1.95E-04	0.162	15.5	1.46E-04	2.41E-04
^{137m}Ba	1.85E-04	0.153	14.7	1.38E-04	2.28E-04
^{151}Sm	1.31E-06	1.09E-03	0.104	9.82E-07	1.62E-06
^{152}Eu	1.72E-09	1.42E-06	1.37E-04	1.71E-09	1.73E-09
^{154}Eu	8.48E-09	7.02E-06	6.74E-04	6.34E-09	1.05E-08
^{155}Eu	1.55E-07	1.29E-04	1.23E-02	1.54E-07	1.56E-07
^{226}Ra	7.76E-14	6.42E-11	6.16E-09	5.80E-14	9.56E-14
^{228}Ra	4.99E-18	4.13E-15	3.96E-13	4.94E-18	5.03E-18
^{227}Ac	4.09E-13	3.39E-10	3.25E-08	3.06E-13	5.05E-13
^{231}Pa	9.44E-13	7.82E-10	7.51E-08	7.06E-13	1.16E-12
^{229}Th	9.65E-16	7.99E-13	7.67E-11	9.57E-16	9.72E-16
^{232}Th	4.36E-19	3.61E-16	3.46E-14	3.26E-19	5.37E-19
^{232}U	5.06E-13	4.19E-10	4.02E-08	3.78E-13	6.24E-13
^{233}U	2.31E-14	1.91E-11	1.83E-09	1.72E-14	2.85E-14
^{234}U	2.52E-08	2.09E-05	2.00E-03	1.89E-08	3.11E-08
^{235}U	1.12E-09	9.29E-07	8.92E-05	8.39E-10	1.38E-09
^{236}U	2.20E-10	1.82E-07	1.75E-05	1.64E-10	2.71E-10
^{238}U	2.56E-08	2.12E-05	2.03E-03	1.91E-08	3.16E-08
^{237}Np	7.09E-11	5.87E-08	5.63E-06	5.30E-11	8.74E-11
^{238}Pu	3.03E-09	2.51E-06	2.40E-04	2.26E-09	3.73E-09
^{239}Pu	4.38E-07	3.63E-04	3.48E-02	3.27E-07	5.40E-07
^{240}Pu	3.84E-08	3.18E-05	3.06E-03	2.87E-08	4.74E-08
^{241}Pu	1.27E-07	1.05E-04	1.01E-02	9.50E-08	1.57E-07
^{242}Pu	5.88E-13	4.87E-10	4.67E-08	4.39E-13	7.25E-13
^{241}Am	3.58E-09	2.97E-06	2.85E-04	2.68E-09	4.42E-09
^{243}Am	2.91E-14	2.41E-11	2.31E-09	2.18E-14	3.59E-14
^{242}Cm	3.50E-11	2.89E-08	2.78E-06	3.47E-11	3.52E-11
^{243}Cm	7.53E-13	6.24E-10	5.99E-08	7.47E-13	7.59E-13
^{244}Cm	7.40E-13	6.13E-10	5.88E-08	5.53E-13	9.12E-13

Table A3-3. 241-T-202 Historical Tank Inventory Estimate.[1, 2] (4 sheets)

Total Inventory Estimate					
Totals	*M*	μg/g	kg	-95 CI (*M* or g/L)	+95 CI (*M* or g/L)
Pu	7.22E-06 (g/L)	----	5.74E-04	5.39E-06	8.90E-06
U	3.22E-04	63.5	6.09	2.41E-04	3.97E-04

Notes:

CI = confidence interval

[1]Agnew et al. (1997a)

[2]These predictions have not been validated and should be used with caution.

[3]This is the volume average for density, mass average water wt% and TOC wt% carbon.

[4]Differences exist among the inventories in this column and the inventories calculated from the two sets of concentrations.

[5]Unknowns in tank solids inventory are assigned by the TLM.

Table A3-4. 241-T-203 Historical Tank Inventory Estimate.[1, 2] (4 sheets)

Total Inventory Estimate					
Physical Properties				-95 CI	+95 CI
Total waste	1.60E+05 (kg) (35.0 kgal)				
Heat load	2.75E-04 (kW) (0.938 Btu/hr)			2.05E-04	3.39E-04
Bulk density[3]	1.21 (g/cm^3)			1.15	1.26
Water wt%[3]	68.6			62.1	75.2
TOC wt% C (wet)[3]	2.11			2.03	2.14
Chemical Constituents	*M*	ppm	kg[4]	-95 CI	+95 CI
Na^{+}	4.23	8.06E+04	1.29E+04	3.03	6.08
Al^{3+}	0	0	0	0	0
Fe^{3+} (total Fe)	0.363	1.68E+04	2.68E+03	0.341	0.385
Cr^{3+}	6.05E-03	260	41.7	4.52E-03	7.46E-03
Bi^{3+}	5.55E-02	9.61E+03	1.54E+03	1.66E-02	7.77E-02
La^{3+}	3.38E-03	389	62.2	2.53E-03	4.17E-03
Hg^{2+}	0	0	0	0	0
Zr (as $ZrO(OH)_2$)	0	0	0	0	0
Pb^{2+}	0	0	0	0	0
Ni^{2+}	1.42E-03	69.2	11.1	1.06E-03	6.61E-03
Sr^{2+}	0	0	0	0	0
Mn^{4+}	4.54E-03	206	33.0	3.39E-03	5.59E-03
Ca^{2+}	0.244	8.11E+03	1.30E+03	0.157	0.332
K^{+}	0.205	6.65E+03	1.06E+03	0.154	0.253
OH^{-}	1.10	1.55E+04	2.48E+03	1.04	1.17
NO^{3-}	1.23	6.29E+04	1.01E+04	0.917	1.51
NO^{2-}	3.20E-03	122	19.5	1.76E-03	4.97E-03
CO_3^{2-}	0.244	1.21E+04	1.94E+03	0.157	0.332
PO_4^{3-}	8.40E-02	6.61E+03	1.06E+03	3.79E-02	0.113
SO_4^{2-}	2.67E-03	212	34.0	1.99E-03	3.29E-03
Si (as SiO_3^{2-})	0	0	0	0	0
F^{-}	1.01	1.59E+04	2.54E+03	0.180	2.89
Cl^{-}	2.37E-02	696	111	1.77E-02	2.93E-02

Table A3-4. 241-T-203 Historical Tank Inventory Estimate.[1,2] (4 sheets)

Total Inventory Estimate					
Chemical Constituents (Cont'd)	*M*	ppm	kg[4]	-95 CI	+95 CI
$C_6H_5O_7^{3-}$	0	0	0	0	0
$EDTA^{4-}$	0	0	0	0	0
$HEDTA^{3-}$	0	0	0	0	0
Glycolate$^-$	0	0	0	0	0
Acetate$^-$	0	0	0	0	0
Oxalate^{2-}	1.06	7.74E+04	1.24E+04	1.01	1.09
DBP	0	0	0	0	0
Butanol	0	0	0	0	0
NH_3	1.23E-07	1.73E-03	2.76E-04	5.23E-08	2.25E-07
$Fe(CN)_6^{4-}$	0	0	0	0	0
Radiological Constituents	Ci/L	µCi/g	Ci[5]	-95 CI (Ci/L)	+95 CI (Ci/L)
^{3}H	5.31E-09	4.40E-06	7.04E-04	2.94E-09	8.07E-09
^{14}C	1.65E-09	1.36E-06	2.18E-04	1.23E-09	2.03E-09
^{59}Ni	4.68E-10	3.88E-07	6.20E-05	3.50E-10	2.17E-09
^{63}Ni	4.32E-08	3.57E-05	5.72E-03	3.23E-08	2.01E-07
^{60}Co	5.29E-10	4.38E-07	7.00E-05	3.95E-10	6.52E-10
^{79}Se	3.47E-10	2.88E-07	4.60E-05	2.60E-10	4.28E-10
^{90}Sr	1.72E-04	0.142	22.8	1.29E-04	2.12E-04
^{90}Y	1.72E-04	0.142	22.8	1.29E-04	2.12E-04
^{93}Zr	1.65E-09	1.37E-06	2.18E-04	1.23E-09	2.03E-09
^{93m}Nb	1.36E-09	1.13E-06	1.81E-04	1.02E-09	1.68E-09
^{99}Tc	1.14E-08	9.47E-06	1.51E-03	8.55E-09	1.41E-08
^{106}Ru	3.96E-16	3.28E-13	5.25E-11	2.96E-16	4.89E-16
^{113m}Cd	4.62E-09	3.82E-06	6.12E-04	3.45E-09	5.69E-09
^{125}Sb	6.10E-10	5.05E-07	8.07E-05	4.56E-10	7.52E-10
^{126}Sn	5.24E-10	4.34E-07	6.94E-05	3.92E-10	6.46E-10
^{129}I	2.16E-11	1.79E-08	2.86E-06	1.61E-11	2.66E-11
^{134}Cs	2.63E-11	2.17E-08	3.48E-06	1.96E-11	3.24E-11

Table A3-4. 241-T-203 Historical Tank Inventory Estimate.[1,2] (4 sheets)

Total Inventory Estimate					
Radiological Constituents (Cont'd)	Ci/L	μCi/g	Ci[2]	-95 CI (Ci/L)	+95 CI (Ci/L)
^{137}Cs	1.95E-04	0.162	25.8	1.46E-04	2.41E-04
^{137m}Ba	1.85E-04	0.153	24.4	1.38E-04	2.28E-04
^{151}Sm	1.31E-06	1.09E-03	0.174	9.82E-07	1.62E-06
^{152}Eu	1.72E-09	1.42E-06	2.28E-04	1.71E-09	1.73E-09
^{154}Eu	8.48E-09	7.02E-06	1.12E-03	6.34E-09	1.05E-08
^{155}Eu	1.55E-07	1.29E-04	2.06E-02	1.54E-07	1.56E-07
^{226}Ra	7.76E-14	6.42E-11	1.03E-08	5.80E-14	9.56E-14
^{228}Ra	4.99E-18	4.13E-15	6.61E-13	4.94E-18	5.03E-18
^{227}Ac	4.09E-13	3.39E-10	5.42E-08	3.06E-13	5.05E-13
^{231}Pa	9.44E-13	7.82E-10	1.25E-07	7.06E-13	1.16E-12
^{229}Th	9.65E-16	7.99E-13	1.28E-10	9.57E-16	9.72E-16
^{232}Th	4.36E-19	3.61E-16	5.77E-14	3.26E-19	5.37E-19
^{232}U	5.06E-13	4.19E-10	6.70E-08	3.78E-13	6.24E-13
^{233}U	2.31E-14	1.91E-11	3.06E-09	1.72E-14	2.85E-14
^{234}U	2.52E-08	2.09E-05	3.34E-03	1.89E-08	3.11E-08
^{235}U	1.12E-09	9.29E-07	1.49E-04	8.39E-10	1.38E-09
^{236}U	2.20E-10	1.82E-07	2.91E-05	1.64E-10	2.71E-10
^{238}U	2.56E-08	2.12E-05	3.39E-03	1.91E-08	3.16E-08
^{237}Np	7.09E-11	5.87E-08	9.39E-06	5.30E-11	8.74E-11
^{238}Pu	3.03E-09	2.51E-06	4.01E-04	2.26E-09	3.73E-09
^{239}Pu	4.38E-07	3.63E-04	5.80E-02	3.27E-07	5.40E-07
^{240}Pu	3.84E-08	3.18E-05	5.09E-03	2.87E-08	4.74E-08
^{241}Pu	1.27E-07	1.05E-04	1.68E-02	9.50E-08	1.57E-07
^{242}Pu	5.88E-13	4.87E-10	7.79E-08	4.39E-13	7.25E-13
^{241}Am	3.58E-09	2.97E-06	4.74E-04	2.68E-09	4.42E-09
^{243}Am	2.91E-14	2.41E-11	3.86E-09	2.18E-14	3.59E-14
^{242}Cm	3.50E-11	2.89E-08	4.63E-06	3.47E-11	3.52E-11
^{243}Cm	7.53E-13	6.24E-10	9.98E-08	7.47E-13	7.59E-13
^{244}Cm	7.40E-13	6.13E-10	9.80E-08	5.53E-13	9.12E-13

Table A3-4. 241-T-203 Historical Tank Inventory Estimate.[1,2] (4 sheets)

Total Inventory Estimate					
Totals	*M*	µg/g	kg	-95 CI (*M* or g/L)	+95 CI (*M* or g/L)
Pu	7.22E-06 (g/L)	----	9.56E-04	5.39E-06	8.90E-06
U	3.22E-04	63.5	10.2	2.41E-04	3.97E-04

Notes:

CI = confidence interval

[1]Agnew et al. (1997a)

[2]These predictions have not been validated and should be used with caution.

[3]This is the volume average for density, mass average water wt% and TOC wt% carbon.

[4]Differences exist among the inventories in this column and the inventories calculated from the two sets of concentrations.

[5]Unknowns in tank solids inventory are assigned by the TLM.

Table A3-5. 241-T-204 Historical Tank Inventory Estimate.[1,2] (4 sheets)

Total Inventory Estimate					
Physical Properties				**-95 CI**	**+95 CI**
Total waste	1.74E+05 (kg) (38.0 kgal)				
Heat load	2.98E-04 (kW) (1.02 Btu/hr)			2.23E-04	3.68E-04
Bulk density[3]	1.21 (g/cm^3)			1.15	1.26
Water wt%[3]	68.6			62.1	75.2
TOC wt% C (wet)[3]	2.11			2.03	2.14
Chemical Constituents	***M***	**ppm**	**kg[4]**	**-95 CI**	**+95 CI**
Na^+	4.23	8.06E+04	1.40E+04	3.03	6.08
Al^{3+}	0	0	0	0	0
Fe^{3+} (total Fe)	0.363	1.68E+04	2.91E+03	0.341	0.385
Cr^{3+}	6.05E-03	260	45.2	4.52E-03	7.46E-03
Bi^{3+}	5.55E-02	9.61E+03	1.67E+03	1.66E-02	7.77E-02
La^{3+}	3.38E-03	389	67.5	2.53E-03	4.17E-03
Hg^{2+}	0	0	0	0	0
Zr (as $ZrO(OH)_2$)	0	0	0	0	0
Pb^{2+}	0	0	0	0	0
Ni^{2+}	1.42E-03	69.2	12.0	1.06E-03	6.61E-03
Sr^{2+}	0	0	0	0	0
Mn^{4+}	4.54E-03	206	35.8	3.39E-03	5.59E-03
Ca^{2+}	0.244	8.11E+03	1.41E+03	0.157	0.332
K^+	0.205	6.65E+03	1.15E+03	0.154	0.253
OH^-	1.10	1.55E+04	2.69E+03	1.04	1.17
NO^{3-}	1.23	6.29E+04	1.09E+04	0.917	1.51
NO^{2-}	3.20E-03	122	21.2	1.76E-03	4.97E-03
CO_3^{2-}	0.244	1.21E+04	2.11E+03	0.157	0.332
PO_4^{3-}	8.40E-02	6.61E+03	1.15E+03	3.79E-02	0.113
SO_4^{2-}	2.67E-03	212	36.9	1.99E-03	3.29E-03
Si (as SiO_3^{2-})	0	0	0	0	0
F^-	1.01	1.59E+04	2.76E+03	0.180	2.89
Cl^-	2.37E-02	696	121	1.77E-02	2.93E-02
$C_6H_5O_7^{3-}$	0	0	0	0	0

Table A3-5. 241-T-204 Historical Tank Inventory Estimate.[1,2] (4 sheets)

Total Inventory Estimate					
Chemical Constituents (Cont'd)	***M***	**ppm**	**kg**[4]	**-95 CI**	**+95 CI**
$EDTA^{4-}$	0	0	0	0	0
$HEDTA^{3-}$	0	0	0	0	0
$Glycolate^{-}$	0	0	0	0	0
$Acetate^{-}$	0	0	0	0	0
$Oxalate^{2-}$	1.06	7.74E+04	1.34E+04	1.01	1.09
DBP	0	0	0	0	0
Butanol	0	0	0	0	0
NH_3	1.23E-07	1.73E-03	3.00E-04	5.23E-08	2.25E-07
$Fe(CN)_6^{4-}$	0	0	0	0	0
Radiological Constituents	**Ci/L**	**μCi/g**	**Ci**[5]	**-95 CI (Ci/L)**	**+95 CI (Ci/L)**
^{3}H	5.31E-09	4.40E-06	7.64E-04	2.94E-09	8.07E-09
^{14}C	1.65E-09	1.36E-06	2.37E-04	1.23E-09	2.03E-09
^{59}Ni	4.68E-10	3.88E-07	6.73E-05	3.50E-10	2.17E-09
^{63}Ni	4.32E-08	3.57E-05	6.21E-03	3.23E-08	2.01E-07
^{60}Co	5.29E-10	4.38E-07	7.60E-05	3.95E-10	6.52E-10
^{79}Se	3.47E-10	2.88E-07	5.00E-05	2.60E-10	4.28E-10
^{90}Sr	1.72E-04	0.142	24.7	1.29E-04	2.12E-04
^{90}Y	1.72E-04	0.142	24.7	1.29E-04	2.12E-04
^{93}Zr	1.65E-09	1.37E-06	2.37E-04	1.23E-09	2.03E-09
^{93m}Nb	1.36E-09	1.13E-06	1.96E-04	1.02E-09	1.68E-09
^{99}Tc	1.14E-08	9.47E-06	1.64E-03	8.55E-09	1.41E-08
^{106}Ru	3.96E-16	3.28E-13	5.70E-11	2.96E-16	4.89E-16
^{113m}Cd	4.62E-09	3.82E-06	6.64E-04	3.45E-09	5.69E-09
^{125}Sb	6.10E-10	5.05E-07	8.77E-05	4.56E-10	7.52E-10
^{126}Sn	5.24E-10	4.34E-07	7.53E-05	3.92E-10	6.46E-10
^{129}I	2.16E-11	1.79E-08	3.10E-06	1.61E-11	2.66E-11
^{134}Cs	2.63E-11	2.17E-08	3.78E-06	1.96E-11	3.24E-11

Table A3-5. 241-T-204 Historical Tank Inventory Estimate.[1,2] (4 sheets)

Total Inventory Estimate					
Radiological Constituents (Cont'd)	Ci/L	μCi/g	Ci[5]	-95 CI (Ci/L)	+95 CI (Ci/L)
^{137}Cs	1.95E-04	0.162	28.1	1.46E-04	2.41E-04
^{137m}Ba	1.85E-04	0.153	26.5	1.38E-04	2.28E-04
^{151}Sm	1.31E-06	1.09E-03	0.189	9.82E-07	1.62E-06
^{152}Eu	1.72E-09	1.42E-06	2.47E-04	1.71E-09	1.73E-09
^{154}Eu	8.48E-09	7.02E-06	1.22E-03	6.34E-09	1.05E-08
^{155}Eu	1.55E-07	1.29E-04	2.23E-02	1.54E-07	1.56E-07
^{226}Ra	7.76E-14	6.42E-11	1.12E-08	5.80E-14	9.56E-14
^{228}Ra	4.99E-18	4.13E-15	7.17E-13	4.94E-18	5.03E-18
^{227}Ac	4.09E-13	3.39E-10	5.89E-08	3.06E-13	5.05E-13
^{231}Pa	9.44E-13	7.82E-10	1.36E-07	7.06E-13	1.16E-12
^{229}Th	9.65E-16	7.99E-13	1.39E-10	9.57E-16	9.72E-16
^{232}Th	4.36E-19	3.61E-16	6.27E-14	3.26E-19	5.37E-19
^{232}U	5.06E-13	4.19E-10	7.27E-08	3.78E-13	6.24E-13
^{233}U	2.31E-14	1.91E-11	3.32E-09	1.72E-14	2.85E-14
^{234}U	2.52E-08	2.09E-05	3.63E-03	1.89E-08	3.11E-08
^{235}U	1.12E-09	9.29E-07	1.61E-04	8.39E-10	1.38E-09
^{236}U	2.20E-10	1.82E-07	3.16E-05	1.64E-10	2.71E-10
^{238}U	2.56E-08	2.12E-05	3.68E-03	1.91E-08	3.16E-08
^{237}Np	7.09E-11	5.87E-08	1.02E-05	5.30E-11	8.74E-11
^{238}Pu	3.03E-09	2.51E-06	4.35E-04	2.26E-09	3.73E-09
^{239}Pu	4.38E-07	3.63E-04	6.30E-02	3.27E-07	5.40E-07
^{240}Pu	3.84E-08	3.18E-05	5.53E-03	2.87E-08	4.74E-08
^{241}Pu	1.27E-07	1.05E-04	1.83E-02	9.50E-08	1.57E-07
^{242}Pu	5.88E-13	4.87E-10	8.45E-08	4.39E-13	7.25E-13
^{241}Am	3.58E-09	2.97E-06	5.15E-04	2.68E-09	4.42E-09
^{243}Am	2.91E-14	2.41E-11	4.19E-09	2.18E-14	3.59E-14
^{242}Cm	3.50E-11	2.89E-08	5.03E-06	3.47E-11	3.52E-11
^{243}Cm	7.53E-13	6.24E-10	1.08E-07	7.47E-13	7.59E-13
^{244}Cm	7.40E-13	6.13E-10	1.06E-07	5.53E-13	9.12E-13

Table A3-5. 241-T-204 Historical Tank Inventory Estimate.[1, 2] (4 sheets)

Total Inventory Estimate					
Totals	*M*	μg/g	kg	-95 CI (*M* or g/L)	+95 CI (*M* or g/L)
Pu	7.22E-06 (g/L)	----	1.04E-03	5.39E-06	8.90E-06
U	3.22E-04	63.5	11.0	2.41E-04	3.97E-04

Notes:

CI = confidence interval

[1]Agnew et al. (1997a)

[2]These predictions have not been validated and should be used with caution.

[3]This is the volume average for density, mass average water wt% and TOC wt% carbon.

[4]Differences exist among the inventories in this column and the inventories calculated from the two sets of concentrations.

[5]Unknowns in tank solids inventory are assigned by the TLM.

A4.0 SURVEILLANCE DATA

The surveillance efforts in place on the T-200 series tanks consist of surface-level measurements (liquid and solid) and temperature monitoring inside the tank (waste and headspace). Surveillance data provide the basis for determining tank integrity. Liquid-level measurements can indicate whether the tank has a major leak. Solid surface-level measurements can indicate physical changes in and consistencies of the solid layers of a tank.

A4.1 SURFACE-LEVEL READINGS

None of the T-200 series tanks are considered leakers. A manual tape is used to monitor the surface level. Riser 4 was used in all tanks as the location of the manual tape. The surface-level plots for each tank indicate a steady waste level from January 1991 to January 1996. The waste surface level on April 1, 1997, was 412.12 cm (162.5 in.), 266.07 cm (104.75 in.), 478.16 cm (188.25 in.), and 492.76 cm (194 in.) for tanks 241-T-201, -T-202, -T-203, and -T-204, respectively. Figures A4-1 to A4-4 are level history graphs of the volume measurements. The T-200 series tanks have no liquid observation wells, but they have three identified dry wells.

A4.2 INTERNAL TANK TEMPERATURES

Each T-200 series tank has a single thermocouple tree with 11 thermocouples to monitor the waste temperature through risers 5, 5, 8, and 8 for tanks 241-T-201, T-202, T-203, and T-204, respectively. The configuration of the thermocouple tree (that is, the spacing of the thermocouples and the distance from the end of the tree to the bottom of the tank) is unclear.

Intermittent tank data for each tank was recorded from 1975 to 1991 and was available from the surveillance analysis computer system. Within this time span, several large breaks occurred in the temperature data sequence for all thermocouples. Continuous temperature data has been available from approximately mid-1994 to January 1998.

The average tank temperature for each tank is 16 to 17 °C (62 to 63 °F), the minimums range from 6 to 11 °C (44 to 52 °F), and the maximum ranges from 22 to 27 °C (72 to 81 °F). For plots of the thermocouple readings, refer to the supporting document for the HTCE (Brevick et al. 1997a). Figures A4-5 to A4-8 are graphs of the weekly high temperature.

A4.3 TANK 241-T-201, -T-202, -T-203, AND -T-204 PHOTOGRAPHS

Each tank has a separate photograph. The waste in tank 241-T-201 appears different from the other T-200 series tanks. It has a dried, cracked, rust-brown surface. There is a blue-black region that appears to have standing liquid present. The other T-200 series tanks appear to lack any free liquid and have dried, cracked gray-brown or gray-black surfaces.
A temperature probe, salt well screen, and a manual tape are also visible in the various photographs. The photographs were taken in 1986 and 1989 (Brevick et al. 1997b).

Figure A4-1. Tank 241-T-201 Level History.

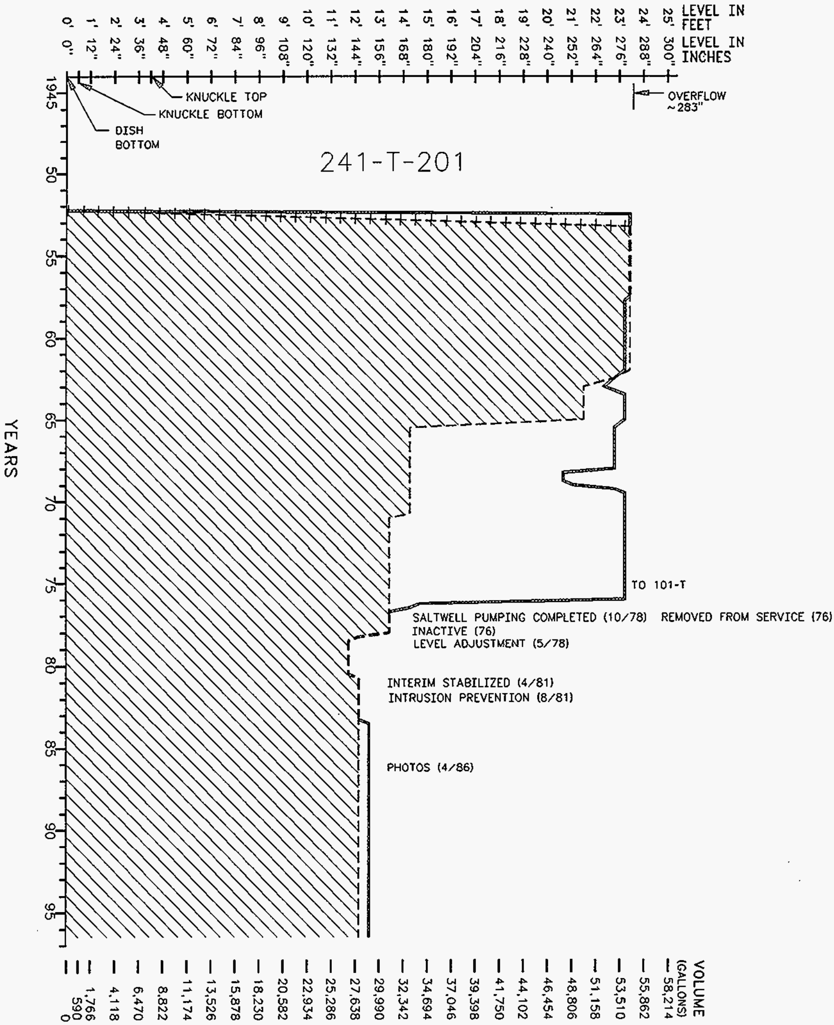


Figure A4-2. Tank 241-T-202 Level History.

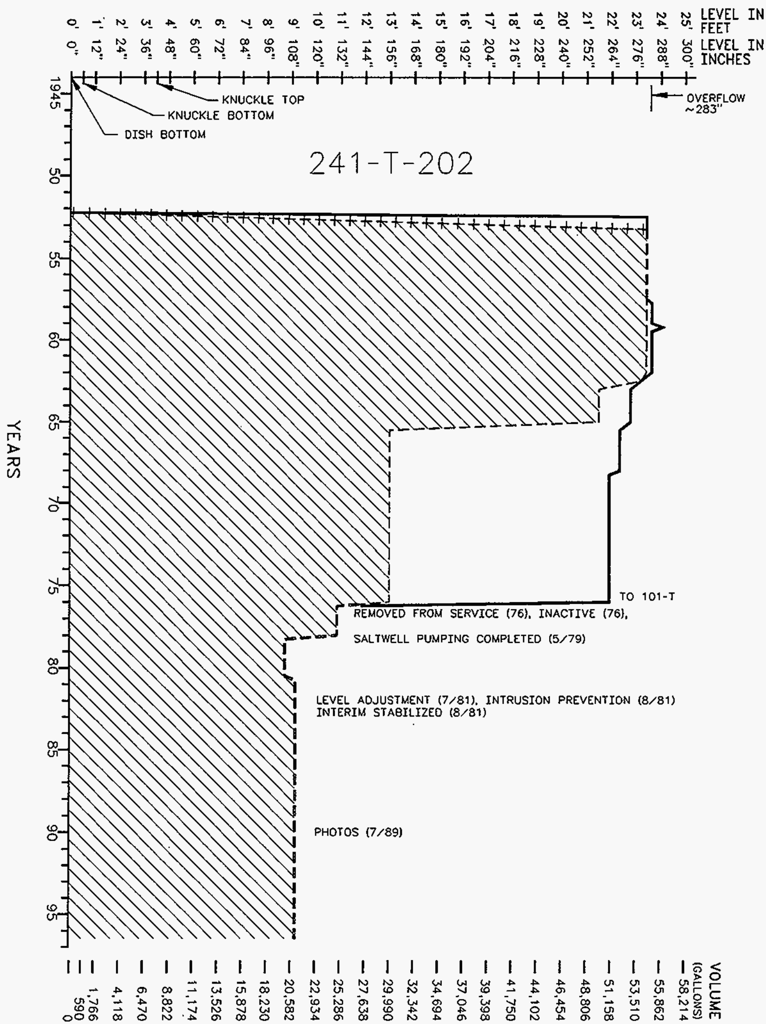


Figure A4-3. Tank 241-T-203 Level History.

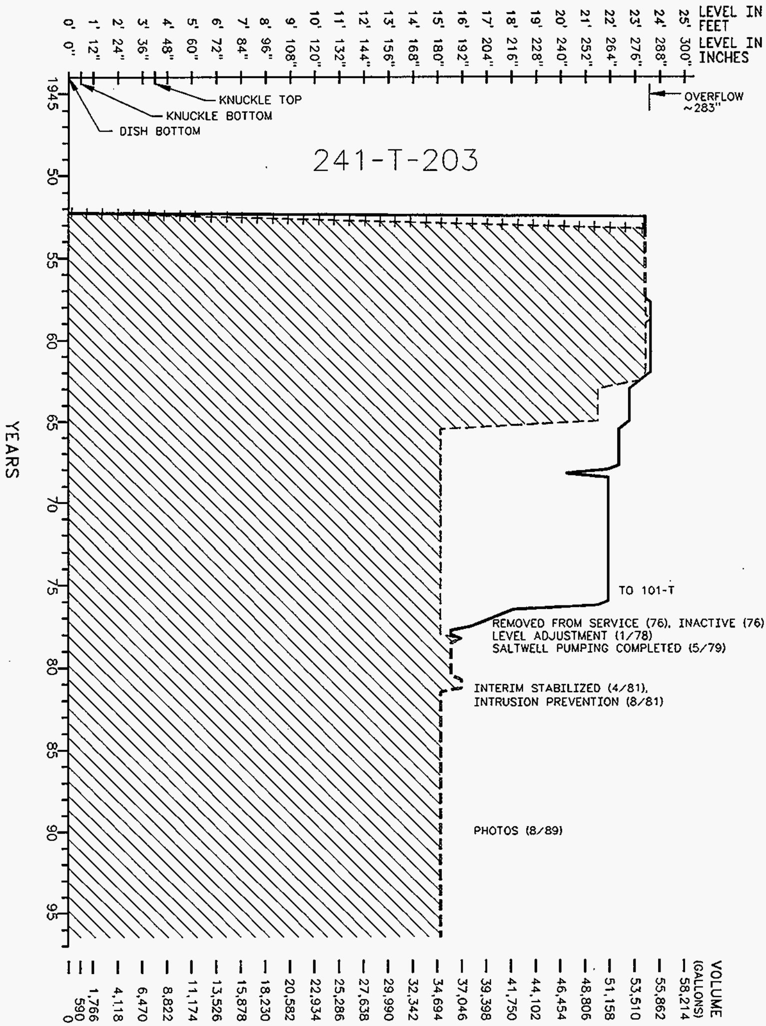


Figure A4-4. Tank 241-T-204 Level History.

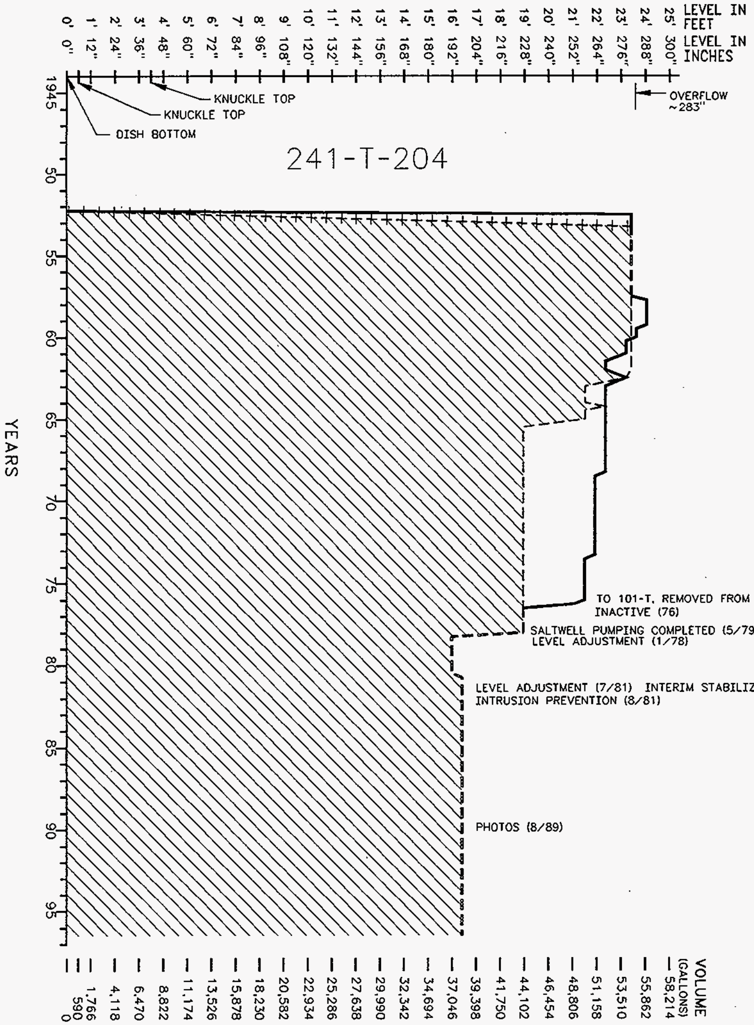


Figure A4-5. Tank 241-T-201 High Temperature Plot.

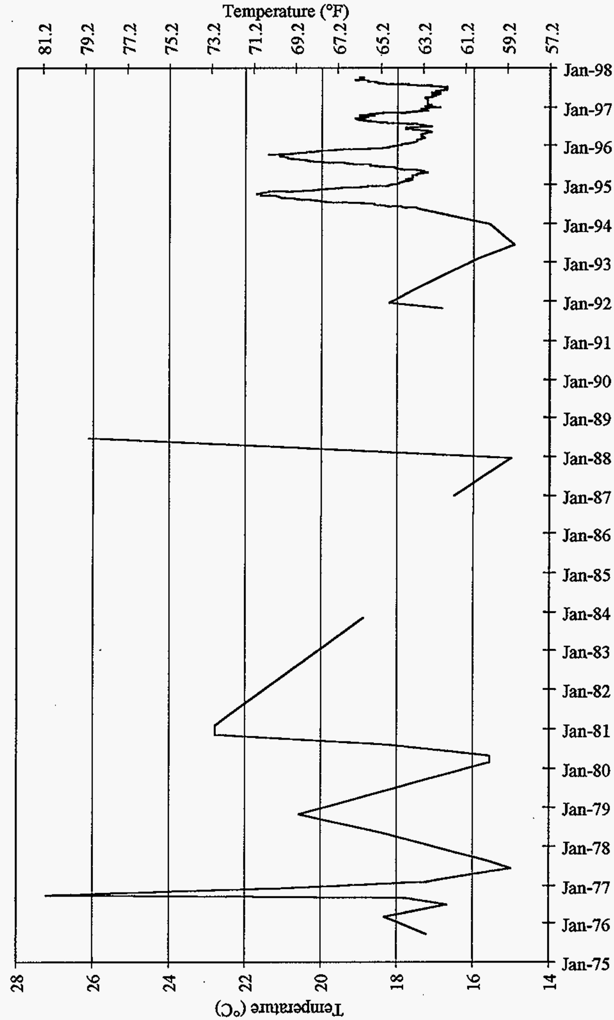


Figure A4-6. Tank 241-T-202 High Temperature Plot.

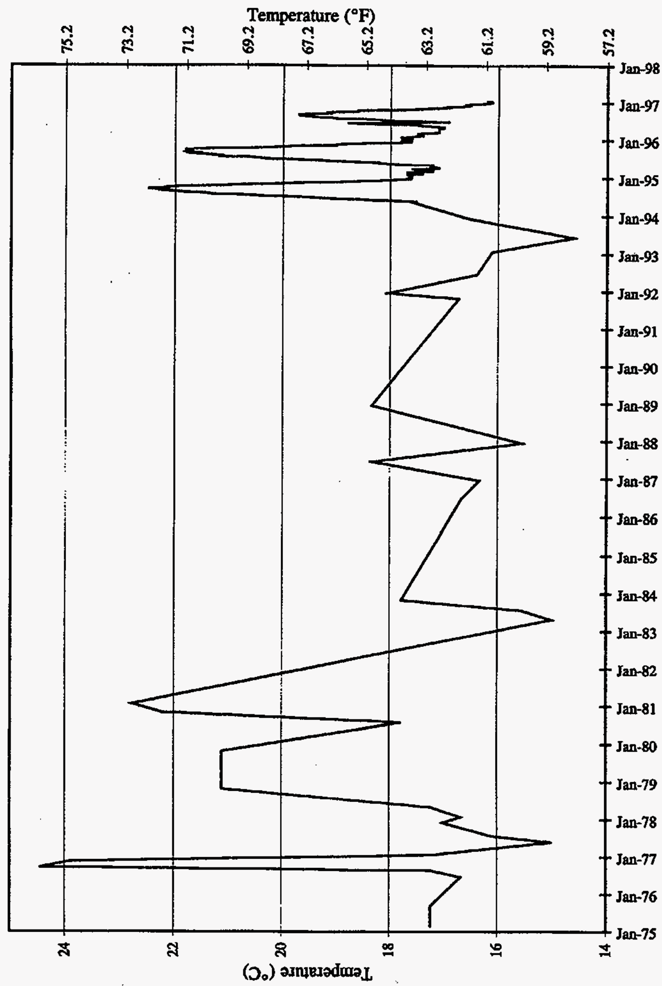


Figure A4-7. Tank 241-T-203 High Temperature Plot.

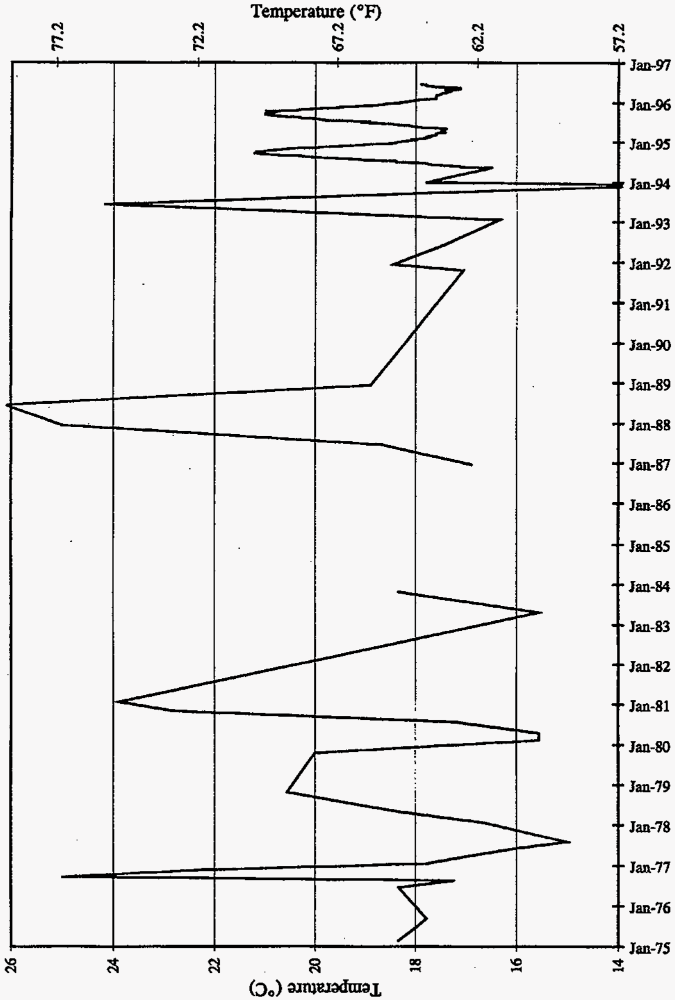
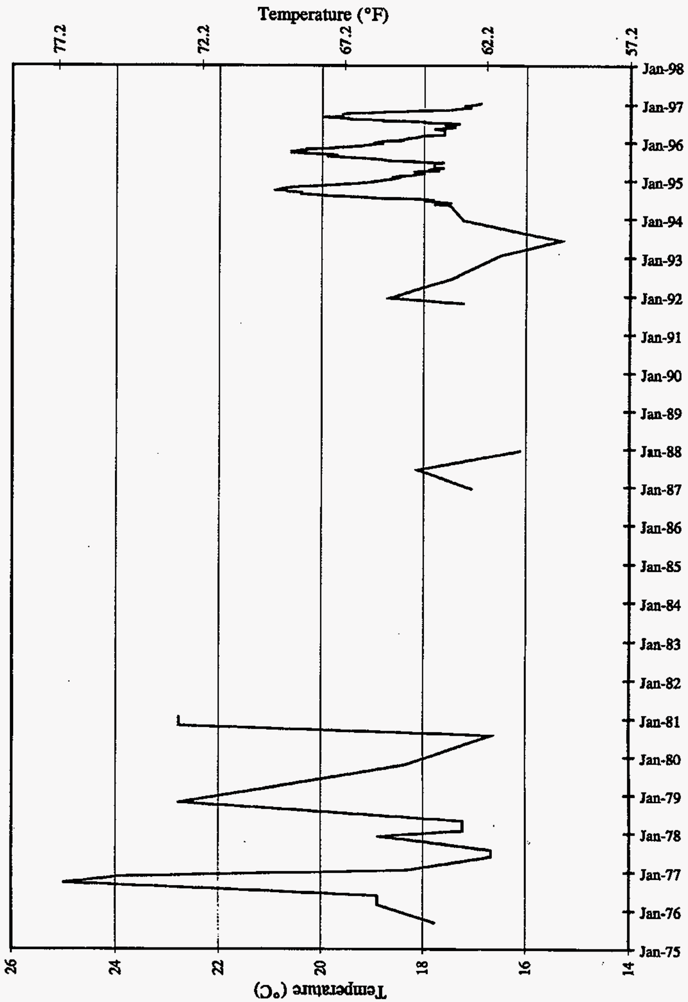


Figure A4-8. Tank 241-T-204 High Temperature Plot.



A5.0 APPENDIX A REFERENCES

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APPENDIX B

SAMPLING OF 241-T-200 SERIES TANKS (241-T-201, 241-T-202, 241-T-203, AND 241-T-204)

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APPENDIX B

SAMPLING OF 241-T-200 SERIES TANKS (241-T-201, 241-T-202, 241-T-203, AND 241-T-204)

Appendix B provides sampling and analysis information for each known sampling event for T-200 series tanks and assesses the sample results. It includes the following.

- **Section B1.0**: Tank Sampling Overview
- **Section B2.0**: Sampling Events
- **Section B3.0**: Assessment of Characterization Results
- **Section B4.0**: Appendix B References

Future sampling information for these tanks will be appended to the above list.

B1.0 TANK SAMPLING OVERVIEW

This section describes the March/April 1997 sampling and analysis events for tanks 241-T-201, -T-202, -T-203, and -T-204. Core samples and vapro phase samples were taken to satisfy the requirements of the *Tank Safety Screening Data Quality Objective* (Dukelow et al. 1995). Vapor phase measurements were also used to satisfy the requirements of the *Memorandum of Understandting for the Organic Compexant Safety Issue Data Requirements* (Schreiber 1997a) and the *Data Quality Objective to Support Resolution of the Organic Solvent Safety Issue* (Meacham et al. 1997). The sampling and analyses were performed in accordance with the *Tank 241-T-201 Push Mode Core Sampling and Analysis Plan* (Hu 1997), *Tank 241-T-202 Push Mode Core Sampling and Analysis Plan* (Bell 1997), *Tank 241-T-203 Push Mode Core Sampling and Analysis Plan* (Schreiber 1997b), and the *Tank 241-T-204 Push Mode Core Sampling and Analysis Plan* (Winkleman 1997). There were also two letters of instruction regarding the analysis of the composite core samples (Hall 1997a and Hall 1997b). Further discussions of the sampling and analysis procedures can be found in the *Tank Characterization Reference Guide* (DeLorenzo et al. 1994). The only previous analytical data for these tanks comes from a sample from tank 241-T-204 taken and analyzed in 1978 (Horton 1978). No samples from any other T-200 series tanks have been documented.

B2.0 SAMPLING EVENTS

This section describes sampling events. Table B2-1 summarizes the sampling and analytical requirements from the safety screening DQO (Dukelow et al. 1995), the organic complexant memorandum of understanding (Schreiber 1997a) and organic solvent DQO (Meacham et al. 1997). Tables B2-8 through B2-234 show analytical results from the most current sampling effort. The analytical results used to characterize current tank contents were from the 1997 core samples. Previous sample results are provided in Section 2.3.

Table B2-1. Integrated Data Quality Objective Requirements for T-200 Series Tanks.

Sampling Event	Applicable DQOs	Sampling Requirements	Analytical Requirements
Push mode core sampling	Safety screening - Energetics - Moisture content - Total alpha - Flammable gas Dukelow et al. (1995) Organic complexant MOU Schreiber (1997a)	Core samples from a minimum of two risers separated radially to the maximum extent possible Combustible gas measurement	Flammability, energetics, moisture, total alpha activity, density, anions, cations, radionuclides, TOC, separable organics, physical properties, TIC, pH, Cr(VI)
Vapor sampling	Hazardous vapor Osborne and Buckley (1995) (Resolved)	Steel canisters, triple sorbent traps, sorbent trap systems	Flammable gas, organic vapors, permanent gases
	Organic solvents Meacham et al. (1997)	Vapor samples	Total nonmethane hydrcarbons

Note:
MOU = Memorandum of Understanding

B2.1 1997 CORE SAMPLING EVENTS

One core sample was collected from each T-200 series tank (241-T-201, -T-202, -T-203, and -T-204). Core 188 was obtained on March 27, core 190 was obtained on April 17 and 18, core 191 was obtained on April 22, and core 192 was obtained on April 24 and 25, 1997. All core samples were collected from riser 3 in each tank. The samples were extruded at the 222-S Laboratory from April 9 to May 8, 1997.

Core sampling was used because of the depth of the waste and the expectation that a full vertical profile of the waste would be obtained from each tank. The core sample from tank 241-T-201, however, may not have recovered a full vertical profile of waste. The waste depth was expected to be approximately 4.1 m (161 in.). Based on observations from extrusion, several samples (segments 2-5) from this tank have large amounts of drainable liquid present where solids are believed to be. This suggests that there may be a local depression or anomaly beneath the riser, biasing the samples from that tank.

A vertical profile is used to satisfy the safety screening DQO (Dukelow et al. 1995). Safety screening analyses include: total alpha and bulk density to determine criticality, DSC to ascertain the fuel energy value, and thermogravimetric analysis (TGA) to obtain the total moisture content. In addition, combustible gas meter readings in the tank headspace were performed to measure flammability. Table B2-1 summarizes the sampling and analytical requirements from the safety screening DQO.

B2.1.1 Sample Handling

The core samples obtained from each tank were taken from riser 3. The total mass of solids obtained from each tank ranged from 1,100 g to 3,300 g; liquids were obtained in substantial quantity from only one tank. The solids were uniformly black in color, and had varying degrees of moisture and physical consistency. Visual inspection of all of the extruded samples indicated that they contained substantial moisture. Table B2-2 shows the extrusion observations.

Table B2-2. T-200 Series Tanks Subsampling Scheme and Sample Description.[1] (3 sheets)

Tank	Customer ID	Weight (g)	Sample Portion	Sample Characteristics
T-201	192-01	268.6	Drainable liquid	Pale yellow and slightly cloudy. No organic layer.
T-201	192-02	248.2	Drainable liquid	Drainable liquid was black and opaque. Settled black solids present. No organic layer.
T-201	192-03	280.4	Drainable liquid	Drainable liquid was black and opaque. Settled black solids present. No organic layer.
T-201	192-04	252.0	Drainable liquid	Drainable liquid was black and opaque. Settled black solids present. No organic layer.
T-201	192-05	272.9	Drainable liquid	Drainable liquid was black and opaque. Settled black solids present. No organic layer.
T-201	192-06	198.3	Lower half	Black solids resembling a wet sludge.
		177.9	Upper half	Black solids resembling a wet sludge.

Table B2-2. T-200 Series Tanks Subsampling Scheme and Sample Description.[1] (3 sheets)

Tank	Customer ID	Weight (g)	Sample Portion	Sample Characteristics
T-201	192-07	187.5	Lower half	Black solids resembling a wet sludge.
		200.3	Upper half	Black solids resembling a wet sludge.
T-201	192-08	166.9	Lower half	Black solids resembling a wet sludge.
		208.7	Upper half	Black solids resembling a wet sludge.
T-202	191-01	172.0	Lower half	Black solids resembling a wet sludge.
		119.0	Upper half	Black solids resembling a sludge/slurry.
T-202	191-02	138.0	Lower half	Black solids resembling a sludge/slurry.
		156.3	Upper half	Black solids resembling a sludge/slurry.
T-202	191-03	168.9	Lower half	Black solids resembling a wet sludge.
		48.4	Upper half	Black solids resembling a wet sludge.
T-202	191-04	158.2	Lower half	Black solids resembling a dry sludge.
		148.8	Upper half	Black solids resembling a dry sludge.
T-202	191-05	256.9	Lower half	Black solids resembling a dry sludge.
		86.4	Upper half	Black solids resembling a wet sludge.
T-203	190-01	155.4	Lower half	Black solids resembling a wet sludge.
		170.4	Upper half	Black solids resembling a wet sludge.
T-203	190-01R	137.8	Lower half	Black solids resembling a sludge/slurry.
				55.6 g drainable liquid, no organic layer.
		109.6	Upper half	Black solids resembling a sludge/slurry.
T-203	190-02	167.3	Lower half	Black solids resembling a wet sludge.
		189.1	Upper half	Black solids resembling a wet sludge.
T-203	190-03	130.3	Lower half	Black solids resembling a wet sludge.
		138.4	Upper half	Black solids resembling a wet sludge.
T-203	190-04	182.4	Lower half	Black solids resembling a wet sludge.
		176.3	Upper half	Black solids resembling a wet sludge.
T-203	190-05	171.6	Lower half	Black solids resembling a wet sludge.
		191.4	Upper half	Black solids resembling a wet sludge.
T-203	190-06	183.7	Lower half	Black solids resembling a wet sludge.
		169.8	Upper half	Black solids resembling a wet sludge.
T-203	190-07	158.1	Lower half	Black solids resembling a wet sludge.
		183.6	Upper half	Black solids resembling a wet sludge.

Table B2-2. T-200 Series Tanks Subsampling Scheme and Sample Description.[1] (3 sheets)

Tank	Customer ID	Weight (g)	Sample Portion	Sample Characteristics
T-203	190-08	175.0	Lower half	Black solids resembling a wet sludge.
		168.1	Upper half	Black solids resembling a wet sludge.
T-203	190-09	185.0	Lower half	Black solids resembling a wet sludge.
		169.2	Upper half	Black solids resembling a wet sludge.
T-204	97-60[2]	150.3	Lower half	Black solids resembling a wet sludge.
		161.2	Upper half	Black solids resembling a wet sludge.
T-204	97-61	94.2	Lower half	Black solids resembling a wet sludge.
		no sample	Upper half	
T-204	97-62	216.6	Lower half	Black solids resembling a wet sludge.
		no sample	Upper half	
T-204	97-63	166.5	Lower half	Black solids resembling a dry sludge.
		189.4	Upper half	Black solids resembling a dry sludge.
T-204	97-64	178.1	Lower half	Black solids resembling a dry sludge.
		177.3	Upper half	Black solids resembling a dry sludge.
T-204	97-65	166.6	Lower half	Black solids resembling a dry sludge.
		194.8	Upper half	Black solids resembling a dry sludge.
T-204	97-66	183.2	Lower half	Black solids resembling a dry sludge.
		172.7	Upper half	Black solids resembling a dry sludge.
T-204	97-67	193.1	Lower half	Black solids resembling a dry sludge.
		159.5	Upper half	Black solids resembling a dry sludge.
T-204	97-68	153.7	Lower half	Black solids resembling a dry sludge.
		173.9	Upper half	Black solids resembling a dry sludge.
T-204	97-69	151.9	Lower half	Black solids resembling a dry sludge.
		195.3	Upper half	Black solids resembling a dry sludge.

Note:

[1]Nuzum (1997a), Esch (1997), Steen (1997), and Nuzum (1997b)

[2]Sample 97060 through 97069 (Customer ID. 97-60 through 97-69) corresponds to core 188.

The samples obtained did not visually differ from each other substantially except in one case. Tank 241-T-201 had several samples (segments 1-5) that were mostly drainable liquid. The liquids were mostly black in color from the presence of suspended solids. Segment 1 of tank 241-T-201 did not have any suspended solids. The solid samples (segments 6-8) were divided into subsegments before analysis. The drainable liquids were allowed to settle. Composites were created from the solid segments and the settled solids and clarified liquor of the drainable liquid. All composites were analyzed separately. Although the solids from the drainable liquid in tank 241-T-201 were composited and analyzed, they were not included in the statistical analysis of the data because of the degree of contamination from supernatant.

The remaining T-200 series solid samples were divided into subsegments, homogenized, subsampled, and composited for further laboratory analyses and archiving. Analyses were performed on both the segment and core composite level.

B2.1.2 Sample Analysis

The analyses performed on the core samples were limited to those required by the safety screening DQO and specific assays used to evaluate the predictions made from the B-200 series data. The analyses required by the safety screening DQO included analyses for thermal properties by DSC, moisture content by TGA, and content of fissile material by total alpha activity analysis. The additional assays selected to evaluate the predictions consisted of a full set of ion chromatography (IC) and inductively coupled plasma (ICP) analytes on core composite samples to determine the presence of selected analytes, which in turn, helped to determine the efficacy of the predictions made.

Differential scanning calorimetry and TGA were performed on samples ranging in mass from 4.661 mg to 52.100 mg. Quality control (QC) tests included performing the analyses in duplicate and using standards.

Total alpha activity measurements were performed on samples that had been fused in a solution of potassium then dissolved in acid. The resulting solution was dried on a counting planchet and counted in an alpha proportional counter. Quality control tests included standards, spikes, blanks, and duplicate analyses.

Ion chromatography was performed on samples that had been prepared by water digestion. Quality control tests included standards, spikes, blanks, and duplicate analyses. The sampling and analysis plans (Bell [1997], Hu [1997], Schreiber [1997b], and Winkelman [1997]) required measuring a select few analytes but reporting the full suite of IC analytes.

Inductively coupled plasma atomic emission spectroscopy (ICP/AES) was performed either on samples that had been prepared by a fusion procedure followed by dissolution in acid or acid dissolution alone. Quality control tests included standards, blanks, spikes, and duplicate analyses. The sampling and analysis plans required analyzing a select few analytes and reporting the full suite of ICP elements.

All reported analyses were performed according to approved laboratory procedures. Table B2-3 lists procedure numbers and applicable analyses. Table B2-4 is a summary of the sample portions, sample numbers, and analyses performed on each sample.

Table B2-3. Analytical Procedures.

Analysis	Method	Procedure Number
Energetics by DSC	Perkin Elmer[1]	LA-514-114
Percent water by TGA	Perkin Elmer®	LA-514-114
Total alpha activity	Alpha proportional counter	LA-508-101
Flammable gas	Combustible gas analyzer	WHC-IP-0030 IH 1.4 and IH 2.1[2]
TOC/TIC	Coulometer	LA-342-100
Metals by ICP/AES	Inductively coupled plasma spectrometry	LA-505-151 LA-505-161
Anions by IC	Ion chromatograph	LA-533-105
Radionuclides	Gamma energy analysis	LA-548-121
^{90}Sr	Beta proportional counter	LA-220-101
Specific gravity	Direct	LA-510-112
Bulk density	Gravimetry	LO-160-103

Note:

[1]Perkin Elmer is a registered trademark of Perkins Research and Manufacturing Company, Inc., Canoga Park, California.

[2]WHC (1992) Safety Department Administrative Manuals, Westinghouse Hanford Company, Richland, Washington:

IH 1.4, Industrial Hygiene Direct Reading Instrument Survey

IH 2.1, Standard Operating Procedure, MSA Model 260 Combustible Gas and Oxygen Analyzer

Table B2-4. T-200 Series Sample Analysis Summary.[1] (6 sheets)

Tank	Sample ID	Sample Portion	Sample Number	Sample Analyses
T-201	192-01	Drainable liquid	S97T000833 S97T001203	DSC/TGA, SpG IC, ICP, total alpha
T-201	192-02	Drainable liquid	S97T000834	DSC/TGA, SpG IC, ICP, total alpha
T-201	192-03	Drainable liquid	S97T000835 S97T001259	DSC/TGA, SpG, IC, ICP total alpha
T-201	192-04	Drainable liquid	S97T000836	DSC/TGA, SpG IC, ICP, total alpha
T-201	192-05	Drainable liquid	S97T000837	DSC/TGA, SpG IC, ICP, total alpha
T-201	192-06	Lower half	S97T000894 S97T000899 S97T000900 S97T000901	Density DSC/TGA IC ICP, total alpha
		Upper half	S97T000909 S97T000921 S97T000931	DSC/TGA ICP IC
T-201	192-07	Lower half	S97T000895 S97T000910 S97T000915 S97T000919	Density DSC/TGA IC ICP, total alpha
		Upper half	S97T000911 S97T000916 S97T000922	DSC/TGA ICP IC
T-201	192-08	Lower half	S97T000896 S97T000912 S97T000917 S97T000920	Density DSC/TGA IC ICP, total alpha
		Upper half	S97T000913 S97T000918 S97T000923	DSC/TGA ICP IC
T-201	192 Composite	Drainable liquid settled solids	S97T001252 S97T001253 S97T001256 S97T001257 S97T001754	Density DSC/TGA, TIC/TOC ICP IC GEA, Sr-90

Table B2-4. T-200 Series Sample Analysis Summary.[1] (6 sheets)

Tank	Sample ID	Sample Portion	Sample Number	Sample Analyses
T-201	192 Composite	Solid	S97T001245	Density
			S97T001246	DSC/TGA, TIC/TOC
			S97T001250	ICP
			S97T001251	IC
			S97T001753	GEA, Sr-90
T-202	191-01	Lower half	S97T000786	Density
			S97T000802	DSC/TGA
			S97T000939	total alpha
			S97T000944	ICP
			S97T000954	IC
		Upper half	S97T000803	DSC/TGA
			S97T000945	ICP
			S97T000955	IC
T-202	191-02	Lower half	S97T000787	Density
			S97T000804	DSC/TGA
			S97T000940	total alpha
			S97T000946	ICP
			S97T000956	IC
		Upper half	S97T000805	DSC/TGA
			S97T000947	ICP
			S97T000957	IC
T-202	191-03	Lower half	S97T000788	Density
			S97T000806	DSC/TGA
			S97T000941	total alpha
			S97T000948	ICP
			S97T000958	IC
		Upper half	S97T000807	DSC/TGA
			S97T000949	ICP
			S97T000959	IC
T-202	191-04	Lower half	S97T000789	Density
			S97T000808	DSC/TGA
			S97T000942	total alpha
			S97T000950	ICP
			S97T000960	IC
		Upper half	S97T000809	DSC/TGA
			S97T000951	ICP
			S97T000961	IC

Table B2-4. T-200 Series Sample Analysis Summary.[1] (6 sheets)

Tank	Sample ID	Sample Portion	Sample Number	Sample Analyses
T-202	191-05	Lower half	S97T000790 S97T000810 S97T000943 S97T000952 S97T000962	Density DSC/TGA total alpha ICP IC
		Upper half	S97T000811 S97T000953 S97T000963	DSC/TGA ICP IC
T-202	191 Composite	Solid	S97T001087 S97T001127 S97T001129 S97T001673 S97T001805	Density GEA, Sr-90 IC DSC/TGA, TIC/TOC ICP
T-203	190-01	Lower half	S97T000657 S97T000665 S97T000759 S97T000768	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000664 S97T000735 S97T000736	DSC/TGA ICP IC
T-203	190-01R	Lower half	S97T000699 S97T000711 S97T000760 S97T000769	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000705 S97T000737 S97T000746	DSC/TGA ICP IC
		Drainable liquid	S97T000733	DSC/TGA, total alpha, IC, ICP, SpG
T-203	190-02	Lower half	S97T000661 S97T000669 S97T000757 S97T000758	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000666 S97T000738 S97T000747	DSC/TGA ICP IC

Table B2-4. T-200 Series Sample Analysis Summary.[1] (6 sheets)

Tank	Sample ID	Sample Portion	Sample Number	Sample Analyses
T-203	190-03	Lower half	S97T000700 S97T000712 S97T000761 S97T000770	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000706 S97T000739 S97T000748	DSC/TGA ICP IC
T-203	190-04	Lower half	S97T000662 S97T000670 S97T000762 S97T000771	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000667 S97T000740 S97T000749	DSC/TGA ICP IC
T-203	190-05	Lower half	S97T000663 S97T000671 S97T000763 S97T000772	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000668 S97T000741 S97T000750	DSC/TGA ICP IC
T-203	190-06	Lower half	S97T000701 S97T000713 S97T000764 S97T000773	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000707 S97T000742 S97T000751	DSC/TGA ICP IC
T-203	190-07	Lower half	S97T000702 S97T000714 S97T000765 S97T000774	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000708 S97T000743 S97T000752	DSC/TGA ICP IC

Table B2-4. T-200 Series Sample Analysis Summary.[1] (6 sheets)

Tank	Sample ID	Sample Portion	Sample Number	Sample Analyses
T-203	190-08	Lower half	S97T000703 S97T000715 S97T000766 S97T000775	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000709 S97T000744 S97T000753	DSC/TGA ICP IC
T-203	190-09	Lower half	S97T000704 S97T000716 S97T000767 S97T000776	Density DSC/TGA ICP, total alpha IC
		Upper half	S97T000710 S97T000745 S97T000754	DSC/TGA ICP IC
T-203	190 Composite	Solid	S97T001012 S97T001013 S97T001016 S97T001017 S97T001734	Density DSC/TGA, TIC/TOC IC ICP GEA, Sr-90
T-204	97-60 (Segment 1)	Lower half	S97T000494 S97T000498 S97T000587	Density DSC/TGA total alpha
		Upper half	S97T000499	DSC/TGA
T-204	97-61 (Segment 2)	Lower half	S97T000570 S97T000574 S97T000588	Density DSC/TGA total alpha
		Upper half	None	
T-204	97-62 (Segment 3)	Lower half	S97T000571 S97T000575 S97T000589	Density DSC/TGA total alpha
		Upper half	None	
T-204	97-63 (Segment 4)	Lower half	S97T000572 S97T000576 S97T000590	Density DSC/TGA total alpha
		Upper half	S97T000580	DSC/TGA

Table B2-4. T-200 Series Sample Analysis Summary.[1] (6 sheets)

Tank	Sample ID	Sample Portion	Sample Number	Sample Analyses
T-204	97-64 (Segment 5)	Lower half	S97T000609 S97T000603 S97T000621	Density DSC/TGA total alpha
		Upper half	S97T000633	DSC/TGA
T-204	97-65 (Segment 6)	Lower half	S97T000610 S97T000604 S97T000622	Density DSC/TGA total alpha
		Upper half	S97T000634	DSC/TGA
T-204	97-66 (Segment 7)	Lower half	S97T000611 S97T000605 S97T000623	Density DSC/TGA total alpha
		Upper half	S97T000635	DSC/TGA
T-204	97-67 (Segment 8)	Lower half	S97T000612 S97T000606 S97T000624	Density DSC/TGA total alpha
		Upper half	S97T000636	DSC/TGA
T-204	97-68 (Segment 9)	Lower half	S97T000613 S97T000607 S97T000625	Density DSC/TGA total alpha
		Upper half	S97T000637	DSC/TGA
T-204	97-69 (Segment 10)	Lower half	S97T000614 S97T000608 S97T000626	Density DSC/TGA total alpha
		Upper half	S97T000638	DSC/TGA
T-204	Composite	Solid	S97T001191 S97T001197 S97T001198 S97T001199 S97T001200	Density DSC/TGA, TIC/TOC GEA, Sr-90 ICP IC

Notes:

GEA = gamma energy analysis
SpG = specific gravity

[1]Nuzum (1997a), Esch (1997), Steen 1997, and Nuzum (1997b)

B2.1.3 Analytical Results

This section summarizes the sampling and analytical results associated with the March/April 1997 sampling and analysis of tanks 241-T-201, -T-202, -T-203, and -T-204. Table B2-5 indexes the total alpha activity, percent water, energetics, IC, and ICP analytical results associated with these tanks. These results are documented in Nuzum 1997a, Esch 1997, Steen 1997, and Nuzum 1997b.

Table B2-5. Analytical Tables.

Analysis	Table Number			
	241-T-201	241-T-202	241-T-203	241-T-204
Total alpha activity	B2-56 and B2-57	B2-113	B2-171 and B2-172	B2-226
Percent water	B2-54	B2-112	B2-169	B2-225
Differential scanning calorimetry	None (no exotherms observed)	None (no exotherms observed)	B2-168	None (no exotherms observed)
Summary data for metals by ICP	B2-8 to B2-44	B2-66 to B2-102	B2-122 to B2-158	B2-181 to B2-215
Anions by IC	B2-45 to B2-52	B2-103 to B2-110	B2-159 to B2-166	B2-216 to B2-223
Radionuclides by GEA	B2-58 to B2-62	B2-114 to B2-118	B2-173 to B2-177	B2-227 to B2-231
Strontium-90	B2-63	B2-119	B2-178	B2-232
Density and specific gravity	B2-53 and B2-55	B2-111	B2-167 and B2-170	B2-224
TIC/TOC	B2-64 and B2-65	B2-120 and B2-121	B2-179 and B2-180	B2-233 and B2-234

The four QC parameters assessed in conjunction with the T-200 series tank samples were standard recoveries, spike recoveries, duplicate analyses (relative percent differences), and blanks. The QC criteria are specified in the respective sampling and analysis plans for each tank (Hu 1997, Bell 1997, Schreiber 1997b, and Winkleman 1997). The only QC parameter for which limits are not specified in the sampling and analysis plans is blank contamination. The limits for blanks are set forth in guidelines followed by the laboratory, and all data results in this report have met those guidelines. Sample and duplicate pairs, in which any QC parameter was outside these limits, are footnoted in the sample mean column of the following data summary tables with an a, b, c, d, e, f, or g as follows.

- "a" indicates the standard recovery was below the QC limit.
- "b" indicates the standard recovery was above the QC limit.
- "c" indicates the spike recovery was below the QC limit.
- "d" indicates the spike recovery was above the QC limit.
- "e" indicates the RPD was above the QC limit.
- "f" indicates blank contamination.
- "g" indicates this is a tentatively identified compound.

In the analytical tables in this section, the "Mean" is the average of result and duplicate values. All values, including those below the detection level (<), were averaged. If both sample and duplicate values were nondetected, the mean is expressed as a nondetected value. If one value was detected and the other was not, the mean is expressed as a detected value. If both values were detected, the mean is expressed as a detected value.

B2.1.3.1 Total Alpha Activity. Analyses for total alpha activity were performed on the segment-level samples recovered from all T-200 tanks. The samples were prepared by fusion digestion and were analyzed in duplicate. The results were averaged and reported as one value. These samples were relatively low in activity, and many results were not above detection limits. The highest result returned was 1.15 μCi/g.

B2.1.3.2 Thermogravimetric Analysis. Thermogravimetric analysis measures the mass of a sample as its temperature is increased at a constant rate. An gas (usually air or nitrogen) is passed over the sample during heating to remove any released gases. A decrease in the weight of a sample during TGA represents a loss of gaseous matter from the sample, through evaporation or through a reaction that forms gas phase products. The moisture content is estimated by assuming that all TGA sample weight loss up to a certain temperature (typically 150 to 200 °C [300 to 390 °F]) is caused by water evaporation. The temperature limit for moisture loss is chosen by the operator at an inflection point on the TGA plot. For the T-200 series tanks, 200 °C was selected as the threshold for determining water content. Other volatile matter fractions can often be differentiated by inflection points as well.

B2.1.3.3 Differential Scanning Calorimetry. In a DSC analysis, heat absorbed or emitted by a substance is measured while the sample is heated at a constant rate. A gas (usually air or nitrogen) is passed over the sample material to remove any gases being released. The onset temperature for an endothermic or exothermic event is determined graphically.

The DSC analyses for these tanks were performed using a Mettler[1] DSC 20 instrument or a Perkin-Elmer® DSC 7 instrument. For tanks 241-T-201, -T-202, and -T-204, no exothermic reactions were noted; therefore, an upper limit of a 95 percent confidence interval on the mean for each sample was not calculated in most cases. The transitions observed represent endothermic events, which are principally caused by water evaporation.

B2.1.3.4 Inductively Coupled Plasma. Samples were prepared by fusion or acid digestion. Phosphorus and sulfur were analyzed as a solubility check for the phosphate and sulfate results reported from IC analyses. The liquid samples from tank 241-T-201 were analyzed directly. The full range of analytes was reported. The samples were analyzed in duplicate. The results were averaged and reported as one value. The potassium and nickel results for the ICP fusion analyses should be disregarded, because the samples were prepared in a nickel crucible by fusion using potassium hydroxide. In comparing acid and fusion digestion data from tank 241-T-203, there appear to be solubility related biases. Most of the quantified fusion analytes (bismuth, chromium, lanthanum, sodium, and strontium) are 20 to 30 percent higher in concentration than the acid results. For two analytes, iron and manganese, that behavior is reversed. The observed bias for iron is the same magnitude, however, the acid-based manganese value is triple the fusion value.

In addition, some irregular behavior was noted for some minor analytes. In tank 241-T-202, there appears to be an unusual pattern of quantified results followed by less than detection limits for arsenic, copper, lead, and thallium. Low levels of these analytes were also observed in tank 241-T-204. The presence of these trace analytes was not anticipated. These results may be from an unidentified interference or instrument error. These observations are not present in sufficient quantities to be statistically assessed. Furthermore, because they are not present in elevated concentrations, they do not impact the overall interpretation of the analytical results or calculation of inventory.

B2.1.3.5 Ion Chromotography. Samples were prepared by water digestion. The liquid samples were analyzed directly after being allowed to settle. The samples were analyzed in duplicate. The results were averaged and reported as one value. The full range of analytes was reported.

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[1]Mettler is a registered trademark of Mettler Electronics, Anaheim, California.

B2.1.3.6 Gamma Energy Analysis. Gamma energy analyses were performed on selected composite-level samples recovered from some of the T-200 tanks. The samples were prepared by fusion digestion and were analyzed in duplicate. The results were averaged and reported as one value. These samples were relatively low in activity, most results were not above the detection limit.

B2.1.3.7 Strontium-90 Analysis. A chemical separation and beta count was performed on selected fusion prepared composite-level samples. The results were averaged and reported as one value. These samples were relatively low in activity, most results were not above the detection limit.

B2.2 VAPOR PHASE MEASUREMENT

Before each sampling event, a vapor phase measurement was taken. These measurements supported the safety screening DQO (Dukelow et al. 1995) and the organic solvents DQO (Meacham et al. 1997). The vapor phase screening was taken for flammability issues. The vapor phase measurements were taken 15 ft below riser 3 in the headspace of the tank, and results were obtained in the field (that is, no gas sample was sent to the laboratory for analysis). Table B2-6 shows the results of the vapor phase measurements.

Table B2-6. Results of Headspace Measurements from T-200 Tanks.

Measurement	Results			
	T-201	T-202	T-203	T-204
Total organic carbon	0%	0%	0%	0%
Lower explosive limit	0%	0%	0%	0%
Oxygen	21%	20.9%	21%	20.8%
Ammonia	0%	0%	0%	0%

B2.3 DESCRIPTION OF HISTORICAL SAMPLING EVENT

Sampling data for tank 241-T-204 have been obtained for one sample obtained in 1978 and reported on December 4, 1978 (Horton 1978). The data are presented in Table B2-7. Pre-1989 analytical data have not been validated and should be used with caution.

No information was available regarding sample handling for this tank or the reason for the sampling. The sample was reported as being black, soft, and tar-like.

Table B2-7. Historical Data Table.[1]

ANALYSIS OF 204-T TANK Sample #1914: Sample appearance was black, soft and tar-like.		
Components	**Water Soluble**	**Acid (Fusion)**
Al [2]	<0.002%	0.02%
Bi^{3+}	0.006%	
CO_3^{2-}	0.8%	
CrO_4^-	0.1%	
Cl^-	0.06%	
F^-	NR	
Fe [2]	0.002	3.7%
Hg [2]	0.004%	
K^+	2.7%	
La^{3+}	NR	
Mn [2]	<0.0004%	
Ni^{2+}	NR	
NO_2^-	0.06%	
NO_3^-	5.0%	0.3%
Na^+	3.0%	
OH^-	0.2%	
PO_4^{3-}	0.6%	0.7%
SO_4^{2-}	<0.1%	<0.1%
SiO_2^{2-}	0.008	2.7%
U [2]	1.08E-07 g/g	1.10E-06 g/g
Pu [2]	6.02E-09 g/g	1.23E-06 g/g
Am [2]	5.43E-12 g/g	
$^{89+90}Sr$	0.086 μCi/g	0.137 μCi/g
^{137}Cs	0.009 μCi/g	0.012 μCi/g
^{155}Eu [2]	NR	
TOC	0.6*M*	
Water solubility	20%	
Bulk density	1.07 g/cm^2	
Percent water	73.0	

Notes:

NR = Not requested (analysis)

[1]These data have not been validated and should be used with caution.

[2]All oxidation states

B2.4 1997 PUSH CORE DATA TABLES

Tables B2-8 to B2-234 show the data gathered from the T-200 series tanks.

Table B2-8. Tank 241-T-201 Analytical Results: Aluminum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	105	96.2	101
S97T001256		Solid composite	80	75.7	77.8
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<1,110	1,170	<1,140
S97T000901		Lower half	<1,020	<996	<1,010
S97T000922	192: 7	Upper half	<1,000	<1,010	<1,010
S97T000919		Lower half	<1,040	<1,020	<1,030
S97T000923	192: 8	Upper half	<1,020	<1,040	<1,030
S97T000920		Lower half	<1,030	<1,010	<1,020
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<7.27	<7.27	<7.27
S97T000834	192: 2	Drainable liquid	<1.83	<1.83	<1.83
S97T000835	192: 3	Drainable liquid	<1.83	<1.83	<1.83
S97T000836	192: 4	Drainable liquid	<1.83	<1.83	<1.83
S97T000837	192: 5	Drainable liquid	<1.83	<1.83	<1.83

Table B2-9. Tank 241-T-201 Analytical Results: Antimony (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			**μg/g**	**μg/g**	**μg/g**
S97T001250	Core 192	Solid composite	<46	<45.8	<45.9
S97T001256		Solid composite	<11.6	<11.4	<11.5
Solids: fusion			**μg/g**	**μg/g**	**μg/g**
S97T000921	192: 6	Upper half	<1,330	<1,310	<1,320
S97T000901		Lower half	<1,220	<1,200	<1,210
S97T000922	192: 7	Upper half	<1,210	<1,210	<1,210
S97T000919		Lower half	<1,250	<1,220	<1,240
S97T000923	192: 8	Upper half	<1,220	<1,250	<1,240
S97T000920		Lower half	<1,230	<1,220	<1,230
Liquids			**μg/g**	**μg/g**	**μg/g**
S97T001203	192: 1	Drainable liquid	<8.71	17.1	<12.9[QC:e]
S97T000834	192: 2	Drainable liquid	<2.2	<2.2	<2.2
S97T000835	192: 3	Drainable liquid	<2.2	<2.2	<2.2
S97T000836	192: 4	Drainable liquid	<2.2	<2.2	<2.2
S97T000837	192: 5	Drainable liquid	<2.2	<2.2	<2.2

Table B2-10. Tank 241-T-201 Analytical Results: Arsenic (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001250	Core 192	Solid composite	<76.7	<76.4	<76.6
S97T001256		Solid composite	<19.3	<19.1	<19.2
Solids: fusion			μg/g	μg/g	μg/g
S97T000921	192: 6	Upper half	<2,220	<2,190	<2,210
S97T000901		Lower half	<2,040	<1,990	<2,020
S97T000922	192: 7	Upper half	<2,010	<2,020	<2,020
S97T000919		Lower half	<2,080	<2,040	<2,060
S97T000923	192: 8	Upper half	<2,030	<2,090	<2,060
S97T000920		Lower half	<2,060	<2,030	<2,050
Liquids			μg/g	μg/g	μg/g
S97T001203	192: 1	Drainable liquid	<14.5	<14.5	<14.5
S97T000834	192: 2	Drainable liquid	<3.67	<3.67	<3.67
S97T000835	192: 3	Drainable liquid	<3.67	<3.67	<3.67
S97T000836	192: 4	Drainable liquid	<3.67	<3.67	<3.67
S97T000837	192: 5	Drainable liquid	<3.67	<3.67	<3.67

Table B2-11. Tank 241-T-201 Analytical Results: Barium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			$\mu g/g$	$\mu g/g$	$\mu g/g$
S97T001250	Core 192	Solid composite	61.1	51.6	56.4
S97T001256		Solid composite	19.6	20.3	20
Solids: fusion			$\mu g/g$	$\mu g/g$	$\mu g/g$
S97T000921	192: 6	Upper half	<1,110	<1,090	<1,100
S97T000901		Lower half	<1,020	<996	<1,010
S97T000922	192: 7	Upper half	<1,000	<1,010	<1,010
S97T000919		Lower half	<1,040	<1,020	<1,030
S97T000923	192: 8	Upper half	<1,020	<1,040	<1,030
S97T000920		Lower half	<1,030	<1,010	<1,020
Liquids			$\mu g/g$	$\mu g/g$	$\mu g/g$
S97T001203	192: 1	Drainable liquid	<7.27	<7.27	<7.27
S97T000834	192: 2	Drainable liquid	<1.83	<1.83	<1.83
S97T000835	192: 3	Drainable liquid	<1.83	<1.83	<1.83
S97T000836	192: 4	Drainable liquid	<1.83	<1.83	<1.83
S97T000837	192: 5	Drainable liquid	<1.83	<1.83	<1.83

Table B2-12. Tank 241-T-201 Analytical Results: Beryllium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001250	Core 192	Solid composite	<3.84	<3.82	<3.83
S97T001256		Solid composite	<0.964	<0.953	<0.958
Solids: fusion			μg/g	μg/g	μg/g
S97T000921	192: 6	Upper half	<111	<109	<110
S97T000901		Lower half	<102	<99.6	<101
S97T000922	192: 7	Upper half	<100	<101	<101
S97T000919		Lower half	<104	<102	<103
S97T000923	192: 8	Upper half	<102	<104	<103
S97T000920		Lower half	<103	<101	<102
Liquids			μg/g	μg/g	μg/g
S97T001203	192: 1	Drainable liquid	<0.727	<0.727	<0.727
S97T000834	192: 2	Drainable liquid	<0.183	<0.183	<0.183
S97T000835	192: 3	Drainable liquid	<0.183	<0.183	<0.183
S97T000836	192: 4	Drainable liquid	<0.183	<0.183	<0.183
S97T000837	192: 5	Drainable liquid	<0.183	<0.183	<0.183

Table B2-13. Tank 241-T-201 Analytical Results: Bismuth (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	1.28E+05	1.10E+05	1.19E+05[QC:d]
S97T001256		Solid composite	19700	20500	20100[QC:e]
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	91,800.00	90,300.00	91,100.00
S97T000901		Lower half	1.11E+05	1.12E+05	1.12E+05
S97T000922	192: 7	Upper half	1.03E+05	60,100	81,600[QC:e]
S97T000919		Lower half	92,900	97,300	95,100
S97T000923	192: 8	Upper half	90,300	87,900	89,100
S97T000920		Lower half	79,100	75,700	77,400
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<14.5	<14.5	<14.5
S97T000834	192: 2	Drainable liquid	<3.67	<3.67	<3.67
S97T000835	192: 3	Drainable liquid	9.78	<3.67	<6.73[QC:e]
S97T000836	192: 4	Drainable liquid	6.39	<3.67	<5.03[QC:e]
S97T000837	192: 5	Drainable liquid	<3.67	4.22	<3.94

Table B2-14. Tank 241-T-201 Analytical Results: Boron (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	165	178	172
S97T001256		Solid composite	87.2	117	102[QC:e]
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<1,110	<1,090	<1,100
S97T000901		Lower half	<1,020	<996	<1,010
S97T000922	192: 7	Upper half	<1,000	<1,010	<1,010
S97T000919		Lower half	<1,040	<1,020	<1,030
S97T000923	192: 8	Upper half	<1,020	<1,040	<1,030
S97T000920		Lower half	<1,030	<1,010	<1,020
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<7.27	<7.27	<7.27
S97T000834	192: 2	Drainable liquid	1.97	1.88	1.93
S97T000835	192: 3	Drainable liquid	2.32	2.3	2.31
S97T000836	192: 4	Drainable liquid	2.74	3.04	2.89
S97T000837	192: 5	Drainable liquid	2.09	1.94	2.01

Table B2-15. Tank 241-T-201 Analytical Results: Cadmium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<3.84	<3.82	<3.83
S97T001256		Solid composite	<0.964	<0.953	<0.958
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<111	<109	<110
S97T000901		Lower half	<102	<99.6	<101
S97T000922	192: 7	Upper half	<100	<101	<101
S97T000919		Lower half	<104	<102	<103
S97T000923	192: 8	Upper half	<102	<104	<103
S97T000920		Lower half	<103	<101	<102
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<0.727	<0.727	<0.727
S97T000834	192: 2	Drainable liquid	<0.183	<0.183	<0.183
S97T000835	192: 3	Drainable liquid	<0.183	<0.183	<0.183
S97T000836	192: 4	Drainable liquid	<0.183	<0.183	<0.183
S97T000837	192: 5	Drainable liquid	<0.183	<0.183	<0.183

Table B2-16. Tank 241-T-201 Analytical Results: Calcium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	1,360	1,120	1,240[QC:d]
S97T001256		Solid composite	294	304	299
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<2,220	<2,190	<2,210
S97T000901		Lower half	<2,040	<1,990	<2,020
S97T000922	192: 7	Upper half	<2,010	<2,020	<2,020
S97T000919		Lower half	<2,080	<2,040	<2,060
S97T000923	192: 8	Upper half	<2,030	<2,090	<2,060
S97T000920		Lower half	<2,060	<2,030	<2,050
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<14.5	<14.5	<14.5
S97T000834	192: 2	Drainable liquid	<3.67	<3.67	<3.67
S97T000835	192: 3	Drainable liquid	<3.67	<3.67	<3.67
S97T000836	192: 4	Drainable liquid	<3.67	<3.67	<3.67
S97T000837	192: 5	Drainable liquid	<3.67	<3.67	<3.67

Table B2-17. Tank 241-T-201 Analytical Results: Cerium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001250	Core 192	Solid composite	92.1	<76.4	<84.3
S97T001256		Solid composite	19.5	20.4	19.9
Solids: fusion			μg/g	μg/g	μg/g
S97T000921	192: 6	Upper half	<2,220	<2,190	<2,210
S97T000901		Lower half	<2,040	<1,990	<2,020
S97T000922	192: 7	Upper half	<2,010	<2,020	<2,020
S97T000919		Lower half	<2,080	<2,040	<2,060
S97T000923	192: 8	Upper half	<2,030	<2,090	<2,060
S97T000920		Lower half	<2,060	<2,030	<2,050
Liquids			μg/g	μg/g	μg/g
S97T001203	192: 1	Drainable liquid	<14.5	<14.5	<14.5
S97T000834	192: 2	Drainable liquid	<3.67	<3.67	<3.67
S97T000835	192: 3	Drainable liquid	<3.67	<3.67	<3.67
S97T000836	192: 4	Drainable liquid	<3.67	<3.67	<3.67
S97T000837	192: 5	Drainable liquid	<3.67	<3.67	<3.67

Table B2-18. Tank 241-T-201 Analytical Results: Chromium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			**μg/g**	**μg/g**	**μg/g**
S97T001250	Core 192	Solid composite	5,650	5,050	5,350[QC:d]
S97T001256		Solid composite	1,560	1,620	1,590[QC:c]
Solids: fusion			**μg/g**	**μg/g**	**μg/g**
S97T000921	192: 6	Upper half	4,030	4,080	4,060
S97T000901		Lower half	5,360	5,390	5,380
S97T000922	192: 7	Upper half	4,970	5,100	5,040
S97T000919		Lower half	5,110	5,020	5,070
S97T000923	192: 8	Upper half	2,770	2,810	2,790
S97T000920		Lower half	2,900	2,880	2,890
Liquids			**μg/g**	**μg/g**	**μg/g**
S97T001203	192: 1	Drainable liquid	4.84	4.88	4.86
S97T000834	192: 2	Drainable liquid	4.91	4.93	4.92
S97T000835	192: 3	Drainable liquid	5.32	4.58	4.95
S97T000836	192: 4	Drainable liquid	5.84	5.58	5.71
S97T000837	192: 5	Drainable liquid	3.35	3.46	3.4

Table B2-19. Tank 241-T-201 Analytical Results: Cobalt (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001250	Core 192	Solid composite	<15.3	<15.3	<15.3
S97T001256		Solid composite	<3.86	<3.81	<3.84
Solids: fusion			μg/g	μg/g	μg/g
S97T000921	192: 6	Upper half	<444	<438	<441
S97T000901		Lower half	<408	<398	<403
S97T000922	192: 7	Upper half	<402	<404	<403
S97T000919		Lower half	<416	<407	<412
S97T000923	192: 8	Upper half	<407	<417	<412
S97T000920		Lower half	<412	<406	<409
Liquids			μg/g	μg/g	μg/g
S97T001203	192: 1	Drainable liquid	5.06	5.15	5.11
S97T000834	192: 2	Drainable liquid	<0.734	<0.734	<0.734
S97T000835	192: 3	Drainable liquid	<0.734	<0.734	<0.734
S97T000836	192: 4	Drainable liquid	<0.734	<0.734	<0.734
S97T000837	192: 5	Drainable liquid	<0.734	<0.734	<0.734

Table B2-20. Tank 241-T-201 Analytical Results: Copper (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<7.67	<7.64	<7.65
S97T001256		Solid composite	<1.93	<1.91	<1.92
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<222	<219	<221
S97T000901		Lower half	<204	<199	<202
S97T000922	192: 7	Upper half	<201	<202	<202
S97T000919		Lower half	<208	<204	<206
S97T000923	192: 8	Upper half	<203	<209	<206
S97T000920		Lower half	<206	<203	<205
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<1.45	<1.45	<1.45
S97T000834	192: 2	Drainable liquid	<0.367	<0.367	<0.367
S97T000835	192: 3	Drainable liquid	<0.367	<0.367	<0.367
S97T000836	192: 4	Drainable liquid	<0.367	<0.367	<0.367
S97T000837	192: 5	Drainable liquid	<0.367	<0.367	<0.367

Table B2-21. Tank 241-T-201 Analytical Results: Iron (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001250	Core 192	Solid composite	10,400	9,320	9,860[QC:d]
S97T001256		Solid composite	1,990	2,070	2,030[QC:e]
Solids: fusion			μg/g	μg/g	μg/g
S97T000921	192: 6	Upper half	8,660	8,600	8,630
S97T000901		Lower half	9,340	9,300	9,320
S97T000922	192: 7	Upper half	7,920	4,780	6,350[QC:e]
S97T000919		Lower half	8,960	8,880	8,920
S97T000923	192: 8	Upper half	3,910	5,020	4,470[QC:e]
S97T000920		Lower half	4,280	3,960	4,120
Liquids			μg/g	μg/g	μg/g
S97T001203	192: 1	Drainable liquid	<7.27	<7.27	<7.27
S97T000834	192: 2	Drainable liquid	<1.83	<1.83	<1.83
S97T000835	192: 3	Drainable liquid	<1.83	<1.83	<1.83
S97T000836	192: 4	Drainable liquid	<1.83	<1.83	<1.83
S97T000837	192: 5	Drainable liquid	<1.83	<1.83	<1.83

Table B2-22. Tank 241-T-201 Analytical Results: Lanthanum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	27,500	22,200	24,900[QC:d,e]
S97T001256		Solid composite	5,910	6,090	6,000[QC:e]
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	15,300	14,800	15,100
S97T000901		Lower half	15,900	17,500	16,700
S97T000922	192: 7	Upper half	21,000	19,600	20,300
S97T000919		Lower half	21,200	22,300	21,800
S97T000923	192: 8	Upper half	14,900	14,800	14,900
S97T000920		Lower half	20,100	19,400	19,800
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<7.27	<7.27	<7.27
S97T000834	192: 2	Drainable liquid	<1.83	<1.83	<1.83
S97T000835	192: 3	Drainable liquid	3.03	<1.83	<2.43[QC:e]
S97T000836	192: 4	Drainable liquid	<1.83	<1.83	<1.83
S97T000837	192: 5	Drainable liquid	<1.83	<1.83	<1.83

Table B2-23. Tank 241-T-201 Analytical Results: Lead (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001250	Core 192	Solid composite	125	299	212[QC:e]
S97T001256		Solid composite	288	300	294
Solids: fusion			μg/g	μg/g	μg/g
S97T000921	192: 6	Upper half	<2,220	<2,190	<2,210
S97T000901		Lower half	<2,040	<1,990	<2,020
S97T000922	192: 7	Upper half	<2,010	<2,020	<2,020
S97T000919		Lower half	<2,080	<2,040	<2,060
S97T000923	192: 8	Upper half	<2,030	<2,090	<2,060
S97T000920		Lower half	<2,060	<2,030	<2,050
Liquids			μg/g	μg/g	μg/g
S97T001203	192: 1	Drainable liquid	<14.5	<14.5	<14.5
S97T000834	192: 2	Drainable liquid	<3.67	<3.67	<3.67
S97T000835	192: 3	Drainable liquid	<3.67	<3.67	<3.67
S97T000836	192: 4	Drainable liquid	<3.67	<3.67	<3.67
S97T000837	192: 5	Drainable liquid	<3.67	<3.67	<3.67

Table B2-24. Tank 241-T-201 Analytical Results: Lithium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<7.67	<7.64	<7.65
S97T001256		Solid composite	<1.93	<1.91	<1.92
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<222	<219	<221
S97T000901		Lower half	<204	<199	<202
S97T000922	192: 7	Upper half	<201	<202	<202
S97T000919		Lower half	<208	<204	<206
S97T000923	192: 8	Upper half	<203	<209	<206
S97T000920		Lower half	<206	<203	<205
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<1.45	<1.45	<1.45
S97T000834	192: 2	Drainable liquid	<0.367	<0.367	<0.367
S97T000835	192: 3	Drainable liquid	<0.367	<0.367	<0.367
S97T000836	192: 4	Drainable liquid	<0.367	<0.367	<0.367
S97T000837	192: 5	Drainable liquid	<0.367	<0.367	<0.367

Table B2-25. Tank 241-T-201 Analytical Results: Magnesium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	349	296	323
S97T001256		Solid composite	61.4	60.8	61.1
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<2,220	<2,190	<2,210
S97T000901		Lower half	<2,040	<1,990	<2,020
S97T000922	192: 7	Upper half	<2,010	<2,020	<2,020
S97T000919		Lower half	<2,080	<2,040	<2,060
S97T000923	192: 8	Upper half	<2,030	<2,090	<2,060
S97T000920		Lower half	<2,060	<2,030	<2,050
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<14.5	<14.5	<14.5
S97T000834	192: 2	Drainable liquid	<3.67	<3.67	<3.67
S97T000835	192: 3	Drainable liquid	<3.67	<3.67	<3.67
S97T000836	192: 4	Drainable liquid	<3.67	<3.67	<3.67
S97T000837	192: 5	Drainable liquid	<3.67	<3.67	<3.67

Table B2-26. Tank 241-T-201 Analytical Results: Manganese (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001250	Core 192	Solid composite	48,500	40,000	44,300[QC:d]
S97T001256		Solid composite	6,960	7,310	7,140[QC:e]
Solids: fusion			μg/g	μg/g	μg/g
S97T000921	192: 6	Upper half	25,400	24,500	25,000
S97T000901		Lower half	29,500	29,900	29,700
S97T000922	192: 7	Upper half	15,600	6,760	11,200[QC:e]
S97T000919		Lower half	33,000	33,200	33,100
S97T000923	192: 8	Upper half	5,320	9,700	7,510[QC:e]
S97T000920		Lower half	24,700	24,000	24,400
Liquids			μg/g	μg/g	μg/g
S97T001203	192: 1	Drainable liquid	<1.45	<1.45	<1.45
S97T000834	192: 2	Drainable liquid	<0.367	<0.367	<0.367
S97T000835	192: 3	Drainable liquid	2.83	<0.367	<1.6[QC:e]
S97T000836	192: 4	Drainable liquid	1.74	0.777	1.26[QC:e]
S97T000837	192: 5	Drainable liquid	0.655	0.906	0.781[QC:e]

Table B2-27. Tank 241-T-201 Analytical Results: Molybdenum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<38.4	<38.2	<38.3
S97T001256		Solid composite	<9.64	<9.53	<9.59
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<1,110	<1,090	<1,100
S97T000901		Lower half	<1,020	<,996	<1,010
S97T000922	192: 7	Upper half	<1,000	<1,010	<1,010
S97T000919		Lower half	<1,040	<1,020	<1,030
S97T000923	192: 8	Upper half	<1,020	<1,040	<1,030
S97T000920		Lower half	<1,030	<1,010	<1,020
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<7.27	<7.27	<7.27
S97T000834	192: 2	Drainable liquid	<1.83	<1.83	<1.83
S97T000835	192: 3	Drainable liquid	<1.83	<1.83	<1.83
S97T000836	192: 4	Drainable liquid	<1.83	<1.83	<1.83
S97T000837	192: 5	Drainable liquid	<1.83	<1.83	<1.83

Table B2-28. Tank 241-T-201 Analytical Results: Neodymium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<76.7	<76.4	<76.6
S97T001256		Solid composite	<19.3	<19.1	<19.2
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<2,220	<2,190	<2,210
S97T000901		Lower half	<2,040	<1,990	<2,020
S97T000922	192: 7	Upper half	<2,010	<2,020	<2,020
S97T000919		Lower half	<2,080	<2,040	<2,060
S97T000923	192: 8	Upper half	<2,030	<2,090	<2,060
S97T000920		Lower half	<2,060	<2,030	<2,050
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<14.5	<14.5	<14.5
S97T000834	192: 2	Drainable liquid	<3.67	<3.67	<3.67
S97T000835	192: 3	Drainable liquid	<3.67	<3.67	<3.67
S97T000836	192: 4	Drainable liquid	<3.67	<3.67	<3.67
S97T000837	192: 5	Drainable liquid	<3.67	<3.67	<3.67

Table B2-29. Tank 241-T-201 Analytical Results: Nickel (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	660	599	630
S97T001256		Solid composite	122	128	125
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<2.89	<2.89	<2.89
S97T000834	192: 2	Drainable liquid	<0.734	<0.734	<0.734
S97T000835	192: 3	Drainable liquid	<0.734	<0.734	<0.734
S97T000836	192: 4	Drainable liquid	<0.734	<0.734	<0.734
S97T000837	192: 5	Drainable liquid	<0.734	<0.734	<0.734

Table B2-30. Tank 241-T-201 Analytical Results: Phosphorus (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	5,040	4,070	4,560[QC:d,e]
S97T001256		Solid composite	1,300	1,330	1,320
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<4,440	<4,380	<4,410
S97T000901		Lower half	<4,080	<3,980	<4,030
S97T000922	192: 7	Upper half	<4,020	<4,040	<4,030
S97T000919		Lower half	<4,160	<4,070	<4,120
S97T000923	192: 8	Upper half	<4,070	<4,170	<4,120
S97T000920		Lower half	<4,120	<4,060	<4,090
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	176	178	177
S97T000834	192: 2	Drainable liquid	173	173	173
S97T000835	192: 3	Drainable liquid	145	144	145
S97T000836	192: 4	Drainable liquid	140	143	141
S97T000837	192: 5	Drainable liquid	137	137	137

Table B2-31. Tank 241-T-201 Analytical Results: Potassium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	5,010	4,600	4,810[QC:d]
S97T001256		Solid composite	4,070	3,920	4,000[QC:e]
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	3,090	3,060	3,080[QC:e]
S97T000834	192: 2	Drainable liquid	2,940	2,980	2,960
S97T000835	192: 3	Drainable liquid	2,690	2,710	2,700
S97T000836	192: 4	Drainable liquid	2,820	2,830	2,830
S97T000837	192: 5	Drainable liquid	2,910	2,910	2,910

Table B2-32. Tank 241-T-201 Analytical Results: Samarium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<76.7	<76.4	<76.6
S97T001256		Solid composite	<19.3	<19.1	<19.2
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<2,220	<2,190	<2,210
S97T000901		Lower half	<2,040	<1,990	<2,020
S97T000922	192: 7	Upper half	<2,010	<2,020	<2,020
S97T000919		Lower half	<2,080	<2,040	<2,060
S97T000923	192: 8	Upper half	<2,030	<2,090	<2,060
S97T000920		Lower half	<2,060	<2,030	<2,050
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<14.5	<14.5	<14.5
S97T000834	192: 2	Drainable liquid	<3.67	<3.67	<3.67
S97T000835	192: 3	Drainable liquid	<3.67	<3.67	<3.67
S97T000836	192: 4	Drainable liquid	<3.67	<3.67	<3.67
S97T000837	192: 5	Drainable liquid	<3.67	<3.67	<3.67

Table B2-33. Tank 241-T-201 Analytical Results: Selenium (ICP). (2 sheets)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<76.7	<76.4	<76.6
S97T001256		Solid composite	<19.3	<19.1	<19.2
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<2,220	<2,190	<2,210
S97T000901		Lower half	<2,040	<1,990	<2,020
S97T000922	192: 7	Upper half	<2,010	<2,020	<2,020
S97T000919		Lower half	<2,080	<2,040	<2,060
S97T000923	192: 8	Upper half	<2,030	<2,090	<2,060
S97T000920		Lower half	<2,060	<2,030	<2,050

Table B2-33. Tank 241-T-201 Analytical Results: Selenium (ICP). (2 sheets)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			µg/g	µg/g	µg/g
S97T000834	192: 2	Drainable liquid	<3.67	<3.67	<3.67
S97T000835	192: 3	Drainable liquid	<3.67	<3.67	<3.67
S97T000836	192: 4	Drainable liquid	<3.67	<3.67	<3.67
S97T000837	192: 5	Drainable liquid	<3.67	<3.67	<3.67

Table B2-34. Tank 241-T-201 Analytical Results: Silicon (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	1,970	1,740	1,860[QC:b,d]
S97T001256		Solid composite	1,440	1,220	1,330[QC:b]
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<1,110	4,030	<2,570[QC:e]
S97T000901		Lower half	<1,020	1,140	<1,080
S97T000922	192: 7	Upper half	1,050	3,800	2,430[QC:e]
S97T000919		Lower half	1,160	1,570	1,370[QC:e]
S97T000923	192: 8	Upper half	2,540	1,190	1,870[QC:e]
S97T000920		Lower half	1,250	1,230	1,240
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	27.1	31.8	29.5
S97T000834	192: 2	Drainable liquid	40.2	38.8	39.5
S97T000835	192: 3	Drainable liquid	42	42.2	42.1
S97T000836	192: 4	Drainable liquid	45	46	45.5
S97T000837	192: 5	Drainable liquid	27.7	32.9	30.3

Table B2-35. Tank 241-T-201 Analytical Results: Silver (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			**μg/g**	**μg/g**	**μg/g**
S97T001250	Core 192	Solid composite	<7.67	<7.64	<7.65[QC:a,c]
S97T001256		Solid composite	2.26	2.21	2.23[QC:a,c]
Solids: fusion			**μg/g**	**μg/g**	**μg/g**
S97T000921	192: 6	Upper half	<222	<219	<221
S97T000901		Lower half	<204	<199	<202
S97T000922	192: 7	Upper half	<201	<202	<202
S97T000919		Lower half	<208	<204	<206
S97T000923	192: 8	Upper half	<203	<209	<206
S97T000920		Lower half	<206	<203	<205
Liquids			**μg/g**	**μg/g**	**μg/g**
S97T001203	192: 1	Drainable liquid	<1.45	<1.45	<1.45[QC:c]
S97T000834	192: 2	Drainable liquid	1.32	1.32	1.32
S97T000835	192: 3	Drainable liquid	1.2	1.22	1.21
S97T000836	192: 4	Drainable liquid	1.27	1.28	1.28
S97T000837	192: 5	Drainable liquid	1.32	1.33	1.32[QC:c]

Table B2-36. Tank 241-T-201 Analytical Results: Sodium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	33,900	30,700	32,300[QC:d]
S97T001256		Solid composite	24,900	23,700	24,300[QC:c]
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	28,100	27,400	27,800
S97T000901		Lower half	27,000	27,000	27,000
S97T000922	192: 7	Upper half	25,800	28,300	27,100
S97T000919		Lower half	27,600	27,500	27,600
S97T000923	192: 8	Upper half	28,100	27,900	28,000
S97T000920		Lower half	28,700	27,600	28,200
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	19,100	18,800	19,000[QC:c]
S97T000834	192: 2	Drainable liquid	18,600	18,700	18,600
S97T000835	192: 3	Drainable liquid	16,700	16,900	16,800
S97T000836	192: 4	Drainable liquid	17,700	17,800	17,800
S97T000837	192: 5	Drainable liquid	18,400	18,300	18,300[QC:c]

Table B2-37. Tank 241-T-201 Analytical Results: Strontium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	1,240	999	1,120[QC:d,e]
S97T001256		Solid composite	112	115	114
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	884	832	858
S97T000901		Lower half	1,170	1,210	1,190
S97T000922	192: 7	Upper half	913	950	932
S97T000919		Lower half	816	800	808
S97T000923	192: 8	Upper half	732	719	726
S97T000920		Lower half	791	770	781
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<1.45	<1.45	<1.45
S97T000834	192: 2	Drainable liquid	<0.367	<0.367	<0.367
S97T000835	192: 3	Drainable liquid	<0.367	<0.367	<0.367
S97T000836	192: 4	Drainable liquid	<0.367	<0.367	<0.367
S97T000837	192: 5	Drainable liquid	<0.367	<0.367	<0.367

Table B2-38. Tank 241-T-201 Analytical Results: Sulfur (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	105	79.4	92.2[QC:e]
S97T001256		Solid composite	57.8	54.8	56.3
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<2,220	<2,190	<2,210
S97T000901		Lower half	<2,040	<1,990	<2,020
S97T000922	192: 7	Upper half	<2,010	<2,020	<2,020
S97T000919		Lower half	<2,080	<2,040	<2,060
S97T000923	192: 8	Upper half	<2,030	<2,090	<2,060
S97T000920		Lower half	<2,060	<2,030	<2,050
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	26.8	26.6	26.7
S97T000834	192: 2	Drainable liquid	29.5	28.8	29.2
S97T000835	192: 3	Drainable liquid	26.5	25.9	26.2
S97T000836	192: 4	Drainable liquid	26.6	28.3	27.5
S97T000837	192: 5	Drainable liquid	28.3	28.1	28.2

Table B2-39. Tank 241-T-201 Analytical Results: Thallium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			**µg/g**	**µg/g**	**µg/g**
S97T001250	Core 192	Solid composite	<153	<153	<153
S97T001256		Solid composite	<38.6	<38.1	<38.4
Solids: fusion			**µg/g**	**µg/g**	**µg/g**
S97T000921	192: 6	Upper half	<4,440	<4,380	<4,410
S97T000901		Lower half	<4,080	<3,980	<4,030
S97T000922	192: 7	Upper half	<4,020	<4,040	<4,030
S97T000919		Lower half	<4,160	<4,070	<4,120
S97T000923	192: 8	Upper half	<4,070	<4,170	<4,120
S97T000920		Lower half	<4,120	<4,060	<4,090
Liquids			**µg/g**	**µg/g**	**µg/g**
S97T001203	192: 1	Drainable liquid	<28.9	<28.9	<28.9
S97T000834	192: 2	Drainable liquid	<7.34	<7.34	<7.34
S97T000835	192: 3	Drainable liquid	<7.34	<7.34	<7.34
S97T000836	192: 4	Drainable liquid	<7.34	<7.34	<7.34
S97T000837	192: 5	Drainable liquid	<7.34	<7.34	<7.34

Table B2-40. Tank 241-T-201 Analytical Results: Titanium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			**μg/g**	**μg/g**	**μg/g**
S97T001250	Core 192	Solid composite	10.1	9.74	9.92
S97T001256		Solid composite	3.34	4.13	3.73[QC:e]
Solids: fusion			**μg/g**	**μg/g**	**μg/g**
S97T000921	192: 6	Upper half	<222	<219	<221
S97T000901		Lower half	<204	<199	<202
S97T000922	192: 7	Upper half	<201	<202	<202
S97T000919		Lower half	<208	<204	<206
S97T000923	192: 8	Upper half	<203	<209	<206
S97T000920		Lower half	<206	<203	<205
Liquids			**μg/g**	**μg/g**	**μg/g**
S97T001203	192: 1	Drainable liquid	<1.45	<1.45	<1.45
S97T000834	192: 2	Drainable liquid	<0.367	<0.367	<0.367
S97T000835	192: 3	Drainable liquid	<0.367	<0.367	<0.367
S97T000836	192: 4	Drainable liquid	<0.367	<0.367	<0.367
S97T000837	192: 5	Drainable liquid	<0.367	<0.367	<0.367

Table B2-41. Tank 241-T-201 Analytical Results: Total Uranium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<384	<382	<383
S97T001256		Solid composite	<96.4	<95.3	<95.8
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<11,100	<10,900	<11,000
S97T000901		Lower half	<10,200	<9,960	<10,100
S97T000922	192: 7	Upper half	<10,000	<10,100	<10,100
S97T000919		Lower half	<10,400	<10,200	<10,300
S97T000923	192: 8	Upper half	<10,200	<10,400	<10,300
S97T000920		Lower half	<10,300	<10,100	<10,200
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<71.9	<71.9	<71.9
S97T000834	192: 2	Drainable liquid	<18.3	<18.3	<18.3
S97T000835	192: 3	Drainable liquid	<18.3	<18.3	<18.3
S97T000836	192: 4	Drainable liquid	<18.3	<18.3	<18.3
S97T000837	192: 5	Drainable liquid	<18.3	<18.3	<18.3

Table B2-42. Tank 241-T-201 Analytical Results: Vanadium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<38.4	<38.2	<38.3
S97T001256		Solid composite	<9.64	<9.53	<9.59
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<1,110	<1,090	<1,100
S97T000901		Lower half	<1,020	<996	<1,010
S97T000922	192: 7	Upper half	<1,000	<1,010	<1,010
S97T000919		Lower half	<1,040	<1,020	<1,030
S97T000923	192: 8	Upper half	<1,020	<1,040	<1,030
S97T000920		Lower half	<1,030	<1,010	<1,020
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<7.27	<7.27	<7.27
S97T000834	192: 2	Drainable liquid	<1.83	<1.83	<1.83
S97T000835	192: 3	Drainable liquid	<1.83	<1.83	<1.83
S97T000836	192: 4	Drainable liquid	<1.83	<1.83	<1.83
S97T000837	192: 5	Drainable liquid	<1.83	<1.83	<1.83

Table B2-43. Tank 241-T-201 Analytical Results: Zinc (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001250	Core 192	Solid composite	105	83.9	94.5[QC:e]
S97T001256		Solid composite	66.3	68	67.2
Solids: fusion			μg/g	μg/g	μg/g
S97T000921	192: 6	Upper half	<222	<219	<221
S97T000901		Lower half	<204	<199	<202
S97T000922	192: 7	Upper half	<201	<202	<202
S97T000919		Lower half	<208	<204	<206
S97T000923	192: 8	Upper half	<203	<209	<206
S97T000920		Lower half	<206	<203	<205
Liquids			μg/g	μg/g	μg/g
S97T001203	192: 1	Drainable liquid	<1.45	<1.45	<1.45
S97T000834	192: 2	Drainable liquid	<0.367	<0.367	<0.367
S97T000835	192: 3	Drainable liquid	0.381	<0.367	<0.374
S97T000836	192: 4	Drainable liquid	<0.367	<0.367	<0.367
S97T000837	192: 5	Drainable liquid	<0.367	<0.367	<0.367

Table B2-44. Tank 241-T-201 Analytical Results: Zirconium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001250	Core 192	Solid composite	<7.67	<7.64	<7.65
S97T001256		Solid composite	2.21	2.4	2.3
Solids: fusion			µg/g	µg/g	µg/g
S97T000921	192: 6	Upper half	<222	<219	<221
S97T000901		Lower half	<204	<199	<202
S97T000922	192: 7	Upper half	<201	<202	<202
S97T000919		Lower half	<208	<204	<206
S97T000923	192: 8	Upper half	<203	<209	<206
S97T000920		Lower half	<206	<203	<205
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<1.45	<1.45	<1.45
S97T000834	192: 2	Drainable liquid	<0.367	<0.367	<0.367
S97T000835	192: 3	Drainable liquid	<0.367	<0.367	<0.367
S97T000836	192: 4	Drainable liquid	<0.367	<0.367	<0.367
S97T000837	192: 5	Drainable liquid	<0.367	<0.367	<0.367

Table B2-45. Tank 241-T-201 Analytical Results: Bromide (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<191	<191	<191
S97T000834	192: 2	Drainable liquid	<99.9	<100	<100
S97T000835	192: 3	Drainable liquid	<99.9	<100	<100
S97T000836	192: 4	Drainable liquid	<191	<191	<191
S97T000837	192: 5	Drainable liquid	<191	<191	<191
Solids: water digest			µg/g	µg/g	µg/g
S97T000931	192: 6	Upper half	<302	<299	<300
S97T000900		Lower half	<278	<280	<279
S97T000916	192: 7	Upper half	<270	<277	<273
S97T000915		Lower half	<273	<265	<269
S97T000918	192: 8	Upper half	<270	<279	<274
S97T000917		Lower half	<276	<272	<274
S97T001251	Core 192	Solid composite	<279	<277	<278
S97T001257		Solid composite	<272	<274	<273

Table B2-46. Tank 241-T-201 Analytical Results: Chloride (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	677	712	694
S97T000834	192: 2	Drainable liquid	728	741	735
S97T000835	192: 3	Drainable liquid	655	632	644
S97T000836	192: 4	Drainable liquid	650	645	647
S97T000837	192: 5	Drainable liquid	696	727	711
Solids: water digest			µg/g	µg/g	µg/g
S97T000931	192: 6	Upper half	976	983	980
S97T000900		Lower half	1,000	940	972
S97T000916	192: 7	Upper half	902	923	912
S97T000915		Lower half	954	1,010	982
S97T000918	192: 8	Upper half	1,030	1,000	1,010
S97T000917		Lower half	1,020	951	983
S97T001251	Core 192	Solid composite	1,060	1,090	1,080
S97T001257		Solid composite	829	850	840

Table B2-47. Tank 241-T-201 Analytical Results: Fluoride (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	3,010	3,050	3,030
S97T000834	192: 2	Drainable liquid	3,220	3,150	3,190
S97T000835	192: 3	Drainable liquid	2,820	2,760	2,790
S97T000836	192: 4	Drainable liquid	3,080	3,080	3,080
S97T000837	192: 5	Drainable liquid	3,320	3,440	3,380
Solids: water digest			µg/g	µg/g	µg/g
S97T000931	192: 6	Upper half	4,640	4,710	4,670
S97T000900		Lower half	4,770	4,400	4,590
S97T000916	192: 7	Upper half	4,820	4,920	4,870
S97T000915		Lower half	4,560	4,560	4,560
S97T000918	192: 8	Upper half	5,220	5,170	5,200
S97T000917		Lower half	5,420	5,010	5,210
S97T001251	Core 192	Solid composite	5,030	5,120	5,080
S97T001257		Solid composite	4,290	4,300	4,300

Table B2-48. Tank 241-T-201 Analytical Results: Nitrate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	34,300	33,900	34,100
S97T000834	192: 2	Drainable liquid	34,800	34,700	34,800
S97T000835	192: 3	Drainable liquid	31,200	30,900	31,000
S97T000836	192: 4	Drainable liquid	32,200	31,800	32,000
S97T000837	192: 5	Drainable liquid	34,000	34,500	34,200
Solids: water digest			µg/g	µg/g	µg/g
S97T000931	192: 6	Upper half	45,600	46,800	46,200
S97T000900		Lower half	44,300	43,600	44,000
S97T000916	192: 7	Upper half	40,300	41,000	40,600
S97T000915		Lower half	43,300	43,500	43,400
S97T000918	192: 8	Upper half	43,700	43,800	43,700
S97T000917		Lower half	45,400	42,500	43,900
S97T001251	Core 192	Solid composite	47,100	49,500	48,300
S97T001257		Solid composite	42,100	42,400	42,300

Table B2-49. Tank 241-T-201 Analytical Results: Nitrite (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	223	224	224
S97T000834	192: 2	Drainable liquid	165	167	166
S97T000835	192: 3	Drainable liquid	140	148	144
S97T000836	192: 4	Drainable liquid	344	334	339
S97T000837	192: 5	Drainable liquid	335	332	334
Solids: water digest			µg/g	µg/g	µg/g
S97T000931	192: 6	Upper half	317	317	317
S97T000900		Lower half	317	298	307
S97T000916	192: 7	Upper half	464	485	475
S97T000915		Lower half	302	296	299
S97T000918	192: 8	Upper half	513	516	514
S97T000917		Lower half	500	484	492
S97T001251	Core 192	Solid composite	309	318	314
S97T001257		Solid composite	289	302	295

Table B2-50. Tank 241-T-201 Analytical Results: Phosphate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	545	499	522
S97T000834	192: 2	Drainable liquid	530	508	519
S97T000835	192: 3	Drainable liquid	444	431	437
S97T000836	192: 4	Drainable liquid	468	430	449
S97T000837	192: 5	Drainable liquid	528	463	495
Solids: water digest			µg/g	µg/g	µg/g
S97T000931	192: 6	Upper half	1,220	1,160	1,190
S97T000900		Lower half	554	680	617[QC:e]
S97T000916	192: 7	Upper half	379	618	498[QC:e]
S97T000915		Lower half	577	417	497[QC:e]
S97T000918	192: 8	Upper half	368	348	358
S97T000917		Lower half	316	478	397[QC:e]
S97T001251	Core 192	Solid composite	366	520	443[QC:e]
S97T001257		Solid composite	1,130	1,110	1,120

Table B2-51. Tank 241-T-201 Analytical Results: Sulfate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			μg/g	μg/g	μg/g
S97T001203	192: 1	Drainable liquid	<211	<211	<211
S97T000834	192: 2	Drainable liquid	<110	<110	<110
S97T000835	192: 3	Drainable liquid	<110	<110	<110
S97T000836	192: 4	Drainable liquid	<211	<211	<211
S97T000837	192: 5	Drainable liquid	<211	<211	<211
Solids: water digest			μg/g	μg/g	μg/g
S97T000931	192: 6	Upper half	963	<331	<647[QC:e]
S97T000900		Lower half	<307	392	<349[QC:e]
S97T000916	192: 7	Upper half	464	527	496
S97T000915		Lower half	<302	981	<641[QC:e]
S97T000918	192: 8	Upper half	727	596	661
S97T000917		Lower half	397	559	478[QC:e]
S97T001251	Core 192	Solid composite	<308	1,250	<779[QC:e]
S97T001257		Solid composite	1,080	<303	<693[QC:e]

Table B2-52. Tank 241-T-201 Analytical Results: Oxalate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			µg/g	µg/g	µg/g
S97T001203	192: 1	Drainable liquid	<160	<160	<160
S97T000834	192: 2	Drainable liquid	<84	97.1	<90.5
S97T000835	192: 3	Drainable liquid	<84	<84.2	<84.1
S97T000836	192: 4	Drainable liquid	<160	<160	<160
S97T000837	192: 5	Drainable liquid	<160	<160	<160
Solids: water digest			µg/g	µg/g	µg/g
S97T000931	192: 6	Upper half	1,020	1,120	1,070
S97T000900		Lower half	1,080	984	1,030
S97T000916	192: 7	Upper half	644	721	682
S97T000915		Lower half	1,030	988	1,010
S97T000918	192: 8	Upper half	769	742	755
S97T000917		Lower half	809	722	766
S97T001251	Core 192	Solid composite	1,150	1,140	1,140
S97T001257		Solid composite	<228	<230	<229

Table B2-53. Tank 241-T-201 Analytical Results: Bulk Density.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			g/mL	g/mL	g/mL
S97T000894	192: 6	Lower half	1.39	N/A	1.39
S97T000895	192: 7	Lower half	1.28	N/A	1.28
S97T000896	192: 8	Lower half	1.27	N/A	1.27
S97T001245	Core 192	Solid composite	1.27	N/A	1.27
S97T001252		Solid composite	1.13	N/A	1.13

Table B2-54. Tank 241-T-201 Analytical Results: Percent Water (DSC/TGA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			%	%	%
S97T000833	192: 1	Drainable liquid	91.1	91	91
S97T000834	192: 2	Drainable liquid	91.2	91	91.1
S97T000835	192: 3	Drainable liquid	91.8	91.8	91.8
S97T000836	192: 4	Drainable liquid	91.4	91.1	91.3
S97T000837	192: 5	Drainable liquid	91	91	91
Solids			%	%	%
S97T000909	192: 6	Upper ½	70.0	69.4	69.7
S97T000899		Lower half	66.3	64.8	65.5
S97T000911	192: 7	Upper half	65.6	60.5	63
S97T000910		Lower half	63.5	66.3	64.9
S97T000913	192: 8	Upper half	70.7	69.9	70.3
S97T000912		Lower half	72.1	71.3	71.7
S97T001246	Core 192	Solidc composite	60.3	62.9	61.6
S97T001253		Solid composite	83.9	87.3	85.6

Table B2-55. Tank 241-T-201 Analytical Results: Specific Gravity.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			unitless	unitless	unitless
S97T000833	192: 1	Drainable liquid	1.05	1.05	1.05
S97T000834	192: 2	Drainable liquid	1.05	1.06	1.06
S97T000835	192: 3	Drainable liquid	1.06	1.05	1.05
S97T000836	192: 4	Drainable liquid	1.06	1.05	1.06
S97T000837	192: 5	Drainable liquid	1.06	1.07	1.06

Table B2-56. Tank 241-T-201 Analytical Results: Total Alpha, Drainable Liquid (Alpha Rad).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			µCi/mL	µCi/mL	µCi/mL
S97T001203	192: 1	Drainable liquid	1.05E-05	8.96E-06	9.73E-06
S97T000834	192: 2	Drainable liquid	7.96E-06	9.41E-06	8.68E-06
S97T001259	192: 3	Drainable liquid	8.49E-06	8.33E-06	8.41E-06
S97T000836	192: 4	Drainable liquid	<3.46E-05	<6.26E-05	<4.86E-05[QC:f]
S97T000837	192: 5	Drainable liquid	<5.59E-05	<7.61E-05	<6.60E-05[QC:f]

Table B2-57. Tank 241-T-201 Analytical Results: Total Alpha, Solid (Alpha).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T000901	192: 6	Lower half	0.632	0.628	0.63
S97T000919	192: 7	Lower half	0.598	0.565	0.581
S97T000920	192: 8	Lower half	1.15	0.966	1.06

Table B2-58. Tank 241-T-201 Analytical Results: Americium-241 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001753	Core 192	Solid composite	<0.0346	<0.0293	<0.0319
S97T001754		Solid composite	<0.0205	<0.0207	<0.0206

Table B2-59. Tank 241-T-201 Analytical Results: Cesium-137 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001753	Core 192	Solid composite	0.0481	0.0433	0.0457
S97T001754		Solid composite	<0.00847	0.0123	<0.0104[QC:e]

Table B2-60. Tank 241-T-201 Analytical Results: Cobalt-60 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001753	Core 192	Solid composite	<0.00634	<0.00566	<0.006
S97T001754		Solid composite	<0.00452	<0.00437	<0.00444

Table B2-61. Tank 241-T-201 Analytical Results: Europium-154 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001753	Core 192	Solid composite	<0.0182	<0.0186	<0.0184
S97T001754		Solid composite	<0.0135	<0.0144	<0.014

Table B2-62. Tank 241-T-201 Analytical Results: Europium-155 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001753	Core 192	Solid composite	<0.0146	<0.0139	<0.0143
S97T001754		Solid composite	<0.0107	<0.0104	<0.0105

Table B2-63. Tank 241-T-201 Analytical Results: Strontium-89/90.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001753	Core 192	Solid composite	0.137	0.145	0.141
S97T001754		Solid composite	0.0495	0.0117	0.0306[QC:c]

Table B2-64. Tank 241-T-201 Analytical Results: Total Inorganic Carbon.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			μg/g	μg/g	μg/g
S97T001246	Core 192	Solid composite	828	791	810
S97T001253		Solid composite	1,800	1,860	1,830

Table B2-65. Tank 241-T-201 Analytical Results: Total Organic Carbon.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			μg/g	μg/g	μg/g
S97T001246	Core 192	Solid composite	303	304	304[QC:c]
S97T001253		Solid composite	156	110	133[QC:c]

Table B2-66. Tank 241-T-202 Analytical Results: Aluminum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	71.9	97.3	84.6[QC:e]
S97T000944		Lower half	70.8	57.9	64.3[QC:e]
S97T000947	191: 2	Upper half	64.4	84.6	74.5[QC:e]
S97T000946		Lower half	68.9	58.9	63.9
S97T000949	191: 3	Upper half	112	88	100[QC:e]
S97T000948		Lower half	46.2	54.2	50.2
S97T000951	191: 4	Upper half	63.3	60.1	61.7
S97T000950		Lower half	59.6	73.2	66.4[QC:a,e]
S97T000953	191: 5	Upper half	62	71.1	66.5
S97T000952		Lower half	120	84	102[QC:a,e]
S97T001805	Core 191	Solid composite	76.4	68	72.2

Table B2-67. Tank 241-T-202 Analytical Results: Antimony (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<17.2	<17.1	<17.1
S97T000944		Lower half	<11.8	<11.8	<11.8[QC:a]
S97T000947	191: 2	Upper half	27.6	<17.1	<22.4[QC:e]
S97T000946		Lower half	<12.2	<12	<12.1[QC:a]
S97T000949	191: 3	Upper half	31.7	25	28.4[QC:e]
S97T000948		Lower half	<11.5	<11.5	<11.5[QC:a]
S97T000951	191: 4	Upper half	20.4	28.5	24.4[QC:e]
S97T000950		Lower half	<12	<12.2	<12.1[QC:a]
S97T000953	191: 5	Upper half	35.5	25.2	30.4[QC:e]
S97T000952		Lower half	<12.1	<12.2	<12.1[QC:a]
S97T001805	Core 191	Solid composite	<12.1	<12.1	<12.1

Table B2-68. Tank 241-T-202 Analytical Results: Arsenic (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	155	167	161
S97T000944		Lower half	<19.6	<19.7	<19.6
S97T000947	191: 2	Upper half	196	188	192
S97T000946		Lower half	<20.3	<20.1	<20.2
S97T000949	191: 3	Upper half	188	187	188
S97T000948		Lower half	<19.2	<19.2	<19.2
S97T000951	191: 4	Upper half	229	221	225
S97T000950		Lower half	<20	<20.3	<20.1
S97T000953	191: 5	Upper half	171	173	172
S97T000952		Lower half	<20.2	<20.3	<20.3
S97T001805	Core 191	Solid composite	<20.2	<20.1	<20.1

Table B2-69. Tank 241-T-202 Analytical Results: Barium (ICP)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	1,610	1,640	1,630
S97T000944		Lower half	1,530	1,480	1,510
S97T000947	191: 2	Upper half	1,590	1,610	1,600
S97T000946		Lower half	1,790	1,950	1,870
S97T000949	191: 3	Upper half	1,940	1,980	1,960
S97T000948		Lower half	1,970	2,080	2,030
S97T000951	191: 4	Upper half	1,080	1,030	1,060
S97T000950		Lower half	22.6	22.2	22.4[QC:a]
S97T000953	191: 5	Upper half	67	65.6	66.3
S97T000952		Lower half	23.4	25.5	24.4[QC:a]
S97T001805	Core 191	Solid composite	1,250	1,280	1,270

Table B2-70. Tank 241-T-202 Analytical Results: Beryllium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<1.43	<1.43	<1.43
S97T000944		Lower half	<0.982	<0.987	<0.984
S97T000947	191: 2	Upper half	<1.45	<1.43	<1.44
S97T000946		Lower half	<1.01	<1	<1
S97T000949	191: 3	Upper half	<1.45	<1.42	<1.44
S97T000948		Lower half	<0.959	<0.958	<0.958
S97T000951	191: 4	Upper half	<1.45	<1.44	<1.44
S97T000950		Lower half	<1	<1.01	<1
S97T000953	191: 5	Upper half	<1.42	<1.4	<1.41
S97T000952		Lower half	<1.01	<1.02	<1.02
S97T001805	Core 191	Solid composite	<1.01	<1.01	<1.01

Table B2-71. Tank 241-T-202 Analytical Results: Bismuth (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	29,600	30,600	30,100
S97T000944		Lower half	28,900	28,100	28,500[QC:a,d]
S97T000947	191: 2	Upper half	34,300	34,300	34,300
S97T000946		Lower half	34,300	36,700	35,500[QC:a]
S97T000949	191: 3	Upper half	36,800	36,400	36,600
S97T000948		Lower half	35,000	36,400	35,700[QC:a]
S97T000951	191: 4	Upper ½	44,500	None	44,500
S97T000950		Lower half	42,700	40,700	41,700[QC:a]
S97T000953	191: 5	Upper half	35,200	34,900	35,100
S97T000952		Lower half	41,100	41,700	41,400[QC:a]
S97T001805	Core 191	Solid composite	40,800	41,100	41,000[QC:d]

Table B2-72. Tank 241-T-202 Analytical Results: Boron (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	123	170	147[QC:e]
S97T000944		Lower half	182	157	170
S97T000947	191: 2	Upper half	132	132	132
S97T000946		Lower half	188	161	175
S97T000949	191: 3	Upper half	141	168	155
S97T000948		Lower half	83.2	150	117[QC:e]
S97T000951	191: 4	Upper half	171	136	154[QC:e]
S97T000950		Lower half	164	220	192[QC:e]
S97T000953	191: 5	Upper half	118	114	116
S97T000952		Lower half	162	157	160
S97T001805	Core 191	Solid composite	154	162	158

Table B2-73. Tank 241-T-202 Analytical Results: Cadmium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<1.43	<1.43	<1.43
S97T000944		Lower half	<0.982	<0.987	<0.984[QC:a]
S97T000947	191: 2	Upper half	<1.45	<1.43	<1.44
S97T000946		Lower half	<1.01	1.06	<1.04[QC:a]
S97T000949	191: 3	Upper half	<1.45	<1.42	<1.44
S97T000948		Lower half	1.57	1.51	1.54[QC:a]
S97T000951	191: 4	Upper half	<1.45	<1.44	<1.44
S97T000950		Lower half	<1	<1.01	<1[QC:a]
S97T000953	191: 5	Upper half	<1.42	<1.4	<1.41
S97T000952		Lower half	<1.01	<1.02	<1.02[QC:a]
S97T001805	Core 191	Solid composite	<1.01	<1.01	<1.01

Table B2-74. Tank 241-T-202 Analytical Results: Calcium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	284	330	307
S97T000944		Lower half	294	236	265[QC:c,e]
S97T000947	191: 2	Upper half	278	271	275
S97T000946		Lower half	246	243	245
S97T000949	191: 3	Upper half	315	335	325
S97T000948		Lower half	172	270	221[QC:e]
S97T000951	191: 4	Upper half	213	211	212[QC:b]
S97T000950		Lower half	202	230	216
S97T000953	191: 5	Upper half	208	212	210[QC:b]
S97T000952		Lower half	252	258	255
S97T001805	Core 191	Solid composite	323	297	310

Table B2-75. Tank 241-T-202 Analytical Results: Cerium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	47.5	62.9	55.2[QC:e]
S97T000944		Lower half	44.6	44.2	44.4
S97T000947	191: 2	Upper half	57.2	53.1	55.2
S97T000946		Lower half	33.9	36.8	35.3
S97T000949	191: 3	Upper half	38	62.6	50.3[QC:e]
S97T000948		Lower half	40.1	42.3	41.2
S97T000951	191: 4	Upper half	57.2	66.3	61.8
S97T000950		Lower half	57.7	54.8	56.3[QC:a]
S97T000953	191: 5	Upper half	61.1	59.1	60.1
S97T000952		Lower half	59.9	59.8	59.8[QC:a]
S97T001805	Core 191	Solid composite	53.2	54.2	53.7

Table B2-76. Tank 241-T-202 Analytical Results: Chromium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	1,580	1,660	1,620
S97T000944		Lower half	1,620	1,540	1,580
S97T000947	191: 2	Upper half	3,480	3,420	3,450
S97T000946		Lower half	3,270	3,540	3,410
S97T000949	191: 3	Upper half	3,170	3,220	3,200
S97T000948		Lower half	3,350	3,510	3,430
S97T000951	191: 4	Upper half	4,730	4,470	4,600
S97T000950		Lower half	3,930	3,830	3,880[QC:a]
S97T000953	191: 5	Upper half	3,330	3,300	3,320
S97T000952		Lower half	3,760	3,700	3,730[QC:a]
S97T001805	Core 191	Solid composite	3,750	3,760	3,760

Table B2-77. Tank 241-T-202 Analytical Results: Cobalt (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	9.55	8.07	8.81
S97T000944		Lower half	<3.93	<3.95	<3.94[QC:a]
S97T000947	191: 2	Upper half	8.34	<5.71	<7.03[QC:c]
S97T000946		Lower half	<4.05	<4.02	<4.04[QC:a]
S97T000949	191: 3	Upper half	<5.78	<5.68	<5.73
S97T000948		Lower half	<3.83	<3.83	<3.83[QC:a]
S97T000951	191: 4	Upper half	6.55	7.04	6.8
S97T000950		Lower half	<4	<4.06	<4.03[QC:a]
S97T000953	191: 5	Upper half	7.26	9.11	8.18[QC:c]
S97T000952		Lower half	<4.05	<4.07	<4.06[QC:a]
S97T001805	Core 191	Solid composite	<4.04	<4.03	<4.04

Table B2-78. Tank 241-T-202 Analytical Results: Copper (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	5.22	5.89	5.55
S97T000944		Lower half	3.37	<1.97	<2.67[QC:a,c,e]
S97T000947	191: 2	Upper half	6.23	7.76	7[QC:e]
S97T000946		Lower half	<2.03	<2.01	<2.02[QC:a]
S97T000949	191: 3	Upper half	10.8	9.11	9.96
S97T000948		Lower half	<1.92	<1.92	<1.92[QC:a]
S97T000951	191: 4	Upper half	7.1	6.33	6.71
S97T000950		Lower half	<2	<2.03	<2.01[QC:a]
S97T000953	191: 5	Upper half	5.06	4.79	4.92
S97T000952		Lower half	<2.02	<2.03	<2.02[QC:a]
S97T001805	Core 191	Solid composite	<2.02	<2.01	<2.01

Table B2-79. Tank 241-T-202 Analytical Results: Iron (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	2,090	2,670	2,380[QC:e]
S97T000944		Lower half	1,970	1,760	1,870[QC:a,c]
S97T000947	191: 2	Upper half	5,950	10,300	8,130[QC:e]
S97T000946		Lower half	4,380	4,560	4,470[QC:a]
S97T000949	191: 3	Upper half	28,600	19,200	2,3900[QC:e]
S97T000948		Lower half	2,790	3,740	3,270[QC:a,e]
S97T000951	191: 4	Upper half	3,910	2,730	3,320[QC:e]
S97T000950		Lower half	2,760	2,600	2,680[QC:a]
S97T000953	191: 5	Upper half	2,610	2,430	2,520
S97T000952		Lower half	2,700	2,730	2,720[QC:a]
S97T001805	Core 191	Solid composite	9,700	5,530	7,620[QC:d,e]

Table B2-80. Tank 241-T-202 Analytical Results: Lanthanum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	8,840	9,060	8,950
S97T000944		Lower half	9,550	9,330	9,440
S97T000947	191: 2	Upper half	10,500	10,600	10,600
S97T000946		Lower half	9,410	10,200	9,810
S97T000949	191: 3	Upper half	10,700	10,700	10,700
S97T000948		Lower half	11,300	11,800	11,600
S97T000951	191: 4	Upper half	13,100	12,500	12,800
S97T000950		Lower half	11,900	11,400	11,700[QC:a]
S97T000953	191: 5	Upper half	9,490	9,320	9,410
S97T000952		Lower half	11,900	12,100	12,000[QC:a]
S97T001805	Core 191	Solid composite	12,500	12,600	12,600[QC:d]

Table B2-81. Tank 241-T-202 Analytical Results: Lead (ICP)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	48	58.8	53.4[QC:e]
S97T000944		Lower half	<19.6	<19.7	<19.6[QC:a,c]
S97T000947	191: 2	Upper half	198	201	200
S97T000946		Lower half	<20.3	<20.1	<20.2[QC:a]
S97T000949	191: 3	Upper half	190	153	172[QC:e]
S97T000948		Lower half	<19.2	<19.2	<19.2[QC:a]
S97T000951	191: 4	Upper half	55.9	43.5	49.7[QC:e]
S97T000950		Lower half	<20	<20.3	<20.1[QC:a]
S97T000953	191: 5	Upper half	122	116	119
S97T000952		Lower half	248	309	279[QC:a,e]
S97T001805	Core 191	Solid composite	85	30.9	58[QC:e]

Table B2-82. Tank 241-T-202 Analytical Results: Lithium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<2.86	<2.85	<2.86
S97T000944		Lower half	<1.96	<1.97	<1.96
S97T000947	191: 2	Upper half	<2.9	<2.86	<2.88
S97T000946		Lower half	<2.03	<2.01	<2.02
S97T000949	191: 3	Upper half	<2.89	<2.84	<2.87
S97T000948		Lower half	<1.92	<1.92	<1.92
S97T000951	191: 4	Upper half	<2.9	<2.88	<2.89
S97T000950		Lower half	<2	<2.03	<2.01
S97T000953	191: 5	Upper half	<2.85	<2.79	<2.82
S97T000952		Lower half	<2.02	<2.03	<2.02
S97T001805	Core 191	Solid composite	<2.02	<2.01	<2.01

Table B2-83. Tank 241-T-202 Analytical Results: Magnesium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	58.6	81	69.8[QC:e]
S97T000944		Lower half	102	85.9	94[QC:a]
S97T000947	191: 2	Upper half	67.8	146	107[QC:e]
S97T000946		Lower half	78.7	75.3	77[QC:a]
S97T000949	191: 3	Upper half	97.6	126	112[QC:e]
S97T000948		Lower half	54.5	57.2	55.9[QC:a]
S97T000951	191: 4	Upper half	52.5	46	49.3
S97T000950		Lower half	66.8	68.1	67.4[QC:a]
S97T000953	191: 5	Upper half	42.1	44.8	43.5
S97T000952		Lower half	73.5	71.4	72.5[QC:a]
S97T001805	Core 191	Solid composite	94.7	82.9	88.8

Table B2-84. Tank 241-T-202 Analytical Results: Manganese (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	8,420	8,840	8,630
S97T000944		Lower half	10,100	9,860	9,980[QC:a,d]
S97T000947	191: 2	Upper half	9,720	9,780	9,750
S97T000946		Lower half	10,400	11,300	10,900[QC:a]
S97T000949	191: 3	Upper half	9,980	10,100	10,000
S97T000948		Lower half	11,500	12,100	11,800[QC:a]
S97T000951	191: 4	Upper half	12,400	11,900	12,200
S97T000950		Lower half	14,800	13,900	14,400[QC:a]
S97T000953	191: 5	Upper half	10,500	10,400	10,500
S97T000952		Lower half	14,500	14,800	14,700[QC:a]
S97T001805	Core 191	Solid composite	14,700	14,900	14,800[QC:d]

Table B2-85. Tank 241-T-202 Analytical Results: Molybdenum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<14.3	<14.3	<14.3
S97T000944		Lower half	<9.82	<9.87	<9.84[QC:a]
S97T000947	191: 2	Upper half	<14.5	<14.3	<14.4
S97T000946		Lower half	<10.1	<10	<10.1[QC:a]
S97T000949	191: 3	Upper half	<14.5	<14.2	<14.3
S97T000948		Lower half	<9.59	<9.58	<9.59[QC:a]
S97T000951	191: 4	Upper half	<14.5	<14.4	<14.4
S97T000950		Lower half	<10	<10.1	<10.1[QC:a]
S97T000953	191: 5	Upper half	<14.2	<14	<14.1
S97T000952		Lower half	<10.1	<10.2	<10.1[QC:a]
S97T001805	Core 191	Solid composite	<10.1	<10.1	<10.1

Table B2-86. Tank 241-T-202 Analytical Results: Neodymium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<28.6	<28.5	<28.6
S97T000944		Lower half	<19.6	<19.7	<19.6
S97T000947	191: 2	Upper half	<29	<28.6	<28.8
S97T000946		Lower half	<20.3	<20.1	<20.2
S97T000949	191: 3	Upper half	<28.9	<28.4	<28.6
S97T000948		Lower half	<19.2	<19.2	<19.2
S97T000951	191: 4	Upper half	<29	<28.8	<28.9
S97T000950		Lower half	<20	<20.3	<20.1[QC:a]
S97T000953	191: 5	Upper half	<28.5	<27.9	<28.2
S97T000952		Lower half	<20.2	<20.3	<20.3[QC:a]
S97T001805	Core 191	Solid composite	<20.2	<20.1	<20.1

Table B2-87. Tank 241-T-202 Analytical Results: Nickel (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	82.3	86.6	84.4
S97T000944		Lower half	79.5	75.2	77.3
S97T000947	191: 2	Upper half	113	112	113
S97T000946		Lower half	94.7	102	98.3
S97T000949	191: 3	Upper half	104	101	103
S97T000948		Lower half	92.9	96.4	94.7
S97T000951	191: 4	Upper half	141	135	138
S97T000950		Lower half	204	193	199[QC:a]
S97T000953	191: 5	Upper half	128	127	128
S97T000952		Lower half	130	133	132[QC:a]
S97T001805	Core 191	Solid composite	131	133	132

Table B2-88. Tank 241-T-202 Analytical Results: Phosphorus (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T000945	191: 1	Upper half	2,370	2,440	2,410
S97T000944		Lower half	2,330	2,250	2,290[QC:a]
S97T000947	191: 2	Upper half	2,690	2,670	2,680
S97T000946		Lower half	1,910	2,040	1,980[QC:a]
S97T000949	191: 3	Upper half	2,330	2,380	2,360
S97T000948		Lower half	2,210	2,310	2,260[QC:a]
S97T000951	191: 4	Upper half	2,360	2,220	2,290
S97T000950		Lower half	1,820	1,780	1,800[QC:a]
S97T000953	191: 5	Upper half	1,660	1,690	1,680
S97T000952		Lower half	1,900	1,920	1,910[QC:a]
S97T001805	Core 191	Solid composite	2,370	2,410	2,390

Table B2-89. Tank 241-T-202 Analytical Results: Potassium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T000945	191: 1	Upper half	7,390	7,500	7,450
S97T000944		Lower half	8,150	7,480	7,820[QC:c]
S97T000947	191: 2	Upper half	7,110	7,170	7,140
S97T000946		Lower half	6,970	7,140	7,060
S97T000949	191: 3	Upper half	6,640	6,710	6,680
S97T000948		Lower half	6,690	6,840	6,770
S97T000951	191: 4	Upper half	6,540	6,190	6,370
S97T000950		Lower half	6,270	6,300	6,290[QC:a]
S97T000953	191: 5	Upper half	6,400	6,340	6,370
S97T000952		Lower half	6,150	6,200	6,180[QC:a]
S97T001805	Core 191	Solid composite	7,120	7,150	7,140

Table B2-90. Tank 241-T-202 Analytical Results: Samarium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T000945	191: 1	Upper half	<28.6	<28.5	<28.6
S97T000944		Lower half	<19.6	<19.7	<19.6[QC:a]
S97T000947	191: 2	Upper half	<29	<28.6	<28.8
S97T000946		Lower half	<20.3	<20.1	<20.2[QC:a]
S97T000949	191: 3	Upper half	<28.9	<28.4	<28.6
S97T000948		Lower half	<19.2	<19.2	<19.2[QC:a]
S97T000951	191: 4	Upper half	<29	<28.8	<28.9
S97T000950		Lower half	<20	<20.3	<20.1[QC:a]
S97T000953	191: 5	Upper half	<28.5	<27.9	<28.2
S97T000952		Lower half	<20.2	<20.3	<20.3[QC:a]
S97T001805	Core 191	Solid composite	<20.2	<20.1	<20.1

Table B2-91. Tank 241-T-202 Analytical Results: Selenium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T000944	191: 1	Lower half	<19.6	<19.7	<19.6[QC:a]
S97T000946	191: 2	Lower half	<20.3	<20.1	<20.2[QC:a]
S97T000948	191: 3	Lower half	<19.2	<19.2	<19.2[QC:a]
S97T000950	191: 4	Lower half	<20	<20.3	<20.1[QC:a]
S97T000952	191: 5	Lower half	<20.2	<20.3	<20.3[QC:a]
S97T001805	Core 191	Solid composite	<20.2	<20.1	<20.1

Table B2-92. Tank 241-T-202 Analytical Results: Silicon (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	1,740	1,950	1,850[QC:b]
S97T000944		Lower half	1,680	1,530	1,610[QC:b,c]
S97T000947	191: 2	Upper half	1,770	2,130	1,950[QC:b]
S97T000946		Lower half	1,350	1,200	1,280[QC:b]
S97T000949	191: 3	Upper half	1,600	1,900	1,750[QC:b]
S97T000948		Lower half	1,330	1,450	1,390[QC:b]
S97T000951	191: 4	Upper half	1,740	1,510	1,630[QC:b]
S97T000950		Lower half	1,600	1,550	1,580[QC:b]
S97T000953	191: 5	Upper half	1,550	1,740	1,650[QC:b]
S97T000952		Lower half	1,530	1,670	1,600[QC:b]
S97T001805	Core 191	Solid composite	1,930	1,810	1,870[QC:b]

Table B2-93. Tank 241-T-202 Analytical Results: Silver (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<2.86	<2.85	<2.86
S97T000944		Lower half	3.03	2.89	2.96[QC:a]
S97T000947	191: 2	Upper half	<2.9	<2.86	<2.88
S97T000946		Lower half	2.78	2.96	2.87[QC:a]
S97T000949	191: 3	Upper half	<2.89	<2.84	<2.87
S97T000948		Lower half	3.19	3.09	3.14[QC:a]
S97T000951	191: 4	Upper half	<2.9	<2.88	<2.89
S97T000950		Lower half	2.34	2.24	2.29[QC:a]
S97T000953	191: 5	Upper half	<2.85	<2.79	<2.82
S97T000952		Lower half	2.82	2.81	2.82[QC:a]
S97T001805	Core 191	Solid composite	<2.02	2.45	<2.24

Table B2-94. Tank 241-T-202 Analytical Results: Sodium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	37,100	37,400	37,300
S97T000944		Lower half	39,600	36,300	38,000[QC:c]
S97T000947	191: 2	Upper half	36,400	36,400	36,400
S97T000946		Lower half	35,100	36,200	35,700
S97T000949	191: 3	Upper half	33,900	34,300	34,100
S97T000948		Lower half	34,000	34,800	34,400
S97T000951	191: 4	Upper half	34,000	31,900	33,000
S97T000950		Lower half	32,500	32,400	32,500
S97T000953	191: 5	Upper half	32,400	32,400	32,400
S97T000952		Lower half	31,700	31,800	31,800
S97T001805	Core 191	Solid composite	35,800	35,900	35,900[QC:b]

Table B2-95. Tank 241-T-202 Analytical Results: Strontium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	649	664	657
S97T000944		Lower half	271	255	263[QC:a]
S97T000947	191: 2	Upper half	424	421	423
S97T000946		Lower half	435	473	454[QC:a]
S97T000949	191: 3	Upper half	475	487	481
S97T000948		Lower half	465	486	476[QC:a]
S97T000951	191: 4	Upper half	579	None	579
S97T000950		Lower half	459	503	481[QC:a]
S97T000953	191: 5	Upper half	331	332	332
S97T000952		Lower half	440	454	447[QC:a]
S97T001805	Core 191	Solid composite	493	501	497

Table B2-96. Tank 241-T-202 Analytical Results: Sulfur (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	288	297	293
S97T000944		Lower half	375	348	362[QC:a,c]
S97T000947	191: 2	Upper half	257	257	257
S97T000946		Lower half	322	329	326[QC:a]
S97T000949	191: 3	Upper half	231	241	236
S97T000948		Lower half	301	309	305[QC:a]
S97T000951	191: 4	Upper half	135	130	133
S97T000950		Lower half	234	238	236[QC:a]
S97T000953	191: 5	Upper half	135	138	137
S97T000952		Lower half	202	206	204[QC:a]
S97T001805	Core 191	Solid composite	299	304	302

Table B2-97. Tank 241-T-202 Analytical Results: Thallium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	171	195	183
S97T000944		Lower half	<39.3	<39.5	<39.4[QC:a,c]
S97T000947	191: 2	Upper half	201	197	199
S97T000946		Lower half	<40.5	<40.2	<40.4[QC:a]
S97T000949	191: 3	Upper half	200	224	212
S97T000948		Lower half	<38.3	<38.3	<38.3[QC:a]
S97T000951	191: 4	Upper half	250	260	255
S97T000950		Lower half	<40	<40.6	<40.3[QC:a]
S97T000953	191: 5	Upper half	213	212	213
S97T000952		Lower half	<40.5	<40.7	<40.6[QC:a]
S97T001805	Core 191	Solid composite	<40.4	<40.3	<40.3

Table B2-98. Tank 241-T-202 Analytical Results: Titanium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	3.03	3.88	3.46[QC:e]
S97T000944		Lower half	2.96	2.67	2.82[QC:a,e]
S97T000947	191: 2	Upper half	3.89	213	108[QC:e]
S97T000946		Lower half	3.4	3.89	3.65[QC:a]
S97T000949	191: 3	Upper half	7.25	4.65	5.95[QC:e]
S97T000948		Lower half	3.39	2.94	3.17[QC:a]
S97T000951	191: 4	Upper half	3.62	2.9	3.26[QC:e]
S97T000950		Lower half	3.19	2.91	3.05[QC:a]
S97T000953	191: 5	Upper half	<2.85	<2.79	<2.82
S97T000952		Lower half	6.32	7.4	6.86[QC:a]
S97T001805	Core 191	Solid composite	4.86	4.5	4.68

Table B2-99. Tank 241-T-202 Analytical Results: Total Uranium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<143	<143	<143
S97T000944		Lower half	216	208	212[QC:a]
S97T000947	191: 2	Upper half	<145	<143	<144
S97T000946		Lower half	<101	<100	<101[QC:a]
S97T000949	191: 3	Upper half	<145	<142	<144
S97T000948		Lower half	<95.9	<95.8	<95.8[QC:a]
S97T000951	191: 4	Upper half	<145	<144	<145
		Lower half	<100	<101	<101[QC:a]
	191: 5	Upper half	<142	<140	<141
S97T000950		Lower half	<101	<102	<102[QC:a]
S97T000953	Core 191	Solid composite	102	<101	<102

Table B2-100. Tank 241-T-202 Analytical Results: Vanadium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<14.3	<14.3	<14.3
S97T000944		Lower half	<9.82	<9.87	<9.84[QC:a]
S97T000947	191: 2	Upper half	<14.5	<14.3	<14.4
S97T000946		Lower half	<10.1	<10	<10.1[QC:a]
S97T000949	191: 3	Upper half	<14.5	<14.2	<14.3
S97T000948		Lower half	<9.59	<9.58	<9.59[QC:a]
S97T000951	191: 4	Upper half	<14.5	<14.4	<14.4
S97T000950		Lower half	<10	<10.1	<10.1[QC:a]
S97T000953	191: 5	Upper half	<14.2	<14	<14.1
S97T000952		Lower half	<10.1	<10.2	<10.1[QC:a]
S97T001805	Core 191	Solid composite	<10.1	<10.1	<10.1

Table B2-101. Tank 241-T-202 Analytical Results: Zinc (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	16.2	18	17.1
S97T000944		Lower half	14.7	12	13.3[QC:a,c,e]
S97T000947	191: 2	Upper half	14.9	16.5	15.7
S97T000946		Lower half	9.51	11.2	10.4[QC:a]
S97T000949	191: 3	Upper half	18	22.4	20.2[QC:e]
S97T000948		Lower half	6.95	9.42	8.19[QC:a,e]
S97T000951	191: 4	Upper half	11.9	14.7	13.3[QC:e]
S97T000950		Lower half	12.9	12	12.4[QC:a]
S97T000953	191: 5	Upper half	19.2	18.7	18.9
S97T000952		Lower half	51.8	55.7	53.8[QC:a]
S97T001805	Core 191	Solid composite	59.9	28.3	44.1[QC:e]

Table B2-102. Tank 241-T-202 Analytical Results: Zirconium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T000945	191: 1	Upper half	<2.86	3.3	<3.08
S97T000944		Lower half	<1.96	<1.97	<1.96
S97T000947	191: 2	Upper half	<2.9	3.87	<3.38[QC:e]
S97T000946		Lower half	<2.03	<2.01	<2.02
S97T000949	191: 3	Upper half	<2.89	<2.84	<2.87
S97T000948		Lower half	<1.92	<1.92	<1.92
S97T000951	191: 4	Upper ½	3.75	None	3.75
S97T000950		Lower half	<2	<2.03	<2.01
S97T000953	191: 5	Upper half	<2.85	<2.79	<2.82
S97T000952		Lower half	<2.02	<2.03	<2.02
S97T001805	Core 191	Solid composite	<2.02	<2.01	<2.01

Table B2-103. Tank 241-T-202 Analytical Results: Bromide (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000955	191: 1	Upper half	<518	<520	<519
S97T000954		Lower half	<277	<281	<279
S97T000957	191: 2	Upper half	<509	<522	<515
S97T000956		Lower half	<252	<249	<250
S97T000959	191: 3	Upper half	<522	<534	<528
S97T000958		Lower half	<265	<268	<266
S97T000961	191: 4	Upper half	<528	<517	<523
S97T000960		Lower half	<1,000	<1,010	<1,010
S97T000963	191: 5	Upper half	<518	<523	<520
S97T000962		Lower half	<1,030	<1,040	<1,040
S97T001129	Core 191	Solid composite	<303	<303	<303

Table B2-104. Tank 241-T-202 Analytical Results: Chloride (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000955	191: 1	Upper half	706	719	713
S97T000954		Lower half	658	602	630
S97T000957	191: 2	Upper half	835	830	833
S97T000956		Lower half	577	647	612
S97T000959	191: 3	Upper half	756	779	768
S97T000958		Lower half	636	568	602
S97T000961	191: 4	Upper half	641	674	657
S97T000960		Lower half	660	646	653
S97T000963	191: 5	Upper half	696	788	742
S97T000962		Lower half	840	570	705[QC:e]
S97T001129	Core 191	Solid composite	674	711	693

Table B2-105. Tank 241-T-202 Analytical Results: Fluoride (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000955	191: 1	Upper half	6,780	6,590	6,690
S97T000954		Lower half	6,240	5,920	6,080
S97T000957	191: 2	Upper half	6,540	6,590	6,570
S97T000956		Lower half	5,620	5,930	5,770
S97T000959	191: 3	Upper half	6,300	6,540	6,420
S97T000958		Lower half	5,620	5,580	5,600
S97T000961	191: 4	Upper half	5,740	5,930	5,840
S97T000960		Lower half	5,610	5,760	5,690
S97T000963	191: 5	Upper half	6,010	5,970	5,990
S97T000962		Lower half	5,720	5,680	5,700
S97T001129	Core 191	Solid composite	6,650	6,470	6,560

Table B2-106. Tank 241-T-202 Analytical Results: Nitrate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000955	191: 1	Upper half	65,000	64,800	64,900
S97T000954		Lower half	67,600	64,900	66,200
S97T000957	191: 2	Upper half	64,700	65,400	65,000
S97T000956		Lower half	62,100	63,900	63,000
S97T000959	191: 3	Upper half	61,500	62,000	61,700
S97T000958		Lower half	63,100	61,500	62,300
S97T000961	191: 4	Upper half	56,900	58,800	57,800
S97T000960		Lower half	58,100	57,500	57,800
S97T000963	191: 5	Upper half	60,600	60,100	60,400
S97T000962		Lower half	57,000	57,600	57,300
S97T001129	Core 191	Solid composite	66,200	65,000	65,600

Table B2-107. Tank 241-T-202 Analytical Results: Nitrite (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000955	191: 1	Upper half	773	781	777
S97T000954		Lower half	319	313	316
S97T000957	191: 2	Upper half	758	772	765
S97T000956		Lower half	303	295	299
S97T000959	191: 3	Upper half	765	759	762
S97T000958		Lower half	316	326	321
S97T000961	191: 4	Upper half	695	705	700
S97T000960		Lower half	<867	<870	<868
S97T000963	191: 5	Upper half	689	699	694
S97T000962		Lower half	<890	<899	<895
S97T001129	Core 191	Solid composite	518	531	525

Table B2-108. Tank 241-T-202 Analytical Results: Phosphate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000955	191: 1	Upper half	1,910	1,870	1,890
S97T000954		Lower half	1,920	1,940	1,930
S97T000957	191: 2	Upper half	2,150	2,210	2,180
S97T000956		Lower half	1,650	1,600	1,630
S97T000959	191: 3	Upper half	1,790	1,790	1,790
S97T000958		Lower half	1,730	1,710	1,720
S97T000961	191: 4	Upper half	1,520	1,480	1,500
S97T000960		Lower half	2,360	2,130	2,240
S97T000963	191: 5	Upper half	1,590	1,730	1,660
S97T000962		Lower half	2,200	2,040	2,120
S97T001129	Core 191	Solid composite	1,880	1,810	1,840

Table B2-109. Tank 241-T-202 Analytical Results: Sulfate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000955	191: 1	Upper half	1,560	1,570	1,570
S97T000954		Lower half	1,230	1,150	1,190
S97T000957	191: 2	Upper half	1,620	1,840	1,730
S97T000956		Lower half	992	1,020	1,010
S97T000959	191: 3	Upper half	1,680	1,970	1,830
S97T000958		Lower half	1,120	1,350	1,230
S97T000961	191: 4	Upper half	1,220	1,770	1,490[QC:e]
S97T000960		Lower half	<1110	1,390	<1250[QC:e]
S97T000963	191: 5	Upper half	1,500	1,830	1,670
S97T000962		Lower half	<1140	1,420	<1,280[QC:e]
S97T001129	Core 191	Solid composite	1,150	1,060	1,110

Table B2-110. Tank 241-T-202 Analytical Results: Oxalate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000955	191: 1	Upper half	<435	<437	<436
S97T000954		Lower half	<232	<236	<234
S97T000957	191: 2	Upper half	<427	<439	<433
S97T000956		Lower half	401	344	372
S97T000959	191: 3	Upper half	<438	<449	<444
S97T000958		Lower half	724	638	681
S97T000961	191: 4	Upper half	474	<435	<455
S97T000960		Lower half	1,050	1,810	1,430[QC:e]
S97T000963	191: 5	Upper half	<435	458	<447
S97T000962		Lower half	1,530	1,480	1,510
S97T001129	Core 191	Solid composite	475	490	482

Table B2-111. Tank 241-T-202 Analytical Results: Bulk Density.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			g/mL	g/mL	g/mL
S97T000786	191: 1	Lower half	1.21	N/A	1.21
S97T000787	191: 2	Lower half	1.26	N/A	1.26
S97T000788	191: 3	Lower half	1.09	N/A	1.09
S97T000789	191: 4	Lower half	1.1	N/A	1.1
S97T000790	191: 5	Lower half	1.25	N/A	1.25
S97T001087	Core 191	Solid composite	1.24	N/A	1.24

Table B2-112. Tank 241-T-202 Analytical Results: Percent Water (DSC/TGA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			%	%	%
S97T000803	191: 1	Upper half	79	78.6	78.8
S97T000802		Lower half	77.2	78.3	77.8
S97T000805	191: 2	Upper half	75.5	77.5	76.5
S97T000804		Lower half	78.7	76.2	77.4
S97T000807	191: 3	Upper half	76.5	68.8	72.7
S97T000806		Lower half	76.3	73.3	74.8
S97T000809	191: 4	Upper half	75.7	76.3	76
S97T000808		Lower half	76.5	76.6	76.5
S97T000811	191: 5	Upper half	63.7	79.4	71.5
S97T000810		Lower half	76.6	75.2	75.9
S97T001673	Core 191	Solid composite	73.6	72	72.8

Table B2-113. Tank 241-T-202 Analytical Results: Total Alpha (Alpha).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T000939	191: 1	Lower half	0.22	0.225	0.223
S97T000940	191: 2	Lower half	0.29	0.295	0.293
S97T000941	191: 3	Lower half	0.195	0.206	0.201
S97T000942	191: 4	Lower half	0.254	0.189	0.222
S97T000943	191: 5	Lower half	0.164	0.185	0.175

Table B2-114. Tank 241-T-202 Analytical Results: Americium-241 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001127	Core 191	Solid composite	<0.121	<0.108	<0.114

Table B2-115. Tank 241-T-202 Analytical Results: Cesium-137 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001127	Core 191	Solid composite	<0.0206	<0.0358	<0.0282[QC:e]

Table B2-116. Tank 241-T-202 Analytical Results: Cobalt-60 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001127	Core 191	Solid composite	<0.0156	<0.0178	<0.0167

Table B2-117. Tank 241-T-202 Analytical Results: Europium-154 (GEA)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001127	Core 191	Solid composite	<0.0366	<0.0461	<0.0413[QC:e]

Table B2-118. Tank 241-T-202 Analytical Results: Europium-155 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001127	Core 191	Solid composite	<0.0403	<0.0389	<0.0396

Table B2-119. Tank 241-T-202 Analytical Results: Strontium-89/90.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001127	Core 191	Solid composite	7.95E-04	0.00418	0.00249[QC:e]

Table B2-120. Tank 241-T-202 Analytical Results: Total Inorganic Carbon.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			µg/g	µg/g	µg/g
S97T001673	Core 191	Solid composite	2,070	2,090	2,080

Table B2-121. Tank 241-T-202 Analytical Results: Total Organic Carbon.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			µg/g	µg/g	µg/g
S97T001673	Core 191	Solid composite	335	358	347

Table B2-122. Tank 241-T-203 Analytical Results: Aluminum (ICP). (2 sheets)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	57.5	55	56.3
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<975	<984	<980
S97T000759		Lower half	<1,040	<1,030	<1,040
S97T000737	190: 1R	Upper half	<1,010	<1,000	<1,010
S97T000760		Lower half	2,230	<929	<1,580[QC:e]
S97T000738	190: 2	Upper half	<976	<999	<988
S97T000757		Lower half	<904	<881	<893
S97T000739	190: 3	Upper half	<1,030	<1,060	<1,050
S97T000761		Lower half	<947	<956	<952
S97T000740	190: 4	Upper half	<931	<945	<938
S97T000762		Lower half	<989	<981	<985
S97T000741	190: 5	Upper half	<1,020	<1,010	<1,020
S97T000763		Lower half	<995	<1000	<998

Table B2-122. Tank 241-T-203 Analytical Results: Aluminum (ICP). (2 sheets)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μg/g	μg/g	μg/g
S97T000742	190: 6	Upper half	<1,020	<1,030	<1,030
S97T000764		Lower half	<1,010	<1,010	<1,010
S97T000743	190: 7	Upper half	<1,020	<1,020	<1,020
S97T000765		Lower half	<1,030	<1,010	<1,020
S97T000744	190: 8	Upper half	<1,030	<1,010	<1,020
S97T000766		Lower half	<1,030	<1,010	<1,020
S97T000745	190: 9	Upper half	<1,020	<1,020	<1,020
S97T000767		Lower half	<1,010	<1,010	<1,010
S97T001734	Core 190	Solid composite	<978	<974	<976
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	<3.63	<3.63	<3.63

Table B2-123. Tank 241-T-203 Analytical Results: Antimony (ICP). (2 sheets)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001017	Core 190	Solid composite	<12	<12	<12
Solids: fusion			μg/g	μg/g	μg/g
S97T000735	190: 1	Upper half	<1,170	<1,180	<1,180
S97T000759		Lower half	<1,250	<1,240	<1,250
S97T000737	190: 1R	Upper half	<1,210	<1,200	<1,210
S97T000760		Lower half	<1,180	<1,110	<1,150
S97T000738	190: 2	Upper half	<1,170	<1,200	<1,190
S97T000757		Lower half	<1,080	<1,060	<1,070
S97T000739	190: 3	Upper half	<1,240	<1,270	<1,260
S97T000761		Lower half	<1,140	<1,150	<1,150

Table B2-123. Tank 241-T-203 Analytical Results: Antimony (ICP). (2 sheets)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µg/g	µg/g	µg/g
S97T000740	190: 4	Upper half	<1,120	<1,130	<1,130
S97T000762		Lower half	<1,190	<1,180	<1,190
S97T000741	190: 5	Upper half	<1,230	<1,220	<1,230
S97T000763		Lower half	<1,190	<1,200	<1,200
S97T000742	190: 6	Upper half	<1,220	<1,240	<1,230
S97T000764		Lower half	<1,210	<1,210	<1,210
S97T000743	190: 7	Upper half	<1,230	<1,220	<1,230
S97T000765		Lower half	<1,230	<1,210	<1,220
S97T000744	190: 8	Upper half	<1,240	<1,210	<1,230
S97T000766		Lower half	<1,230	<1,210	<1,220
S97T000745	190: 9	Upper half	<1,230	<1,220	<1,230
S97T000767		Lower half	<1,210	<1,220	<1,220
S97T001734	Core 190	Solid composite	<1,170	<1,170	<1,170
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<4.36	<4.36	<4.36

Table B2-124. Tank 241-T-203 Analytical Results: Arsenic (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<20	<20	<20
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<1,950	<1,970	<1,960
S97T000759		Lower half	<2,080	<2,060	<2,070
S97T000737	190: 1R	Upper half	<2,010	<2,000	<2,010
S97T000760		Lower half	<1,970	<1,860	<1,920
S97T000738	190: 2	Upper half	<1,950	<2,000	<1,980
S97T000757		Lower half	<1,810	<1,760	<1,790
S97T000739	190: 3	Upper half	<2,070	<2,110	<2,090
S97T000761		Lower half	<1,890	<1,910	<1,900
S97T000740	190: 4	Upper half	<1,860	<1,890	<1,880
S97T000762		Lower half	<1,980	<1,960	<1,,970
S97T000741	190: 5	Upper half	<2,050	<2,030	<2,040
S97T000763		Lower half	<1,990	<2,000	<2,000
S97T000742	190: 6	Upper half	<2,040	<2,060	<2,050
S97T000764		Lower half	<2,010	<2,020	<2,020
S97T000743	190: 7	Upper half	<2,050	<2,040	<2,050
S97T000765		Lower half	<2,050	<2,020	<2,040
S97T000744	190: 8	Upper half	<2,070	<2,020	<2,050
S97T000766		Lower half	<2,060	<2,020	<2,040
S97T000745	190: 9	Upper half	<2,050	<2,030	<2,040
S97T000767		Lower half	<2,010	<2,030	<2,020
S97T001734	Core 190	Solid composite	<1,960	<1,950	<1,960
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<7.27	<7.27	<7.27

Table B2-125. Tank 241-T-203 Analytical Results: Barium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	73.2	76.3	74.8
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<975	<984	<980
S97T000759		Lower half	<1,040	<1,030	<1,040
S97T000737	190: 1R	Upper half	<1,010	<1,000	<1,010
S97T000760		Lower half	<983	<929	<956
S97T000738	190: 2	Upper half	<976	<999	<988
S97T000757		Lower half	<904	<881	<893
S97T000739	190: 3	Upper half	<1,030	<1,060	<1,050
S97T000761		Lower half	<947	<956	<952
S97T000740	190: 4	Upper half	<931	<945	<938
S97T000762		Lower half	<989	<981	<985
S97T000741	190: 5	Upper half	<1,020	<1,010	<1,020
S97T000763		Lower half	<995	<1,000	<998
S97T000742	190: 6	Upper half	<1,020	<1,030	<1,030
S97T000764		Lower half	<1,010	<1,010	<1,010
S97T000743	190: 7	Upper half	<1,020	<1,020	<1,020
S97T000765		Lower half	<1,030	<1,010	<1,020
S97T000744	190: 8	Upper half	<1,030	<1,010	<1,020
S97T000766		Lower half	<1,030	<1,010	<1,020
S97T000745	190: 9	Upper half	<1,020	<1,020	<1,020
S97T000767		Lower half	<1,010	<1,010	<1,010
S97T001734	Core 190	Solid composite	<978	<974	<976
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<3.63	<3.63	<3.63

Table B2-126. Tank 241-T-203 Analytical Results: Beryllium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<0.998	<0.998	<0.998
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<97.5	<98.4	<98
S97T000759		Lower half	<104	<103	<104
S97T000737	190: 1R	Upper half	<101	<100	<101
S97T000760		Lower half	<98.3	<92.9	<95.6
S97T000738	190: 2	Upper half	<97.6	<99.9	<98.8
S97T000757		Lower half	<90.4	<88.1	<89.3
S97T000739	190: 3	Upper half	<103	<106	<105
S97T000761		Lower half	<94.7	<95.6	<95.2
S97T000740	190: 4	Upper half	<93.1	<94.5	<93.8
S97T000762		Lower half	<98.9	<98.1	<98.5
S97T000741	190: 5	Upper half	<102	<101	<102
S97T000763		Lower half	<99.5	<100	<99.8
S97T000742	190: 6	Upper half	<102	<103	<103
S97T000764		Lower half	<101	<101	<101
S97T000743	190: 7	Upper half	<102	<102	<102
S97T000765		Lower half	<103	<101	<102
S97T000744	190: 8	Upper half	<103	<101	<102
S97T000766		Lower half	<103	<101	<102
S97T000745	190: 9	Upper half	<102	<102	<102
S97T000767		Lower half	<101	<101	<101
S97T001734	Core 190	Solid composite	<97.8	<97.4	<97.6
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<0.363	<0.363	<0.363

Table B2-127. Tank 241-T-203 Analytical Results: Bismuth (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001017	Core 190	Solid composite	49,500	47,800	48,700[Q,C:c]
Solids: fusion			μg/g	μg/g	μg/g
S97T000735	190: 1	Upper half	29,000	27,100	28,100
S97T000759		Lower half	36,300	34,100	35,200
S97T000737	190: 1R	Upper half	25,000	26,000	25,500
S97T000760		Lower half	29,300	31,100	30,200
S97T000738	190: 2	Upper half	25,500	29,000	27,300
S97T000757		Lower half	37,200	35,900	36,600
S97T000739	190: 3	Upper half	36,200	33,900	35,100
S97T000761		Lower half	46,000	41,400	43,700
S97T000740	190: 4	Upper half	41,100	37,800	39,500
S97T000762		Lower half	41,100	33,400	37,300[QC:e]
S97T000741	190: 5	Upper half	34,900	38,100	36,500
S97T000763		Lower half	38,200	41,100	39,700
S97T000742	190: 6	Upper half	41,200	39,800	40,500
S97T000764		Lower half	37,400	35,800	36,600
S97T000743	190: 7	Upper half	53,900	52,500	53,200
S97T000765		Lower half	53,000	44,000	48,500
S97T000744	190: 8	Upper half	54,200	59,000	56,600
S97T000766		Lower half	53,000	63,100	58,100
S97T000745	190: 9	Upper half	31,900	28,600	30,300
S97T000767		Lower half	34,700	30,900	32,800
S97T001734	Core 190	Solid composite	60,800	62,300	61,600
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	<7.27	<7.27	<7.27

Table B2-128. Tank 241-T-203 Analytical Results: Boron (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001017	Core 190	Solid composite	75.2	111	93.1[QC:e]
Solids: fusion			μg/g	μg/g	μg/g
S97T000735	190: 1	Upper half	<975	<984	<980
S97T000759		Lower half	<1,040	<1,030	<1,040
S97T000737	190: 1R	Upper half	<1,010	<1,000	<1,010
S97T000760		Lower half	<983	<929	<956
S97T000738	190: 2	Upper half	<976	<999	<988
S97T000757		Lower half	<904	<881	<893
S97T000739	190: 3	Upper half	<1,030	<1,060	<1,050
S97T000761		Lower half	<947	<956	<952
S97T000740	190: 4	Upper half	<931	<945	<938
S97T000762		Lower half	<989	<981	<985
S97T000741	190: 5	Upper half	<1,020	<1,010	<1,020
S97T000763		Lower half	<995	<1,000	<998
S97T000742	190: 6	Upper half	<1,020	<1,030	<1,030
S97T000764		Lower half	<1,010	<1,010	<1,010
S97T000743	190: 7	Upper half	<1,020	<1,020	<1,020
S97T000765		Lower half	<1,030	<1,010	<1,020
S97T000744	190: 8	Upper half	<1,030	<1,010	<1,020
S97T000766		Lower half	<1,030	<1,010	<1,020
S97T000745	190: 9	Upper half	<1,020	<1,020	<1,020
S97T000767		Lower half	<1,010	<1,010	<1,010
S97T001734	Core 190	Solid composite	<978	<974	<976
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	<3.63	<3.63	<3.63

Table B2-129. Tank 241-T-203 Analytical Results: Cadmium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<0.998	<0.998	<0.998
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<97.5	<98.4	<98
S97T000759		Lower half	<104	<103	<104
S97T000737	190: 1R	Upper half	<101	<100	<101
S97T000760		Lower half	<98.3	<92.9	<95.6
S97T000738	190: 2	Upper half	<97.6	<99.9	<98.8
S97T000757		Lower half	<90.4	<88.1	<89.3
S97T000739	190: 3	Upper half	<103	<106	<105
S97T000761		Lower half	<94.7	<95.6	<95.2
S97T000740	190: 4	Upper half	<93.1	<94.5	<93.8
S97T000762		Lower half	<98.9	<98.1	<98.5
S97T000741	190: 5	Upper half	<102	<101	<102
S97T000763		Lower half	<99.5	<100	<99.8
S97T000742	190: 6	Upper half	<102	<103	<103
S97T000764		Lower half	<101	<101	<101
S97T000743	190: 7	Upper half	<102	<102	<102
S97T000765		Lower half	<103	<101	<102
S97T000744	190: 8	Upper half	<103	<101	<102
S97T000766		Lower half	<103	<101	<102
S97T000745	190: 9	Upper half	<102	<102	<102
S97T000767		Lower half	<101	<101	<101
S97T001734	Core 190	Solid composite	<97.8	<97.4	<97.6
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<0.363	<0.363	<0.363

Table B2-130. Tank 241-T-203 Analytical Results: Calcium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	353	339	346
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<1,950	<1,970	<1,960
S97T000759		Lower half	<2,080	<2,060	<2,070
S97T000737	190: 1R	Upper half	<2,010	<2,000	<2,010
S97T000760		Lower half	<1,970	<1,860	<1,920
S97T000738	190: 2	Upper half	<1,950	<2,000	<1,980
S97T000757		Lower half	<1,810	<1,760	<1,790
S97T000739	190: 3	Upper half	<2,070	<2,110	<2,090
S97T000761		Lower half	<1,890	<1,910	<1,900
S97T000740	190: 4	Upper half	<1,860	<1,890	<1,880
S97T000762		Lower half	<1,980	<1,960	<1,970
S97T000741	190: 5	Upper half	<2,050	<2,030	<2,040
S97T000763		Lower half	<1,990	<2,000	<2,000
S97T000742	190: 6	Upper half	<2,040	<2,060	<2,050
S97T000764		Lower half	<2,010	<2,020	<2,020
S97T000743	190: 7	Upper half	<2,050	<2,040	<2,050
S97T000765		Lower half	<2,050	<2,020	<2,040
S97T000744	190: 8	Upper half	<2,070	<2,020	<2,050
S97T000766		Lower half	<2,060	<2,020	<2,040
S97T000745	190: 9	Upper half	<2,050	<2,030	<2,040
S97T000767		Lower half	<2,010	<2,030	<2,020
S97T001734	Core 190	Solid composite	<1,960	<1,950	<1,960
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<7.27	<7.27	<7.27

Table B2-131. Tank 241-T-203 Analytical Results: Cerium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	56.6	53.9	55.3
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<1,950	<1,970	<1,960
S97T000759		Lower half	<2,080	<2,060	<2,070
S97T000737	190: 1R	Upper half	<2,010	<2,000	<2,010
S97T000760		Lower half	<1,970	<1,860	<1,920
S97T000738	190: 2	Upper half	<1,950	<2,000	<1,980
S97T000757		Lower half	<1,810	<1,760	<1,790
S97T000739	190: 3	Upper half	<2,070	<2,110	<2,090
S97T000761		Lower half	<1,890	<1,910	<1,900
S97T000740	190: 4	Upper half	<1,860	<1,890	<1,880
S97T000762		Lower half	<1,980	<1,960	<1,970
S97T000741	190: 5	Upper half	<2,050	<2,030	<2,040
S97T000763		Lower half	<1,990	<2,000	<2,000
S97T000742	190: 6	Upper half	<2,040	<2,060	<2,050
S97T000764		Lower half	<2,010	<2,020	<2,020
S97T000743	190: 7	Upper half	<2,050	<2,040	<2,050
S97T000765		Lower half	<2,050	<2,020	<2,040
S97T000744	190: 8	Upper half	<2,070	<2,020	<2,050
S97T000766		Lower half	<2,060	<2,020	<2,040
S97T000745	190: 9	Upper half	<2,050	<2,030	<2,040
S97T000767		Lower half	<2,010	<2,030	<2,020
S97T001734	Core 190	Solid composite	<1,960	<1,950	<1,960
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<7.27	<7.27	<7.27

Table B2-132. Tank 241-T-203 Analytical Results: Chromium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	3,870	3,710	3,790[QC:c]
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	2,670	2,640	2,660
S97T000759		Lower half	2,530	2,610	2,570
S97T000737	190: 1R	Upper half	1,770	1,770	1,770
S97T000760		Lower half	3,090	3,060	3,080
S97T000738	190: 2	Upper half	2,900	3,110	3,010
S97T000757		Lower half	3,250	3,250	3,250
S97T000739	190: 3	Upper half	3,040	2,980	3,010
S97T000761		Lower half	3,650	3,640	3,650
S97T000740	190: 4	Upper half	3,960	3,870	3,920
S97T000762		Lower half	4,290	3,550	3,920
S97T000741	190: 5	Upper half	3,360	3,440	3,400
S97T000763		Lower half	4,040	4,320	4,180
S97T000742	190: 6	Upper half	4,820	4,640	4,730
S97T000764		Lower half	4,440	4,340	4,390
S97T000743	190: 7	Upper half	3,550	3,400	3,480
S97T000765		Lower half	4,540	4,460	4,500
S97T000744	190: 8	Upper half	3,940	4,120	4,030
S97T000766		Lower half	3,980	3,950	3,970
S97T000745	190: 9	Upper half	3,750	3,500	3,630
S97T000767		Lower half	3,750	3,830	3,790
S97T001734	Core 190	Solid composite	4,700	4,850	4,780
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	30.4	30.9	30.6

Table B2-133. Tank 241-T-203 Analytical Results: Cobalt (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<3.99	<3.99	<3.99
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<390	<393	<392
S97T000759		Lower half	<415	<412	<414
S97T000737	190: 1R	Upper half	<403	<400	<402
S97T000760		Lower half	<393	<372	<383
S97T000738	190: 2	Upper half	<391	<400	<396
S97T000757		Lower half	<362	<353	<358
S97T000739	190: 3	Upper half	<414	<423	<419
S97T000761		Lower half	<379	<382	<381
S97T000740	190: 4	Upper half	<372	<378	<375
S97T000762		Lower half	<396	<392	<394
S97T000741	190: 5	Upper half	<409	<405	<407
S97T000763		Lower half	<398	<401	<400
S97T000742	190: 6	Upper half	<408	<412	<410
S97T000764		Lower half	<403	<405	<404
S97T000743	190: 7	Upper half	<410	<408	<409
S97T000765		Lower half	<410	<403	<407
S97T000744	190: 8	Upper half	<413	<404	<409
S97T000766		Lower half	<411	<405	<408
S97T000745	190: 9	Upper half	<409	<406	<408
S97T000767		Lower half	<403	<406	<405
S97T001734	Core 190	Solid composite	<391	<389	<390
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<1.45	<1.45	<1.45

Table B2-134. Tank 241-T-203 Analytical Results: Copper (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<2	<2	<2
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<195	<197	<196
S97T000759		Lower half	<208	<206	<207
S97T000737	190: 1R	Upper half	<201	<200	<201
S97T000760		Lower half	<197	<186	<192
S97T000738	190: 2	Upper half	<195	<200	<198
S97T000757		Lower half	<181	<176	<179
S97T000739	190: 3	Upper half	<207	<211	<209
S97T000761		Lower half	<189	<191	<190
S97T000740	190: 4	Upper half	<186	<189	<188
S97T000762		Lower half	<198	<196	<197
S97T000741	190: 5	Upper half	<205	<203	<204
S97T000763		Lower half	<199	<200	<200
S97T000742	190: 6	Upper half	<204	<206	<205
S97T000764		Lower half	<201	<202	<202
S97T000743	190: 7	Upper half	<205	<204	<205
S97T000765		Lower half	<205	<202	<204
S97T000744	190: 8	Upper half	<207	<202	<205
S97T000766		Lower half	<206	<202	<204
S97T000745	190: 9	Upper half	<205	<203	<204
S97T000767		Lower half	<201	<203	<202
S97T001734	Core 190	Solid composite	<196	<195	<196
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<0.727	<0.727	<0.727

Table B2-135. Tank 241-T-203 Analytical Results: Iron (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001017	Core 190	Solid composite	3,620	10,000	6,810[QC:d,e]
Solids: fusion			μg/g	μg/g	μg/g
S97T000735	190: 1	Upper half	1,960	1,780	1,870
S97T000759		Lower half	2,210	2,040	2,130
S97T000737	190: 1R	Upper half	14,500	30,200	22,400[QC:e]
S97T000760		Lower half	2,110	1,800	1,960
S97T000738	190: 2	Upper half	17,500	3,130	10,300[QC:e]
S97T000757		Lower half	2,270	2,010	2,140
S97T000739	190: 3	Upper half	5,700	8,050	6,880[QC:e]
S97T000761		Lower half	2,520	2,480	2,500
S97T000740	190: 4	Upper half	2,710	4,220	3,470[QC:e]
S97T000762		Lower half	2,440	2,100	2,270
S97T000741	190: 5	Upper half	1,860	1,930	1,900
S97T000763		Lower half	2,230	2,340	2,290
S97T000742	190: 6	Upper half	2,240	2,240	2,240
S97T000764		Lower half	2,540	2,570	2,560
S97T000743	190: 7	Upper half	3,890	3,780	3,840
S97T000765		Lower half	3,080	2,810	2,950
S97T000744	190: 8	Upper half	3,080	3,130	3,110
S97T000766		Lower half	2,910	2,680	2,800
S97T000745	190: 9	Upper half	2,150	1,660	1,910[QC:e]
S97T000767		Lower half	2,320	2,200	2,260
S97T001734	Core 190	Solid composite	5,900	4,160	5,030[QC:e]
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	<3.63	<3.63	<3.63

Table B2-136. Tank 241-T-203 Analytical Results: Lanthanum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	11,900	11,500	11,700[QC:c]
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	8,680	8,630	8,660
S97T000759		Lower half	9,630	9,890	9,760
S97T000737	190: 1R	Upper half	8,370	8,330	8,350
S97T000760		Lower half	7,090	7,500	7,300
S97T000738	190: 2	Upper half	7,140	7,870	7,510
S97T000757		Lower half	9,750	9,260	9,510
S97T000739	190: 3	Upper half	10,000	9,720	9,860
S97T000761		Lower half	11,800	11,800	11,800
S97T000740	190: 4	Upper half	9,730	9,270	9,500
S97T000762		Lower half	11,300	11,200	11,300
S97T000741	190: 5	Upper half	9,850	10,100	9,980
S97T000763		Lower half	12,000	11,100	11,600
S97T000742	190: 6	Upper half	10,300	10,700	10,500
S97T000764		Lower half	10,000	10,400	10,200
S97T000743	190: 7	Upper half	10,800	10,900	10,900
S97T000765		Lower half	9,740	9,560	9,650
S97T000744	190: 8	Upper half	10,600	11,200	10,900
S97T000766		Lower half	11,900	13,900	12,900
S97T000745	190: 9	Upper half	9,290	9,760	9,530
S97T000767		Lower half	10,400	9,910	10,200
S97T001734	Core 190	Solid composite	14,000	14,400	14,200
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<3.63	<3.63	<3.63

Table B2-137. Tank 241-T-203 Analytical Results: Lead (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001017	Core 190	Solid composite	<20	21.5	<20.8[QC:d]
Solids: fusion			μg/g	μg/g	μg/g
S97T000735	190: 1	Upper half	<1,950	<1,970	<1,960
S97T000759		Lower half	<2,080	<2,060	<2,070
S97T000737	190: 1R	Upper half	<2,010	<2,000	<2,010
S97T000760		Lower half	<1,970	<1,860	<1,920
S97T000738	190: 2	Upper half	<1,950	<2,000	<1,980
S97T000757		Lower half	<1,810	<1,760	<1,790
S97T000739	190: 3	Upper half	<2,070	<2,110	<2,090
S97T000761		Lower half	<1,890	<1,910	<1,900
S97T000740	190: 4	Upper half	<1,860	<1,890	<1,880
S97T000762		Lower half	<1,980	<1,960	<1,970
S97T000741	190: 5	Upper half	<2,050	<2,030	<2,040
S97T000763		Lower half	<1,990	<2,000	<2,000
S97T000742	190: 6	Upper half	<2,040	<2,060	<2,050
S97T000764		Lower half	<2,010	<2,020	<2,020
S97T000743	190: 7	Upper half	<2,050	<2,040	<2,050
S97T000765		Lower half	<2,050	<2,020	<2,040
S97T000744	190: 8	Upper half	<2,070	<2,020	<2,050
S97T000766		Lower half	<2,060	<2,020	<2,040
S97T000745	190: 9	Upper half	<2,050	<2,030	<2,040
S97T000767		Lower half	<2,010	<2,030	<2,020
S97T001734	Core 190	Solid composite	<1,960	<1,950	<1,960
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	<7.27	<7.27	<7.27

Table B2-138. Tank 241-T-203 Analytical Results: Lithium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<2	<2	<2
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<195	<197	<196
S97T000759		Lower half	<208	<206	<207
S97T000737	190: 1R	Upper half	<201	<200	<201
S97T000760		Lower half	<197	<186	<192
S97T000738	190: 2	Upper half	<195	<200	<198
S97T000757		Lower half	<181	<176	<179
S97T000739	190: 3	Upper half	<207	<211	<209
S97T000761		Lower half	<189	<191	<190
S97T000740	190: 4	Upper half	<186	<189	<188
S97T000762		Lower half	<198	<196	<197
S97T000741	190: 5	Upper half	<205	<203	<204
S97T000763		Lower half	<199	<200	<200
S97T000742	190: 6	Upper half	<204	<206	<205
S97T000764		Lower half	<201	<202	<202
S97T000743	190: 7	Upper half	<205	<204	<205
S97T000765		Lower half	<205	<202	<204
S97T000744	190: 8	Upper half	<207	<202	<205
S97T000766		Lower half	<206	<202	<204
S97T000745	190: 9	Upper half	<205	<203	<204
S97T000767		Lower half	<201	<203	<202
S97T001734	Core 190	Solid composite	<196	<195	<196
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<0.727	<0.727	<0.727

Table B2-139. Tank 241-T-203 Analytical Results: Magnesium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	77.8	80.2	79
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<1,950	<1,970	<1,960
S97T000759		Lower half	<2,080	<2,060	<2,070
S97T000737	190: 1R	Upper half	<2,010	<2,000	<2,010
S97T000760		Lower half	<1,970	<1,860	<1,920
S97T000738	190: 2	Upper half	<1,950	<2,000	<1,980
S97T000757		Lower half	<1,810	<1,760	<1,790
S97T000739	190: 3	Upper half	<2,070	<2,110	<2,090
S97T000761		Lower half	<1,890	<1,910	<1,900
S97T000740	190: 4	Upper half	<1,860	<1,890	<1,880
S97T000762		Lower half	<1,980	<1,960	<1,970
S97T000741	190: 5	Upper half	<2,050	<2,030	<2,040
S97T000763		Lower half	<1,990	<2,000	<2,000
S97T000742	190: 6	Upper half	<2,040	<2,060	<2,050
S97T000764		Lower half	<2,010	<2,020	<2,020
S97T000743	190: 7	Upper half	<2,050	<2,040	<2,050
S97T000765		Lower half	<2,050	<2,020	<2,040
S97T000744	190: 8	Upper half	<2,070	<2,020	<2,050
S97T000766		Lower half	<2,060	<2,020	<2,040
S97T000745	190: 9	Upper half	<2,050	<2,030	<2,040
S97T000767		Lower half	<2,010	<2,030	<2,020
S97T001734	Core 190	Solid composite	<1,960	<1,950	<1,960
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<7.27	<7.27	<7.27

Table B2-140. Tank 241-T-203 Analytical Results: Manganese (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			$\mu g/g$	$\mu g/g$	$\mu g/g$
S97T001017	Core 190	Solid composite	16,400	15,700	16,100[QC:e]
Solids: fusion			$\mu g/g$	$\mu g/g$	$\mu g/g$
S97T000735	190: 1	Upper half	9,230	9,080	9,160
S97T000759		Lower half	10,700	10,800	10,800
S97T000737	190: 1R	Upper half	8,040	8,110	8,080
S97T000760		Lower half	7,940	8,180	8,060
S97T000738	190: 2	Upper half	7,900	8,680	8,290
S97T000757		Lower half	10,600	10,400	10,500
S97T000739	190: 3	Upper half	10,200	9,970	10,100
S97T000761		Lower half	11,700	11,700	11,700
S97T000740	190: 4	Upper half	11,000	10,400	10,700
S97T000762		Lower half	11,800	11,300	11,600
S97T000741	190: 5	Upper half	10,700	10,900	10,800
S97T000763		Lower half	12,300	11,500	11,900
S97T000742	190: 6	Upper half	11,800	12,000	11,900
S97T000764		Lower half	11,600	11,700	11,700
S97T000743	190: 7	Upper half	12,700	12,800	12,800
S97T000765		Lower half	12,900	12,200	12,600
S97T000744	190: 8	Upper half	12,600	12,800	12,700
S97T000766		Lower half	13,100	14,000	13,600
S97T000745	190: 9	Upper half	10,800	6,150	8,480[QC:e]
S97T000767		Lower half	8,180	7,280	7,730
S97T001734	Core 190	Solid composite	7,250	3,400	5,330[QC:e]
Liquids			$\mu g/g$	$\mu g/g$	$\mu g/g$
S97T000733	190: 1R	Drainable liquid	<0.727	<0.727	<0.727

Table B2-141. Tank 241-T-203 Analytical Results: Molybdenum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<9.98	<9.98	<9.98
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<975	<984	<980
S97T000759		Lower half	<1040	<1,030	<1,040
S97T000737	190: 1R	Upper half	<1,010	<1,000	<1,010
S97T000760		Lower half	<983	<929	<956
S97T000738	190: 2	Upper half	<976	<999	<988
S97T000757		Lower half	<904	<881	<893
S97T000739	190: 3	Upper half	<1,030	<1,060	<1,050
S97T000761		Lower half	<947	<956	<952
S97T000740	190: 4	Upper half	<931	<945	<938
S97T000762		Lower half	<989	<981	<985
S97T000741	190: 5	Upper half	<1,020	<1,010	<1,020
S97T000763		Lower half	<995	<1,000	<998
S97T000742	190: 6	Upper half	<1,020	<1,030	<1,030
S97T000764		Lower half	<1,010	<1,010	<1,010
S97T000743	190: 7	Upper half	<1,020	<1,020	<1,020
S97T000765		Lower half	<1,030	<1,010	<1,020
S97T000744	190: 8	Upper half	<1,030	<1,010	<1,020
S97T000766		Lower half	<1,030	<1,010	<1,020
S97T000745	190: 9	Upper half	<1,020	<1,020	<1,020
S97T000767		Lower half	<1,010	<1,010	<1,010
S97T001734	Core 190	Solid composite	<978	<974	<976
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<3.63	<3.63	<3.63

Table B2-142. Tank 241-T-203 Analytical Results: Neodymium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<20	<20	<20
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<1,950	<1,970	<1,960
S97T000759		Lower half	<2,080	<2,060	<2,070
S97T000737	190: 1R	Upper half	<2,010	<2,000	<2,010
S97T000760		Lower half	<1,970	<1,860	<1,920
S97T000738	190: 2	Upper half	<1,950	<2,000	<1,980
S97T000757		Lower half	<1,810	<1,760	<1,790
S97T000739	190: 3	Upper half	<2,070	<2,110	<2,090
S97T000761		Lower half	<1,890	<1,910	<1,900
S97T000740	190: 4	Upper half	<1,860	<1,890	<1,880
S97T000762		Lower half	<1,980	<1,960	<1,970
S97T000741	190: 5	Upper half	<2,050	<2,030	<2,040
S97T000763		Lower half	<1,990	<2,000	<2,000
S97T000742	190: 6	Upper half	<2,040	<2,060	<2,050
S97T000764		Lower half	<2,010	<2,020	<2,020
S97T000743	190: 7	Upper half	<2,050	<2,040	<2,050
S97T000765		Lower half	<2,050	<2,020	<2,040
S97T000744	190: 8	Upper half	<2,070	<2,020	<2,050
S97T000766		Lower half	<2,060	<2,020	<2,040
S97T000745	190: 9	Upper half	<2,050	<2,030	<2,040
S97T000767		Lower half	<2,010	<2,030	<2,020
S97T001734	Core 190	Solid composite	<1,960	<1,950	<1,960
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<7.27	<7.27	<7.27

Table B2-143. Tank 241-T-203 Analytical Results: Nickel (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	149	146	148
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<1.45	<1.45	<1.45

Table B2-144. Tank 241-T-203 Analytical Results: Phosphorus (ICP). (2 sheets)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	2,420	2,350	2,390[QC:e]
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<3,900	<3,930	<3,920
S97T000759		Lower half	<4,150	<4,120	<4,140
S97T000737	190: 1R	Upper half	<4,030	<4,000	<4,020
S97T000760		Lower half	<3,930	<3,720	<3,830
S97T000738	190: 2	Upper half	<3,910	<4,000	<3,960
S97T000757		Lower half	<3,620	<3,530	<3,580
S97T000739	190: 3	Upper half	<4,140	<4,230	<4,190
S97T000761		Lower half	<3,790	<3,820	<3,810
S97T000740	190: 4	Upper half	<3,720	<3,780	<3,750
S97T000762		Lower half	<3,960	<3,920	<3,940
S97T000741	190: 5	Upper half	<4,090	<4,050	<4,070
S97T000763		Lower half	<3,980	<4,010	<4,000
S97T000742	190: 6	Upper half	<4,080	<4,120	<4,100
S97T000764		Lower half	<4,030	<4,050	<4,040
S97T000743	190: 7	Upper half	<4,100	<4,080	<4,090
S97T000765		Lower half	<4,100	<4,030	<4,070

Table B2-144. Tank 241-T-203 Analytical Results: Phosphorus (ICP). (2 sheets)

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µg/g	µg/g	µg/g
S97T000744	190: 8	Upper half	<4,130	<4,040	<4,090
S97T000766		Lower half	<4,110	<4,050	<4,080
S97T000745	190: 9	Upper half	<4,090	<4,060	<4,080
S97T000767		Lower half	<4,030	<4,060	<4,050
S97T001734	Core 190	Solid composite	<3,910	<3,890	<3,900
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	536	542	539

Table B2-145. Tank 241-T-203 Analytical Results: Potassium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	6,960	6,740	6,850[QC:c]
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	6,020	6,040	6,030[QC:d]

Table B2-146. Tank 241-T-203 Analytical Results: Samarium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<20	<20	<20
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<1,950	<1,970	<1,960
S97T000759		Lower half	<2,080	<2,060	<2,070
S97T000737	190: 1R	Upper half	<2,010	<2,000	<2,010
S97T000760		Lower half	<1,970	<1,860	<1,920
S97T000738	190: 2	Upper half	<1,950	<2,000	<1,980
S97T000757		Lower half	<1,810	<1,760	<1,790
S97T000739	190: 3	Upper half	<2,070	<2,110	<2,090
S97T000761		Lower half	<1,890	<1,910	<1,900
S97T000740	190: 4	Upper half	<1,860	<1,890	<1,880
S97T000762		Lower half	<1,980	<1,960	<1,970
S97T000741	190: 5	Upper half	<2,050	<2,030	<2,040
S97T000763		Lower half	<1,990	<2,000	<2,000
S97T000742	190: 6	Upper half	<2,040	<2,060	<2,050
S97T000764		Lower half	<2,010	<2,020	<2,020
S97T000743	190: 7	Upper half	<2,050	<2,040	<2,050
S97T000765		Lower half	<2,050	<2,020	<2,040
S97T000744	190: 8	Upper half	<2,070	<2,020	<2,050
S97T000766		Lower half	<2,060	<2,020	<2,040
S97T000745	190: 9	Upper half	<2,050	<2,030	<2,040
S97T000767		Lower half	<2,010	<2,030	<2,020
S97T001734	Core 190	Solid composite	<1,960	<1,950	<1,960
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<7.27	<7.27	<7.27

Table B2-147. Tank 241-T-203 Analytical Results: Selenium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<1,950	<1,970	<1,960
S97T000759		Lower half	<2,080	<2,060	<2,070
S97T000737	190: 1R	Upper half	<2,010	<2,000	<2,010
S97T000760		Lower half	<1,970	<1,860	<1,920
S97T000738	190: 2	Upper half	<1,950	<2,000	<1,980
S97T000757		Lower half	<1,810	<1,760	<1,790
S97T000739	190: 3	Upper half	<2,070	<2,110	<2,090
S97T000761		Lower half	<1,890	<1,910	<1,900
S97T000740	190: 4	Upper half	<1,860	<1,890	<1,880
S97T000762		Lower half	<1,980	<1,960	<1,970
S97T000741	190: 5	Upper half	<2,050	<2,030	<2,040
S97T000763		Lower half	<1,990	<2,000	<2,000
S97T000742	190: 6	Upper half	<2,040	<2,060	<2,050
S97T000764		Lower half	<2,010	<2,020	<2,020
S97T000743	190: 7	Upper half	<2,050	<2,040	<2,050
S97T000765		Lower half	<2,050	<2,020	<2,040
S97T000744	190: 8	Upper half	<2,070	<2,020	<2,050
S97T000766		Lower half	<2,060	<2,020	<2,040
S97T000745	190: 9	Upper half	<2,050	<2,030	<2,040
S97T000767		Lower half	<2,010	<2,030	<2,020
S97T001734	Core 190	Solid composite	<1,960	<1,950	<1,960
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<7.27	<7.27	<7.27

Table B2-148. Tank 241-T-203 Analytical Results: Silicon (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	1,690	1510	1600[QC:b]
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<975	1,050	<1,010
S97T000759		Lower half	<1,040	<1,030	<1,040
S97T000737	190: 1R	Upper half	1,060	<1,000	<1,030
S97T000760		Lower half	6,270	<929	<3600[QC:e]
S97T000738	190: 2	Upper half	<976	1,190	<1,080
S97T000757		Lower half	2,210	1,100	1660[QC:e]
S97T000739	190: 3	Upper half	1,060	<1,060	<1,060
S97T000761		Lower half	<947	<956	<952
S97T000740	190: 4	Upper half	<931	<945	<938
S97T000762		Lower half	<989	1,310	<1,150[QC:e]
S97T000741	190: 5	Upper half	<1,020	<1,010	<1,020
S97T000763		Lower half	<995	<1,000	<998
S97T000742	190: 6	Upper half	<1,020	<1,030	<1,030
S97T000764		Lower half	<1,010	<1,010	<1,010
S97T000743	190: 7	Upper half	<1,020	<1,020	<1,020
S97T000765		Lower half	<1,030	1,080	<1,060
S97T000744	190: 8	Upper half	<1,030	<1,010	<1,020
S97T000766		Lower half	1,100	<1,010	<1,060
S97T000745	190: 9	Upper half	<1,020	<1,020	<1,020
S97T000767		Lower half	1,280	<1,010	<1,150[QC:e]
S97T001734	Core 190	Solid composite	1,570	1,770	1,670
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	35.8	38.8	37.3

Table B2-149. Tank 241-T-203 Analytical Results: Silver (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	2.41	<2	<2.21
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<195	<197	<196
S97T000759		Lower half	<208	<206	<207
S97T000737	190: 1R	Upper half	<201	<200	<201
S97T000760		Lower half	<197	<186	<192
S97T000738	190: 2	Upper half	<195	<200	<198
S97T000757		Lower half	<181	<176	<179[QC:c]
S97T000739	190: 3	Upper half	<207	<211	<209
S97T000761		Lower half	<189	<191	<190
S97T000740	190: 4	Upper half	<186	<189	<188
S97T000762		Lower half	<198	<196	<197
S97T000741	190: 5	Upper half	<205	<203	<204
S97T000763		Lower half	<199	<200	<200
S97T000742	190: 6	Upper half	<204	<206	<205
S97T000764		Lower half	<201	<202	<202
S97T000743	190: 7	Upper half	<205	<204	<205
S97T000765		Lower half	<205	<202	<204
S97T000744	190: 8	Upper half	<207	<202	<205
S97T000766		Lower half	<206	<202	<204
S97T000745	190: 9	Upper half	<205	<203	<204
S97T000767		Lower half	<201	<203	<202
S97T001734	Core 190	Solid composite	<196	<195	<196
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	2.12	2.09	2.11

Table B2-150. Tank 241-T-203 Analytical Results: Sodium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			**µg/g**	**µg/g**	**µg/g**
S97T001017	Core 190	Solid composite	35,300	34,300	34,800[QC:c]
Solids: fusion			**µg/g**	**µg/g**	**µg/g**
S97T000735	190: 1	Upper half	36,600	36,900	36,800
S97T000759		Lower half	36,000	36,900	36,500
S97T000737	190: 1R	Upper half	36,600	36,000	36,300
S97T000760		Lower half	36,700	36,400	36,600
S97T000738	190: 2	Upper half	34,400	35,300	34,900
S97T000757		Lower half	34,700	35,500	35,100
S97T000739	190: 3	Upper half	31,800	32,400	32,100
S97T000761		Lower half	33,100	33,400	33,300
S97T000740	190: 4	Upper half	33,100	32,900	33,000
S97T000762		Lower half	35,200	29,800	32,500
S97T000741	190: 5	Upper half	33,800	33,500	33,700
S97T000763		Lower half	33,700	35,100	34,400
S97T000742	190: 6	Upper half	34,500	35,200	34,900
S97T000764		Lower half	34,100	33,900	34,000
S97T000743	190: 7	Upper half	34,900	35,000	35,000
S97T000765		Lower half	33,800	34,100	34,000
S97T000744	190: 8	Upper half	34,100	34,600	34,400
S97T000766		Lower half	34,600	34,400	34,500
S97T000745	190: 9	Upper half	34,300	34,900	34,600
S97T000767		Lower half	34,100	34,000	34,100
S97T001734	Core 190	Solid composite	44,700	44,900	44,800
Liquids			**µg/g**	**µg/g**	**µg/g**
S97T000733	190: 1R	Drainable liquid	29,600	29,600	29,600[QC:d]

Table B2-151. Tank 241-T-203 Analytical Results: Strontium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	570	544	557
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	409	412	411
S97T000759		Lower half	437	478	458
S97T000737	190: 1R	Upper half	419	413	416
S97T000760		Lower half	255	284	270
S97T000738	190: 2	Upper half	229	240	235
S97T000757		Lower half	342	335	339
S97T000739	190: 3	Upper half	334	328	331
S97T000761		Lower half	450	454	452
S97T000740	190: 4	Upper half	358	340	349
S97T000762		Lower half	639	487	563[QC:e]
S97T000741	190: 5	Upper half	515	529	522
S97T000763		Lower half	507	640	574[QC:e]
S97T000742	190: 6	Upper half	556	560	558
S97T000764		Lower half	587	603	595
S97T000743	190: 7	Upper half	583	580	582
S97T000765		Lower half	589	589	589
S97T000744	190: 8	Upper half	729	748	739
S97T000766		Lower half	671	780	726
S97T000745	190: 9	Upper half	639	676	658
S97T000767		Lower half	696	683	690
S97T001734	Core 190	Solid composite	689	695	692
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<0.727	<0.727	<0.727

Table B2-152. Tank 241-T-203 Analytical Results: Sulfur (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	124	131	128
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<1,950	<1,970	<1,960
S97T000759		Lower half	<2,080	<2,060	<2,070
S97T000737	190: 1R	Upper half	<2,010	<2,000	<2,010
S97T000760		Lower half	<1,970	<1,860	<1,920
S97T000738	190: 2	Upper half	<1,950	<2,000	<1,980
S97T000757		Lower half	<1,810	<1,760	<1,790
S97T000739	190: 3	Upper half	<2,070	<2,110	<2,090
S97T000761		Lower half	<1,890	<1,910	<1,900
S97T000740	190: 4	Upper half	<1,860	<1,890	<1,880
S97T000762		Lower half	<1,980	<1,960	<1,970
S97T000741	190: 5	Upper half	<2,050	<2,030	<2,040
S97T000763		Lower half	<1,990	<2,000	<2,000
S97T000742	190: 6	Upper half	<2,040	<2,060	<2,050
S97T000764		Lower half	<2,010	<2,020	<2,020
S97T000743	190: 7	Upper half	<2,050	<2,040	<2,050
S97T000765		Lower half	<2,050	<2,020	<2,040
S97T000744	190: 8	Upper half	<2,070	<2,020	<2,050
S97T000766		Lower half	<2,060	<2,020	<2,040
S97T000745	190: 9	Upper half	<2,050	<2,030	<2,040
S97T000767		Lower half	<2,010	<2,030	<2,020
S97T001734	Core 190	Solid composite	<1,960	<1,950	<1,960
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	89.9	89.9	89.9

Table B2-153. Tank 241-T-203 Analytical Results: Thallium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001017	Core 190	Solid composite	<39.9	<39.9	<39.9
Solids: fusion			μg/g	μg/g	μg/g
S97T000735	190: 1	Upper half	<3,900	<3,930	<3,920
S97T000759		Lower half	<4,150	<4,120	<4,140
S97T000737	190: 1R	Upper half	<4,030	<4,000	<4,020
S97T000760		Lower half	<3,930	<3,720	<3,830
S97T000738	190: 2	Upper half	<3,910	<4,000	<3,960
S97T000757		Lower half	<3,620	<3,530	<3,580
S97T000739	190: 3	Upper half	<4,140	<4,230	<4,190
S97T000761		Lower half	<3,790	<3,820	<3,810
S97T000740	190: 4	Upper half	<3,720	<3,780	<3,750
S97T000762		Lower half	<3,960	<3,920	<3,940
S97T000741	190: 5	Upper half	<4,090	<4,050	<4,070
S97T000763		Lower half	<3,980	<4,010	<4,000
S97T000742	190: 6	Upper half	<4,080	<4,120	<4,100
S97T000764		Lower half	<4,030	<4,050	<4,040
S97T000743	190: 7	Upper half	<4,100	<4,080	<4,090
S97T000765		Lower half	<4,100	<4,030	<4,070
S97T000744	190: 8	Upper half	<4,130	<4,040	<4,090
S97T000766		Lower half	<4,110	<4,050	<4,080
S97T000745	190: 9	Upper half	<4,090	<4,060	<4,080
S97T000767		Lower half	<4,030	<4,060	<4,050
S97T001734	Core 190	Solid composite	<3,910	<3,890	<3,900
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	<14.5	<14.5	<14.5

Table B2-154. Tank 241-T-203 Analytical Results: Titanium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001017	Core 190	Solid composite	3.2	3.34	3.27
Solids: fusion			μg/g	μg/g	μg/g
S97T000735	190: 1	Upper half	<195	<197	<196
S97T000759		Lower half	<208	<206	<207
S97T000737	190: 1R	Upper half	<201	<200	<201
S97T000760		Lower half	<197	<186	<192
S97T000738	190: 2	Upper half	<195	<200	<198
S97T000757		Lower half	<181	<176	<179
S97T000739	190: 3	Upper half	<207	<211	<209
S97T000761		Lower half	<189	<191	<190
S97T000740	190: 4	Upper half	<186	<189	<188
S97T000762		Lower half	<198	<196	<197
S97T000741	190: 5	Upper half	<205	<203	<204
S97T000763		Lower half	<199	<200	<200
S97T000742	190: 6	Upper half	<204	<206	<205
S97T000764		Lower half	<201	<202	<202
S97T000743	190: 7	Upper half	<205	<204	<205
S97T000765		Lower half	<205	<202	<204
S97T000744	190: 8	Upper half	<207	<202	<205
S97T000766		Lower half	<206	<202	<204
S97T000745	190: 9	Upper half	<205	<203	<204
S97T000767		Lower half	<201	<203	<202
S97T001734	Core 190	Solid composite	<196	<195	<196
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	<0.727	<0.727	<0.727

Table B2-155. Tank 241-T-203 Analytical Results: Total Uranium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001017	Core 190	Solid composite	<99.8	<99.8	<99.8
Solids: fusion			μg/g	μg/g	μg/g
S97T000735	190: 1	Upper half	<9,750	<9,840	<9,800
S97T000759		Lower half	<10,400	<10,300	<10,400
S97T000737	190: 1R	Upper half	<10,100	<10,000	<10,100
S97T000760		Lower half	<9,830	<9,290	<9,560
S97T000738	190: 2	Upper half	<9,760	<9,990	<9,880
S97T000757		Lower half	<9,040	<8810	<8,930
S97T000739	190: 3	Upper half	<10,300	<10,600	<10,500
S97T000761		Lower half	<9470	<9,560	<9,520
S97T000740	190: 4	Upper half	<9310	<9,450	<9,380
S97T000762		Lower half	<9890	<9,810	<9,850
S97T000741	190: 5	Upper half	<1,0200	<10,100	<10,200
S97T000763		Lower half	<9,950	<10,000	<9,980
S97T000742	190: 6	Upper half	<10,200	<10,300	<10,300
S97T000764		Lower half	<10,100	<10,100	<10,100
S97T000743	190: 7	Upper half	<10,200	<10,200	<10,200
S97T000765		Lower half	<10,300	<10,100	<10,200
S97T000744	190: 8	Upper half	<10,300	<10,100	<10,200
S97T000766		Lower half	<10,300	<10,100	<10,200
S97T000745	190: 9	Upper half	<10,200	<10,200	<10,200
S97T000767		Lower half	<10,100	<10,100	<10,100
S97T001734	Core 190	Solid composite	<9780	<9,740	<9760
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	<36.3	<36.3	<36.3

Table B2-156. Tank 241-T-203 Analytical Results: Vanadium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001017	Core 190	Solid composite	<9.98	<9.98	<9.98
Solids: fusion			μg/g	μg/g	μg/g
S97T000735	190: 1	Upper half	<975	<984	<980
S97T000759		Lower half	<1,040	<1,030	<1,040
S97T000737	190: 1R	Upper half	<1,010	<1,000	<1,010
S97T000760		Lower half	<983	<929	<956
S97T000738	190: 2	Upper half	<976	<999	<988
S97T000757		Lower half	<904	<881	<893
S97T000739	190: 3	Upper half	<1,030	<1,060	<1,050
S97T000761		Lower half	<947	<956	<952
S97T000740	190: 4	Upper half	<931	<945	<938
S97T000762		Lower half	<989	<981	<985
S97T000741	190: 5	Upper half	<1,020	<1,010	<1,020
S97T000763		Lower half	<995	<1,000	<998
S97T000742	190: 6	Upper half	<1,020	<1,030	<1,030
S97T000764		Lower half	<1,010	<1,010	<1,010
S97T000743	190: 7	Upper half	<1,020	<1,020	<1,020
S97T000765		Lower half	<1,030	<1,010	<1,020
S97T000744	190: 8	Upper half	<1,030	<1,010	<1,020
S97T000766		Lower half	<1,030	<1,010	<1,020
S97T000745	190: 9	Upper half	<1,020	<1,020	<1,020
S97T000767		Lower half	<1,010	<1,010	<1,010
S97T001734	Core 190	Solid composite	<978	<974	<976
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	<3.63	<3.63	<3.63

Table B2-157. Tank 241-T-203 Analytical Results: Zinc (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	20.7	20.5	20.6
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<195	<197	<196
S97T000759		Lower half	<208	<206	<207
S97T000737	190: 1R	Upper half	<201	<200	<201
S97T000760		Lower half	<197	<186	<192
S97T000738	190: 2	Upper half	<195	<200	<198
S97T000757		Lower half	<181	<176	<179
S97T000739	190: 3	Upper half	<207	<211	<209
S97T000761		Lower half	<189	<191	<190
S97T000740	190: 4	Upper half	<186	<189	<188
S97T000762		Lower half	<198	<196	<197
S97T000741	190: 5	Upper half	<205	<203	<204
S97T000763		Lower half	<199	<200	<200
S97T000742	190: 6	Upper half	<204	<206	<205
S97T000764		Lower half	<201	<202	<202
S97T000743	190: 7	Upper half	<205	<204	<205
S97T000765		Lower half	<205	<202	<204
S97T000744	190: 8	Upper half	<207	<202	<205
S97T000766		Lower half	<206	<202	<204
S97T000745	190: 9	Upper half	<205	<203	<204
S97T000767		Lower half	<201	<203	<202
S97T001734	Core 190	Solid composite	<196	<195	<196
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<0.727	<0.727	<0.727

Table B2-158. Tank 241-T-203 Analytical Results: Zirconium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001017	Core 190	Solid composite	<2	<2	<2
Solids: fusion			µg/g	µg/g	µg/g
S97T000735	190: 1	Upper half	<195	<197	<196
S97T000759		Lower half	<208	<206	<207
S97T000737	190: 1R	Upper half	<201	<200	<201
S97T000760		Lower half	<197	<186	<192
S97T000738	190: 2	Upper half	<195	<200	<198
S97T000757		Lower half	<181	<176	<179
S97T000739	190: 3	Upper half	<207	<211	<209
S97T000761		Lower half	<189	<191	<190
S97T000740	190: 4	Upper half	<186	<189	<188
S97T000762		Lower half	<198	<196	<197
S97T000741	190: 5	Upper half	<205	<203	<204
S97T000763		Lower half	<199	<200	<200
S97T000742	190: 6	Upper half	<204	<206	<205
S97T000764		Lower half	<201	<202	<202
S97T000743	190: 7	Upper half	<205	<204	<205
S97T000765		Lower half	<205	<202	<204
S97T000744	190: 8	Upper half	<207	<202	<205
S97T000766		Lower half	<206	<202	<204
S97T000745	190: 9	Upper half	<205	<203	<204
S97T000767		Lower half	<201	<203	<202
S97T001734	Core 190	Solid composite	<196	<195	<196
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<0.727	<0.727	<0.727

Table B2-159. Tank 241-T-203 Analytical Results: Bromide (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000736	190: 1	Upper half	<261	<260	<261
S97T000768		Lower half	<269	<265	<267
S97T000746	190: 1R	Upper half	<278	<271	<274
S97T000769		Lower half	<229	<225	<227
S97T000747	190: 2	Upper half	<262	<259	<260
S97T000758		Lower half	<275	<270	<273
S97T000748	190: 3	Upper half	<264	<258	<261
S97T000770		Lower half	<230	<232	<231
S97T000749	190: 4	Upper half	<256	<246	<251
S97T000771		Lower half	<264	<267	<266
S97T000750	190: 5	Upper half	<268	<274	<271
S97T000772		Lower half	<270	<266	<268
S97T000751	190: 6	Upper half	<519	<525	<522
S97T000773		Lower half	<274	<270	<272
S97T000752	190: 7	Upper half	<268	<272	<270
S97T000774		Lower half	<271	<271	<271
S97T000753	190: 8	Upper half	<277	<270	<273
S97T000775		Lower half	<275	<279	<277
S97T000754	190: 9	Upper half	<262	<267	<265
S97T000776		Lower half	<259	<258	<259
S97T001016	Core 190	Solid composite	<301	<292	<297
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<191	<191	<191

Table B2-160. Tank 241-T-203 Analytical Results: Chloride (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			$\mu g/g$	$\mu g/g$	$\mu g/g$
S97T000736	190: 1	Upper half	659	642	651
S97T000768		Lower half	577	632	605
S97T000746	190: 1R	Upper half	602	592	597
S97T000769		Lower half	653	618	636
S97T000747	190: 2	Upper half	599	641	620
S97T000758		Lower half	621	577	599
S97T000748	190: 3	Upper half	598	573	585
S97T000770		Lower half	609	636	622
S97T000749	190: 4	Upper half	618	596	607
S97T000771		Lower half	607	618	612
S97T000750	190: 5	Upper half	786	839	812
S97T000772		Lower half	606	623	614
S97T000751	190: 6	Upper half	461	500	481
S97T000773		Lower half	546	549	548
S97T000752	190: 7	Upper half	422	444	433
S97T000774		Lower half	596	615	605
S97T000753	190: 8	Upper half	591	444	518[QC:e]
S97T000775		Lower half	614	607	611
S97T000754	190: 9	Upper half	580	556	568
S97T000776		Lower half	592	596	594
S97T001016	Core 190	Solid composite	689	627	658
Liquids			$\mu g/g$	$\mu g/g$	$\mu g/g$
S97T000733	190: 1R	Drainable liquid	498	519	509

Table B2-161. Tank 241-T-203 Analytical Results: Fluoride (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000736	190: 1	Upper half	7,190	6,900	7,050
S97T000768		Lower half	6,220	6,440	6,330
S97T000746	190: 1R	Upper half	6,600	6,710	6,650
S97T000769		Lower half	6,460	6,110	6,290
S97T000747	190: 2	Upper half	6,380	6,500	6,440
S97T000758		Lower half	6,320	5,860	6,090
S97T000748	190: 3	Upper half	6,120	6,170	6,150
S97T000770		Lower half	6,120	6,240	6,180
S97T000749	190: 4	Upper half	6,310	6,350	6,330
S97T000771		Lower half	6,260	6,470	6,360
S97T000750	190: 5	Upper half	6,750	6,860	6,810
S97T000772		Lower half	6,650	6,550	6,600
S97T000751	190: 6	Upper half	4,830	4,840	4,830
S97T000773		Lower half	5,840	5,880	5,860
S97T000752	190: 7	Upper half	4,540	4,610	4,580
S97T000774		Lower half	6,710	6,670	6,690
S97T000753	190: 8	Upper half	6,580	4,710	5,640[QC:e]
S97T000775		Lower half	6,390	6,630	6,510
S97T000754	190: 9	Upper half	6,220	6,090	6,160
S97T000776		Lower half	6,150	6,210	6,180
S97T001016	Core 190	Solid composite	6,320	6,350	6,340
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	5,110	4,990	5,050

Table B2-162. Tank 241-T-203 Analytical Results: Nitrate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000736	190: 1	Upper half	63,600	62,900	63,300
S97T000768		Lower half	62,700	62,700	62,700
S97T000746	190: 1R	Upper half	63,300	61,800	62,500
S97T000769		Lower half	66,300	62,700	64,500
S97T000747	190: 2	Upper half	64,600	65,900	65,300
S97T000758		Lower half	64,900	58,500	61,700
S97T000748	190: 3	Upper half	63,200	60,900	62,100
S97T000770		Lower half	62,400	63,700	63,000
S97T000749	190: 4	Upper half	62,500	59,600	61,100
S97T000771		Lower half	54,600	55,400	55,000
S97T000750	190: 5	Upper half	59,400	61,100	60,200
S97T000772		Lower half	57,600	58,200	57,900
S97T000751	190: 6	Upper half	45,100	46,200	45,600
S97T000773		Lower half	57,600	57,500	57,600
S97T000752	190: 7	Upper half	43,600	44,500	44,100
S97T000774		Lower half	57,600	58,800	58,200
S97T000753	190: 8	Upper half	57,300	42,200	49,800[QC:e]
S97T000775		Lower half	57,100	57,700	57,400
S97T000754	190: 9	Upper half	62,200	59,500	60,900
S97T000776		Lower half	59,300	60,200	59,700
S97T001016	Core 190	Solid composite	63,700	65,200	64,400
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	53,000	53,100	53,000

Table B2-163. Tank 241-T-203 Analytical Results: Nitrite (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000736	190: 1	Upper half	497	489	493
S97T000768		Lower half	322	309	316
S97T000746	190: 1R	Upper half	336	338	337
S97T000769		Lower half	267	253	260
S97T000747	190: 2	Upper half	300	295	298
S97T000758		Lower half	303	276	289
S97T000748	190: 3	Upper half	272	271	272
S97T000770		Lower half	246	239	242
S97T000749	190: 4	Upper half	260	248	254
S97T000771		Lower half	398	405	402
S97T000750	190: 5	Upper half	418	435	426
S97T000772		Lower half	399	425	412
S97T000751	190: 6	Upper half	<448	<454	<451
S97T000773		Lower half	293	273	283
S97T000752	190: 7	Upper half	255	257	256
S97T000774		Lower half	407	398	402
S97T000753	190: 8	Upper half	410	374	392
S97T000775		Lower half	418	412	415
S97T000754	190: 9	Upper half	210	207	208
S97T000776		Lower half	275	271	273
S97T001016	Core 190	Solid composite	297	292	295
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	250	258	254

Table B2-164. Tank 241-T-203 Analytical Results: Phosphate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000736	190: 1	Upper half	2,880	2,900	2,890
S97T000768		Lower half	2,280	2,320	2,300
S97T000746	190: 1R	Upper half	2,620	2,660	2,640
S97T000769		Lower half	2,190	1,810	2,000
S97T000747	190: 2	Upper half	2,140	1,990	2,070
S97T000758		Lower half	2,250	1,880	2,060
S97T000748	190: 3	Upper half	2,220	2,160	2,190
S97T000770		Lower half	2,400	2,830	2,610
S97T000749	190: 4	Upper half	2,290	2,220	2,250
S97T000771		Lower half	2,200	2,280	2,240
S97T000750	190: 5	Upper half	2,420	2,400	2,410
S97T000772		Lower half	2,370	2,410	2,390
S97T000751	190: 6	Upper half	1,880	1,780	1,830
S97T000773		Lower half	2,070	2,260	2,170
S97T000752	190: 7	Upper half	1,500	2,330	1,920[QC:e]
S97T000774		Lower half	2,310	2,270	2,290
S97T000753	190: 8	Upper half	2,000	1,590	1,790[QC:e]
S97T000775		Lower half	2,080	1,930	2,010
S97T000754	190: 9	Upper half	2,500	3,160	2,830[QC:e]
S97T000776		Lower half	3,620	2,560	3,090[QC:e]
S97T001016	Core 190	Solid composite	2,290	3,530	2,910[QC:e]
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	1,350	1,380	1,360

Table B2-165. Tank 241-T-203 Analytical Results: Sulfate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			μg/g	μg/g	μg/g
S97T000736	190: 1	Upper half	607	613	610
S97T000768		Lower half	432	450	441
S97T000746	190: 1R	Upper half	337	<299	<318
S97T000769		Lower half	388	294	341[QC:e]
S97T000747	190: 2	Upper half	<289	387	<338[QC:e]
S97T000758		Lower half	<304	329	<316
S97T000748	190: 3	Upper half	<292	<284	<288
S97T000770		Lower half	366	<256	<311[QC:e]
S97T000749	190: 4	Upper half	<283	<272	<278
S97T000771		Lower half	567	610	588
S97T000750	190: 5	Upper half	637	688	663
S97T000772		Lower half	816	621	718[QC:e]
S97T000751	190: 6	Upper half	<572	<580	<576
S97T000773		Lower half	<302	658	<480[QC:e]
S97T000752	190: 7	Upper half	<296	<301	<298
S97T000774		Lower half	353	696	524[QC:e]
S97T000753	190: 8	Upper half	317	582	450[QC:e]
S97T000775		Lower half	352	733	542[QC:e]
S97T000754	190: 9	Upper half	368	371	369
S97T000776		Lower half	467	734	600[QC:e]
S97T001016	Core 190	Solid composite	<333	543	<438[QC:e]
Liquids			μg/g	μg/g	μg/g
S97T000733	190: 1R	Drainable liquid	309	365	337

Table B2-166. Tank 241-T-203 Analytical Results: Oxalate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T000736	190: 1	Upper half	<219	<219	<219
S97T000768		Lower half	546	554	550
S97T000746	190: 1R	Upper half	302	265	283
S97T000769		Lower half	750	757	754
S97T000747	190: 2	Upper half	1,010	1,040	1,030
S97T000758		Lower half	1,420	1,220	1,320
S97T000748	190: 3	Upper half	1,430	1,510	1,470
S97T000770		Lower half	1,620	1,690	1,660
S97T000749	190: 4	Upper half	1,550	1,500	1,530
S97T000771		Lower half	1,150	1,160	1,150
S97T000750	190: 5	Upper half	1,300	1,370	1,330
S97T000772		Lower half	1,340	1,260	1,300
S97T000751	190: 6	Upper half	1,310	1,280	1,300
S97T000773		Lower half	1,560	1,570	1,570
S97T000752	190: 7	Upper half	1,250	1,260	1,260
S97T000774		Lower half	1,260	1,300	1,280
S97T000753	190: 8	Upper half	1,300	865	1,080[QC:e]
S97T000775		Lower half	1,240	1,220	1,230
S97T000754	190: 9	Upper half	1,600	1,590	1,590
S97T000776		Lower half	1,520	1,550	1,540
S97T001016	Core 190	Solid composite	1,410	1,330	1,370
Liquids			µg/g	µg/g	µg/g
S97T000733	190: 1R	Drainable liquid	<160	<160	<160

Table B2-167. Tank 241-T-203 Analytical Results: Bulk Density.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			g/mL	g/mL	g/mL
S97T000657	190: 1	Lower half	1.21	N/A	1.21
S97T000699	190: 1R	Lower half	1.19	N/A	1.19
S97T000661	190: 2	Lower half	1.2	N/A	1.2
S97T000700	190: 3	Lower half	1.39	N/A	1.39
S97T000662	190: 4	Lower half	1.22	N/A	1.22
S97T000663	190: 5	Lower half	1.14	N/A	1.14
S97T000701	190: 6	Lower half	1.27	N/A	1.27
S97T000702	190: 7	Lower half	1.17	N/A	1.17
S97T000703	190: 8	Lower half	1.15	N/A	1.15
S97T000704	190: 9	Lower half	1.29	N/A	1.29
S97T001012	Core 190	Solid composite	1.23	N/A	1.23

Table B2-168. Tank 241-T-203 Analytical Results: Exotherm - transition 1 (DSC/TGA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			J/g	J/g	J/g
S97T000713	190: 6	Lower half	2.44	3.38	2.91[QC:e]
S97T000714	190: 7	Lower half	4.68	2.29	3.48[QC:e]
S97T000710	190: 9	Upper half	4.39	4.67	4.53

Table B2-169. Tank 241-T-203 Analytical Results: Percent Water (DSC/TGA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			%	%	%
S97T000664	190: 1	Upper half	77.8	76.7	77.3
S97T000665		Lower half	74.1	75.6	74.8
S97T000705	190: 1R	Upper half	79.8	80.9	80.4
S97T000711		Lower half	83.8	82.9	83.3
S97T000666	190: 2	Upper half	76.3	75.2	75.7
S97T000669		Lower half	76.8	76.3	76.5
S97T000706	190: 3	Upper half	78.1	78.3	78.2
S97T000712		Lower half	69.5	76	72.8
S97T000667	190: 4	Upper half	74.8	75.9	75.3
S97T000670		Lower half	75.7	73	74.3
S97T000668	190: 5	Upper half	78.1	77.8	78
S97T000671		Lower half	76.9	76.5	76.7
S97T000707	190: 6	Upper half	76.6	76.2	76.4
S97T000713		Lower half	75.2	75.9	75.6
S97T000708	190: 7	Upper half	74.2	76.6	75.4
S97T000714		Lower half	75	71.5	73.2
S97T000709	190: 8	Upper half	75.4	76.4	75.9
S97T000715		Lower half	75.8	75.9	75.8
S97T000710	190: 9	Upper half	74.3	71.3	72.8
S97T000716		Lower half	76.6	76.1	76.4
S97T001013	Core 190	Solid composite	69.6	72.5	71
Liquids			%	%	%
S97T000733	190: 1R	Drainable liquid	85.3	85.2	85.3

Table B2-170. Tank 241-T-203 Analytical Results: Specific Gravity.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			unitless	unitless	unitless
S97T000733	190: 1R	Drainable liquid	1.09	1.08	1.09

Table B2-171. Tank 241-T-203 Analytical Results: Total Alpha (Alpha Rad).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Liquids			μCi/mL	μCi/mL	μCi/mL
S97T000733	190: 1R	Drainable liquid	<8.48E-05	<5.50E-05	<6.99E-05[QC:f]

Table B2-172. Tank 241-T-203 Analytical Results: Total Alpha (Alpha).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T000759	190: 1	Lower half	0.23	0.249	0.24
S97T000760	190: 1R	Lower half	0.179	0.169	0.174
S97T000757	190: 2	Lower half	0.247	0.206	0.226
S97T000761	190: 3	Lower half	0.311	0.247	0.279
S97T000762	190: 4	Lower half	0.201	0.181	0.191
S97T000763	190: 5	Lower half	0.278	0.278	0.278
S97T000764	190: 6	Lower half	0.129	0.128	0.129
S97T000765	190: 7	Lower half	0.14	0.123	0.132
S97T000766	190: 8	Lower half	0.154	0.18	0.167
S97T000767	190: 9	Lower half	0.159	0.124	0.142

Table B2-173. Tank 241-T-203 Analytical Results: Americium-241 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001734	Core 190	Solid composite	0.0359	0.0359	0.0359

Table B2-174. Tank 241-T-203 Analytical Results: Cesium-137 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001734	Core 190	Solid composite	<0.0178	<0.0183	<0.0181

Table B2-175. Tank 241-T-203 Analytical Results: Cobalt-60 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001734	Core 190	Solid composite	<0.013	<0.0122	<0.0126

Table B2-176. Tank 241-T-203 Analytical Results: Europium-154 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001734	Core 190	Solid composite	<0.0432	<0.0392	<0.0412

Table B2-177. Tank 241-T-203 Analytical Results: Europium-155 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001734	Core 190	Solid composite	<0.0334	<0.0337	<0.0336

Table B2-178. Tank 241-T-203 Analytical Results: Strontium-89/90.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001734	Core 190	Solid composite	0.00246	0.00267	0.00257

Table B2-179. Tank 241-T-203 Analytical Results: Total Inorganic Carbon.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			μg/g	μg/g	μg/g
S97T001013	Core 190	Solid composite	1,580	1,580	1,580

Table B2-180. Tank 241-T-203 Analytical Results: Total Organic Carbon.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			μg/g	μg/g	μg/g
S97T001013	Core 190	Solid composite	418	423	421

Table B2-181. Tank 241-T-204 Analytical Results: Aluminum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	52.9	54.3	53.6

Table B2-182. Tank 241-T-204 Analytical Results: Antimony (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	30.5	36.8	33.6

Table B2-183. Tank 241-T-204 Analytical Results: Arsenic (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	207	209	208

Table B2-184. Tank 241-T-204 Analytical Results: Barium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	<14.3	<14	<14.2

Table B2-185. Tank 241-T-204 Analytical Results: Beryllium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	<1.43	<1.4	<1.42

Table B2-186. Tank 241-T-204 Analytical Results: Bismuth (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	51,100	51,900	51,500[QC:d]

Table B2-187. Tank 241-T-204 Analytical Results: Boron (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	67.2	123	95.1[QC:e]

Table B2-188. Tank 241-T-204 Analytical Results: Cadmium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	<1.43	<1.4	<1.42

Table B2-189. Tank 241-T-204 Analytical Results: Cerium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	61.6	64.3	63

Table B2-190. Tank 241-T-204 Analytical Results: Chromium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	4,510	4,470	4,490

Table B2-191. Tank 241-T-204 Analytical Results: Cobalt (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	6.12	6.92	6.52

Table B2-192. Tank 241-T-204 Analytical Results: Copper (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	7.25	6.42	6.84

Table B2-193. Tank 241-T-204 Analytical Results: Iron (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest				μg/g	μg/g
S97T001199	Core 188	Solid composite	3,860	4,210	4,040[QC:d]

Table B2-194. Tank 241-T-204 Analytical Results: Lanthanum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	11,300	11,700	11,500[QC:d]

Table B2-195. Tank 241-T-204 Analytical Results: Lead (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	308	312	310

Table B2-196. Tank 241-T-204 Analytical Results: Lithium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	<2.86	<2.81	<2.84

Table B2-197. Tank 241-T-204 Analytical Results: Magnesium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			μg/g	μg/g	μg/g
S97T001199	Core 188	Solid composite	35.1	34.1	34.6

Table B2-198. Tank 241-T-204 Analytical Results: Manganese (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	14,100	14,000	14,100[QC:d]

Table B2-199. Tank 241-T-204 Analytical Results: Molybdenum (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	<14.3	<14	<14.2

Table B2-200. Tank 241-T-204 Analytical Results: Neodymium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	<28.6	<28.1	<28.4

Table B2-201. Tank 241-T-204 Analytical Results: Nickel (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	242	241	242

Table B2-202. Tank 241-T-204 Analytical Results: Phosphorus (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	2,630	2,660	2,650

Table B2-203. Tank 241-T-204 Analytical Results: Potassium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	6,090	6,150	6,120[QC:d]

Table B2-204. Tank 241-T-204 Analytical Results: Samarium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	<28.6	<28.1	<28.4

Table B2-205. Tank 241-T-204 Analytical Results: Silicon (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	1,520	1,470	1,500[QC:b]

Table B2-206. Tank 241-T-204 Analytical Results: Silver (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	<2.86	<2.81	<2.84[QC:d]

Table B2-207. Tank 241-T-204 Analytical Results: Sodium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	31,700	31,900	31,800[QC:d]

Table B2-208. Tank 241-T-204 Analytical Results: Strontium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	495	502	499

Table B2-209. Tank 241-T-204 Analytical Results: Sulfur (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	<28.6	<28.1	<28.4

Table B2-210. Tank 241-T-204 Analytical Results: Thallium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	290	308	299

Table B2-211. Tank 241-T-204 Analytical Results: Titanium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	3.47	3.46	3.46

Table B2-212. Tank 241-T-204 Analytical Results: Total Uranium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	<143	<140	<142

Table B2-213. Tank 241-T-204 Analytical Results: Vanadium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	<14.3	<14	<14.2

Table B2-214. Tank 241-T-204 Analytical Results: Zinc (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	54.2	71.2	62.7[QC:e]

Table B2-215. Tank 241-T-204 Analytical Results: Zirconium (ICP).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: acid digest			µg/g	µg/g	µg/g
S97T001199	Core 188	Solid composite	<2.86	<2.81	<2.84

Table B2-216. Tank 241-T-204 Analytical Results: Bromide (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T001200	Core 188	Solid composite	<283	<282	<283

Table B2-217. Tank 241-T-204 Analytical Results: Chloride (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T001200	Core 188	Solid composite	694	653	673

Table B2-218. Tank 241-T-204 Analytical Results: Fluoride (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T001200	Core 188	Solid composite	6,060	5,820	5,940

Table B2-219. Tank 241-T-204 Analytical Results: Nitrate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T001200	Core 188	Solid composite	57,400	52,900	55,200

Table B2-220. Tank 241-T-204 Analytical Results: Nitrite (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T001200	Core 188	Solid composite	300	267	284

Table B2-221. Tank 241-T-204 Analytical Results: Phosphate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T001200	Core 188	Solid composite	2,550	2,360	2,460

Table B2-222. Tank 241-T-204 Analytical Results: Sulfate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			µg/g	µg/g	µg/g
S97T001200	Core 188	Solid composite	414	<312	<363[QC:e]

Table B2-223. Tank 241-T-204 Analytical Results: Oxalate (IC).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: water digest			μg/g	μg/g	μg/g
S97T001200	Core 188	Solid composite	1,350	1,310	1,330

Table B2-224. Tank 241-T-204 Analytical Results: Bulk Density.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			g/mL	g/mL	g/mL
S97T000494	188: 1	Lower half	1.15	N/A	1.15
S97T000570	188: 2	Lower half	1.17	N/A	1.17
S97T000571	188: 3	Lower half	1.16	N/A	1.16
S97T000572	188: 4	Lower half	1.2	N/A	1.2
S97T000609	188: 5	Lower half	1.21	N/A	1.21
S97T000610	188: 6	Lower half	1.17	N/A	1.17
S97T000611	188: 7	Lower half	1.18	N/A	1.18
S97T000612	188: 8	Lower half	1.2	N/A	1.2
S97T000613	188: 9	Lower half	1.19	N/A	1.19
S97T000614	188:10	Lower half	1.21	N/A	1.21
S97T001191	Core 188	Solid composite	1.21	N/A	1.21

Table B2-225. Tank 241-T-204 Analytical Results: Percent Water (DSC/TGA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			%	%	%
S97T000499	188: 1	Upper half	88.6	81	84.8
S97T000498		Lower half	79.5	78.9	79.2
S97T000574	188: 2	Lower half	75.6	79.4	77.5
S97T000575	188: 3	Lower half	79.8	79.5	79.7
S97T000580	188: 4	Upper half	72.5	71.4	71.9
S97T000576		Lower half	74.9	74.8	74.9
S97T000633	188: 5	Upper half	76.9	76.2	76.5
S97T000603		Lower half	75.9	74.9	75.4
S97T000634	188: 6	Upper half	75.6	78	76.8
S97T000604		Lower half	76.8	75.9	76.4
Solids			%	%	%
S97T000635	188: 7	Upper half	72.7	72.1	72.4
S97T000605		Lower half	76.2	74	75.1
S97T000636	188: 8	Upper half	72	72.8	72.4
S97T000606		Lower half	73.2	69.6	71.4
S97T000637	188: 9	Upper half	71	75.1	73.1
S97T000607		Lower half	74.4	76	75.2
S97T000638	188:10	Upper half	53.7	73.3	63.5[QC:e]
S97T000608		Lower half	73.9	75	74.4
S97T001197	Core 188	Solid composite	75.9	74.3	75.1

Table B2-226. Tank 241-T-204 Analytical Results: Total Alpha (Alpha).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T000587	188: 1	Lower half	0.176	0.151	0.163
S97T000588	188: 2	Lower half	0.138	0.149	0.144
S97T000589	188: 3	Lower half	0.138	0.116	0.127
S97T000590	188: 4	Lower half	0.138	0.136	0.137
S97T000621	188: 5	Lower ½	0.127	0.165	0.146[QC:e]
S97T000622	188: 6	Lower half	0.129	0.138	0.134
S97T000623	188: 7	Lower half	<0.00316	0.146	<0.0746
S97T000624	188: 8	Lower half	0.184	0.158	0.171
S97T000625	188: 9	Lower half	0.208	0.189	0.199
S97T000626	188:10	Lower half	0.157	0.141	0.149

Table B2-227. Tank 241-T-204 Analytical Results: Americium-241 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001198	Core 188	Solid composite	0.0227	0.0262	0.0244

Table B2-228. Tank 241-T-204 Analytical Results: Cesium-137 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			μCi/g	μCi/g	μCi/g
S97T001198	Core 188	Solid composite	0.00775	0.00777	0.00776

Table B2-229. Tank 241-T-204 Analytical Results: Cobalt-60 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001198	Core 188	Solid composite	<0.00171	<0.00148	<0.00159

Table B2-230. Tank 241-T-204 Analytical Results: Europium-154 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001198	Core 188	Solid composite	<0.00439	<0.00403	<0.00421

Table B2-231. Tank 241-T-204 Analytical Results: Europium-155 (GEA).

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001198	Core 188	Solid composite	<0.00353	<0.00329	<0.00341

Table B2-232. Tank 241-T-204 Analytical Results: Strontium-89/90.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids: fusion			µCi/g	µCi/g	µCi/g
S97T001198	Core 188	Solid composite	0.00346	0.00574	0.0046[QC:e,f]

Table B2-233. Tank 241-T-204 Analytical Results: Total Inorganic Carbon.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			µg/g	µg/g	µg/g
S97T001197	Core 188	Solid composite	1,410	1,380	1,400

Table B2-234. Tank 241-T-204 Analytical Results: Total Organic Carbon.

Sample Number	Sample Location	Sample Portion	Result	Duplicate	Mean
Solids			μg/g	μg/g	μg/g
S97T001197	Core 188	Solid composite	346	278	312[QC:e]

B3.0 ASSESSMENT OF CHARACTERIZATION RESULTS

This section discusses the overall quality and consistency of the current sampling results for the T-200 tanks. It also evaluates sampling and analysis factors that may impact data interpretation. These factors are used to assess overall data quality and consistency and to identify limitations in data use.

B3.1 FIELD OBSERVATIONS

Sample recovery from the T-200 series tanks was generally good. Tank 241-T-201 samples were not as complete as expected. There was substantial Drainable liquid present in most samples, where surveillance estimates indicate solid material should be present. This appears to be the result of a localized depression beneath riser 3. Most samples from the other tanks appeared to have nearly complete recoveries. The segments were almost full. The consistency of the waste, gel-like and pliable, was conducive to high sample recoveries. Taking advantage of the available prior information and assuming the similarity observed between the B-200 tanks and the T-200 series tanks is the same, only one core sample was taken from each tank.

The expected depth of the waste ranged from 2.7 m to 4.9 m (105 to 194 in.) The readings taken at the risers at the time of sampling largely supported these estimates. In-tank photographs showed that the waste in tank 241-T-201 appears different from the other T-200 series tanks. It has a dried, cracked, rust-brown surface. There is a blue-black region that appears to have standing liquid present. The other T-200 series tanks appear to lack any free liquid, and have dried, cracked gray-brown or gray-black surfaces. Although the requirement that vertical profiles of the waste be obtained from two risers was not met, the intent of the safety screening DQO (Dukelow et al. 1995) was met because of the large amount of data collected from the B-200 series tanks and the degree of agreement observed between the two sets of tanks.

B3.2 QUALITY CONTROL ASSESSMENT

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 pertinent QC tests were conducted on 1997 core samples, allowing a full assessment of the accuracy and precision of the data. The sampling and analysis plans (Hu [1997], Bell [1997], Schreiber [1997b], and Winkleman [1997]) established specific criteria for all analytes. Sample and duplicate pairs with one or more QC results outside the specified criteria were identified by footnotes in the data summary tables.

The standard and spike recovery results provide an estimate of analysis accuracy. If a standard or spike recovery is above or below the given criterion, the analytical results may be biased high or low, respectively. The standard recoveries for the large majority of the analytes examined in the T-200 series samples were within acceptable laboratory operating parameters. Spike recoveries were often invalid for analytes present in very high quantities, such as bismuth, chromium, iron, lanthanum, manganese, and sodium. The spike concentration was often too low with regard to the sample concentration to be distinguished. Post digestion spikes run on the samples would show the results to be acceptable. Some of the total alpha spike recoveries would be outside of the QC thresholds, however, additional assays would attribute this behavior to matrix interference.

The precision is estimated by the relative percent difference (RPD), which is defined as the absolute value of the difference between the primary and duplicate samples, divided by their mean, times 100. Relative percent differences outside of the specified QC bounds were observed for several analytes in the T-200 series tanks. Total alpha, strontium-90, and phosphate were the analytes most frequently observed having elevated RPDs. Absorbance from alpha solids on the sample mount (self-shielding) was identified as a potential issue for the total alpha measurement, and sample heterogeneity was identified as the cause of the lack of reproducibility for the other analytes. Additionally, analytes near the detection limits are subject to larger RPDs.

Finally, a few samples had results that exceeded the criterion for preparation blanks. The analytes observed were those usually associated with cross contamintation from sample preparation and/or glassware (sodium, calcium, and nitrate). Slightly elevated total alpha measurements were observed in the blanks, however in all cases the concentrations observed were small compared to the sample concentrations. Therefore, contamination was not considered a problem.

In summary, the vast majority of QC results were within the boundaries specified in the sampling and analysis plans. The discrepancies mentioned here and footnoted in the data summary tables should not impact data validity or use.

B3.3 DATA CONSISTENCY CHECKS

Comparing different analytical methods is helpful in assessing the consistency and quality of the data. Several comparisons were possible with the data set provided by the core samples: a comparison of phosphorous and sulfur as analyzed by ICP to phosphate and sulfate as analyzed by IC and a comparison of TOC to oxalate. In addition, mass and charge balances were calculated to help assess the overall data consistency.

B3.3.1 Comparison of Results from Different Analytical Methods

The following data consistency checks compare the results from two analytical methods. Agreement between the two methods strengthens the credibility of both results, but poor agreement brings the reliability of the data into question. All analytical mean results were taken from Section B2.0 tables. Tables B3-1, B3-2, and B3-3 show comparisons for specific analytes between methods.

Table B3-1. Comparison of Phosphate to Total Phosphorous.

Tank	Mean Phosphate (IC-based) (μg/g)	Phosphorous (calculated from IC) (μg/g)	Phosphorous (ICP:A-based) (μg/g)	Percent Water Soluble
T-201	443	145	4,560	3.18
T-202	1,840	601	2,390	25.1
T-203	2,910	951	2,390	39.8
T-204	2,460	804	2,460	32.7

Table B3-2. Comparison of Sufate to Total Sulfur.

Tank	Mean Sulfate (IC-based) (μg/g)	Sulfur (calculated from IC) (μg/g)	Sulfur (ICP:A-based) (μg/g)
T-201	<77.9	<26	92.2
T-202	1,110	370	302
T-203	<438	<146	128
T-204	<363	<121	<28.4

Table B3-3. Comparison of Oxalate to Total Organic Carbon.

Tank	Mean Oxalate (IC-based) (μg/g)	TOC (calculated from IC) (μg/g)	TOC (Persulfate-based) (μg/g)	Percent Water Soluble
T-201	1,140	311	304	100
T-202	482	131	347	37.8
T-203	1,370	373	No data	NA
T-204	1,330	363	312	100

The analytical phosphorous mean result as determined by ICP ranged from 2,390 to 4,560 $\mu g/g$. The phosphate-based phosphorous values (obtained from converting phosphate to phosphorous) ranged from 145 to 951 $\mu g/g$. This behavior suggests that the phosphate is not water-soluble.

The analytical sulfur mean result as determined by ICP ranged from below detection to 302 $\mu g/g$. The sulfate-based sulfur values ranged from below detection to 370 $\mu g/g$. This suggests that there is very little sulfate present, but what sulfate there is, is very water-soluble.

The analytical TOC mean result as determined by persulfate oxidation ranged from 304 to 347 $\mu g/g$. The oxalate-based TOC values ranged from 131 to 363 $\mu g/g$. This behavior suggests that most of the TOC present is oxalate.

B3.3.2 Mass and Charge Balance

The principal objective in performing mass and charge balances is to determine whether the measurements are consistent. In calculating the balances, only the analytes listed in Section B2.0, which were detected at a concentration of 1,000 $\mu g/g$ or greater, were considered.

Except sodium, potassium, and lanthanum, all cations listed in Tables B3-4, B3-7, B3-10, and B3-13 were assumed to be in their most common hydroxide or oxide form. Sodium and potassium were assumed to be ions, and lanthanum was assumed to be combined as an insoluble fluoride. The concentrations of the assumed species were calculated stoichiometrically. Because precipitates are neutral species, all positive charge was attributed to the cations. The anions listed in Tables B3-5, B3-8, B3-11, and B3-14 were assumed to be present as sodium and potassium salts and were expected to balance the positive charge exhibited by the cations. Phosphorous, as determined by ICP, is assumed to be mostly water insoluble bismuth phosphate and appears only in the cation mass and charge calculations.

The concentrations of cations, anions, and the percent water were ultimately used to calculate the mass balance. The mass balance was calculated from the formula below. The factor 10,000 is the conversion factor from weight percent to $\mu g/g$. These calculations are shown in Tables B3-6, B3-9, B3-12, and B3-15.

Tank 241-T-201

Mass balance (Tank T-201) = % Water x 10,000 + {Total Analyte Concentration}

= % Water (x 10,000) + {$Bi(OH)_3$ + $FeO(OH)$ + MnO_2 + Na^+ + K^+ + $Cr(OH)_3$ + $Ca(OH)_2$ + $Sr(OH)_2$ + LaF_3 + F^- + NO_3^- + CO_3^{-2} + Cl^- + $BiPO_4$ + $C_2O_4^{-2}$ + SiO_2 }

The total analyte concentrations calculated from the above equation is 389,000 μg/g. The mean weight percent water (obtained from the TGA) is 61.6 percent or 616,000 μg/g. The mass balance resulting from adding the percent water to the total analyte concentration is 100.4 percent (see Table B3-6).

The following equations demonstrate the derivation of total cations and total anions; the charge balance is the ratio of these two values.

Total cations (μeq/g) = $[Na^+]/23.0 + [K^+]/39.1 = 1{,}527\ \mu eq/g$

Total anions (μeq/g) = $[F^-]/19.0 + [NO_3^-]/62.0 + [CO_3^{-2}]/30.0 + [Cl^-]/35.5 + [C_2O_4^{-2}]/44.0 = 1{,}236\ \mu eq/g$

The charge balance obtained by dividing the sum of the positive charge by the sum of the negative charge was 1.24. The net positive charge was 291 μeq/g. To balance this net positive charge, an amount of hydroxide equal to the charge imbalance was assumed. Including this term makes the charge balance 1.00 and the mass balance 101 percent, well within the uncertainties associated with the assumptions and measurements made. In summary, the above calculations yield reasonable mass and charge balance values (close to 1.00 for charge balance and 100 percent for mass balance), indicating that the analytical results are consistent.

Table B3-4. 241-T-201 Cation Mass and Charge Data.

Analyte	Concentration (μg/g)	Assumed Species	Concentration of Assumed Species (μg/g)	Charge (μeq/g)
Bi	119,000	$BiPO_4$	43,800	0.00
		$Bi(OH)_3$	111,000	0.00
Ca	1,240	$Ca(OH)_2$	2,290	0.00
Cr	5,350	$Cr(OH)_3$	10,600	0.00
Fe	9,860	FeO(OH)	13,900	0
La	24,900	LaF_3	34,800	0
Mn	44,300	MnO_2	70,100	0
K	4,810	K^+	4,810	123
Na	32,300	Na^+	32,300	1,404
Sr	1,210	$Sr(OH)_2$	1,530	0
		Total	325,000	1,527

Table B3-5. 241-T-201 Anion Mass and Charge Data.

Analyte	Concentration ($\mu g/g$)	Assumed Species	Concentration of Assumed Species ($\mu g/g$)	Charge ($\mu eq/g$)
Cl	1,080	Cl^-	1,080	(30)
TIC	810	CO_3^{-2}	4,050	(135)
F	5,080	F^-	5,080	(267)
NO3	48,300	NO_3-	48,300	(779)
TOC	304	$C_2O_4^{-2}$	1,120	(25)
P	4,560	PO_4^{-3}	As $BiPO_4$	0
Si	1,860	SiO_2	3,980	0
		Total	63,600	(1,236)

Table B3-6. Mass and Charge Balance Totals for Tank 241-T-201.

Totals	Concentrations ($\mu g/g$)	Charge ($\mu eq/g$)
Total from Table B3-2 (cations)	325,000	1,527
Total from Table B3-3 (anions)	63,600	(1,236)
Water percent	616,000	0
Subtotal	1,004,600	+291
Added OH to charge balance	4,950	(291)
Total	1,010,000	0

Tank 241-T-202

The concentrations of cations, anions, and the percent water were ultimately used to calculate the mass balance. The mass balance was calculated from the formula below. The factor 10,000 is the conversion factor from weight percent to $\mu g/g$.

Mass balance (Tank T-202) = % Water x 10,000 + {Total Analyte Concentration}

$$= \% \text{ Water } (\times 10{,}000) + \{Bi(OH)_3 + FeO(OH) + MnO_2 + Na^+ + K^+ + Cr(OH)_3 + SO_4^{-2} + LaF_3 + F^- + NO_3^- + CO_3^{-2} + BiPO_4 + C_2O_4^{-2} + SiO_2\}$$

The total analyte concentrations calculated from the above equation is 247,000 μg/g. The mean weight percent water (obtained from the TGA) is 72.8 percent or 728,000 μg/g. The mass balance resulting from adding the percent water to the total analyte concentration is 97.5 percent (see Table B3-9).

The following equations demonstrate the derivation of total cations and total anions; the charge balance is the ratio of these two values.

<u>Total cations</u> (μeq/g) = $[Na^+]/23.0 + [K^+]/39.1 = 1{,}744\ \mu eq/g$

<u>Total anions</u> (μeq/g) = $[F^-]/19.0 + [NO_3^-]/62.0 + [CO_3^{-2}]/30.0 + [SO_4^{-2}]/48.0$ $[C_2O_4^{-2}]/44.0 = 1{,}802\ \mu eq/g$

The charge balance obtained by dividing the sum of the positive charge by the sum of the negative charge was 0.97. The net negative charge was 58 μeq/g. To balance this net negative charge, an amount of sodium equal to the charge imbalance could be assumed. This would represent approximately 1,330 μg Na/g waste. The uncertainty associated with the sodium measurement is approximately 1,090 μg Na/g waste. Because of the relative closeness of the mass and charge balance, and the size of the potential correction with respect to the uncertainty, no futher adjustments are made. The mass and charge balance results are well within the uncertainties associated with the assumptions and measurements made. In summary, the above calculations yield reasonable mass and charge balance values (close to 1.00 for charge balance and 100 percent for mass balance), indicating that the analytical results are consistent.

Table B3-7. 241-T-202 Cation Mass and Charge Data.

Analyte	Concentration (μg/g)	Assumed Species	Concentration of Assumed Species (μg/g)	Charge (μeq/g)
Bi	41,000	$BiPO_4$	23,400	0.00
		$Bi(OH)_3$	30,900	0.00
Cr	3,760	$Cr(OH)_3$	7,450	0.00
Fe	7,620	FeO(OH)	12,100	0
La	12,600	LaF_3	17,800	0
Mn	14,800	MnO_2	23,400	0
K	7,140	K^+	7,140	183
Na	35,900	Na^+	35,900	1,561
		Total	158,100	1,744

Table B3-8. 241-T-202 Anion Mass and Charge Data.

Analyte	Concentration ($\mu g/g$)	Assumed Species	Concentration of Assumed Species ($\mu g/g$)	Charge ($\mu eq/g$)
TIC	2,080	CO_3^{-2}	10,400	(347)
F	6,560	F^-	6,560	(345)
NO_3-	65,600	NO_3-	65,600	(1,058)
TOC	347	$C_2O_4^{-2}$	1,270	(29)
P	2,390	PO_4^{-3}	As $BiPO_4$	0
SO_4^{-2}	1,110	SO_4^{-2}	1,110	(23)
Si	1,870	SiO_2	4,000	0
		Total	88,900	(1,802)

Table B3-9. Mass and Charge Balance Totals for Tank 241-T-202.

Totals	Concentrations ($\mu g/g$)	Charge ($\mu eq/g$)
Total from Table B3-2 (cations)	158,100	1,744
Total from Table B3-3 (anions)	88,900	(1,802)
Water percent	728,000	0
Total	975,000	(58)

Tank 241-T-203

The concentrations of cations, anions, and the percent water were ultimately used to calculate the mass balance. The mass balance was calculated from the formula below. The factor 10,000 is the conversion factor from weight percent to $\mu g/g$.

Mass balance (Tank T-203) = % Water x 10,000 + {Total Analyte Concentration}

= % Water (x 10,000) + $\{Bi(OH)_3 + FeO(OH) + MnO_2 + Na^+ + K^+ + Cr(OH)_3 + SO_4^{-2} + LaF_3 + F^- + NO_3^- + CO_3^{-2} + BiPO_4 + C_2O_4^{-2} + SiO_2\}$

The total analyte concentrations calculated from the above equation is 250,000 μg/g. The mean weight percent water (obtained from the TGA) is 71.0 percent or 710,000 μg/g. The mass balance resulting from adding the percent water to the total analyte concentration is approximately 96.0 percent (see Table B3-12).

The following equations demonstrate the derivation of total cations and total anions; the charge balance is the ratio of these two values.

Total cations (μeq/g) = $[Na^+]/23.0 + [K^+]/39.1 = 1{,}681\ \mu eq/g$

Total anions (μeq/g) = $[F^-]/19.0 + [NO_3^-]/62.0 + [CO_3^{-2}]/30.0 + [C_2O_4^{-2}]/44.0 = 1{,}662\ \mu eq/g$

The charge balance obtained by dividing the sum of the positive charge by the sum of the negative charge was 1.01. The net positive charge was 19 μeq/g. To balance this net positive charge, an amount of hydroxide equal to the charge imbalance was assumed. Including this term makes the charge balance 1.00 and the mass balance 96 percent, well within the uncertainties associated with the assumptions and measurements made. In summary, the above calculations yield reasonable mass and charge balance values (close to 1.00 for charge balance and 100 percent for mass balance), indicating that the analytical results are consistent.

Table B3-10. 241-T-203 Cation Mass and Charge Data.

Analyte	Concentration (μg/g)	Assumed Species	Concentration of Assumed Species (μg/g)	Charge (μeq/g)
Bi	48,700	$BiPO_4$	23,400	0.00
		$Bi(OH)_3$	40,600	0.00
Cr	3,790	$Cr(OH)_3$	7,500	0.00
Fe	6,810	FeO(OH)	10,800	0
La	11,700	LaF_3	16,500	0
Mn	16,100	MnO_2	25,400	0
K	6,850	K^+	6,850	168
Na	34,800	Na^+	34,800	1,513
		Total	166,000	1,681

Table B3-11. 241-T-203 Anion Mass and Charge Data.

Analyte	Concentration ($\mu g/g$)	Assumed Species	Concentration of Assumed Species ($\mu g/g$)	Charge ($\mu eq/g$)
TIC	1,580	CO_3^{-2}	7,900	(263)
F	6,340	F^-	6,340	(334)
NO_3-	64,400	NO_3-	64,400	(1,030)
TOC	420	$C_2O_4^{-2}$	1,540	(35)
P	2,390	PO_4^{-3}	As $BiPO_4$	0
Si	1,600	SiO_2	3,420	0
		Total	83,600	(1,662)

Table B3-12. Mass and Charge Balance Totals for Tank 241-T-203.

Totals	Concentrations ($\mu g/g$)	Charge ($\mu eq/g$)
Total from Table B3-2 (cations)	166,000	1,681
Total from Table B3-3 (anions)	83,600	(1,662)
Water percent	710,000	0
Subtotal	959,600	19
Added OH to charge balance	323	(19)
Total	960,000	0

Tank 241-T-204

The concentrations of cations, anions, and the percent water were ultimately used to calculate the mass balance. The mass balance was calculated from the formula below. The factor 10,000 is the conversion factor from weight percent to μg/g.

Mass balance (Tank T-204) = % Water x 10,000 + {Total Analyte Concentration}

= % Water (x 10,000) + {$Bi(OH)_3$ + $FeO(OH)$ + MnO_2 + Na^+ + K^+ +$Cr(OH)_3$ +SO_4^{-2}+ LaF_3 + F^- + NO_3^- + CO_3^{-2} + $BiPO_4$ +$C_2O_4^{-2}$ + SiO_2 }

The total analyte concentrations calculated from the above equation is about 232,000 μg/g. The mean weight percent water (obtained from the TGA) is 75.1 percent or 751,000 μg/g. The mass balance resulting from adding the percent water to the total analyte concentration is approximately 98.3 percent (see Table B3-15).

The following equations demonstrate the derivation of total cations and total anions; the charge balance is the ratio of these two values.

Total cations (μeq/g) = $[Na^+]/23.0 + [K^+]/39.1 = 1{,}539$ μeq/g

Total anions (μeq/g) = $[F^-]/19.0 + [NO_3^-]/62.0 + [CO_3^{-2}]/30.0 + [C_2O_4^{-2}]/44.0 = 1{,}461$ μeq/g

The charge balance obtained by dividing the sum of the positive charge by the sum of the negative charge was 1.05. The net positive charge was 78 μeq/g. To balance this net positive charge, an amount of hydroxide equal to the charge imbalance was assumed. Including this term makes the charge balance 1.00 and the mass balance 98.4 percent, well within the uncertainties associated with the assumptions and measurements made. In summary, the above calculations yield reasonable mass and charge balance values (close to 1.00 for charge balance and 100 percent for mass balance), indicating that the analytical results are consistent.

Table B3-13. 241-T-204 Cation Mass and Charge Data.

Analyte	Concentration (μg/g)	Assumed Species	Concentration of Assumed Species (μg/g)	Charge (μeq/g)
Bi	51,500	$BiPO_4$	24,000	0.00
		$Bi(OH)_3$	43,400	0.00
Cr	4,490	$Cr(OH)_3$	8,890	0.00
Fe	4,040	FeO(OH)	6,420	0
La	11,500	LaF_3	16,200	0
Mn	14,100	MnO_2	22,300	0
K	6,120	K^+	6,120	156
Na	31,800	Na^+	31,800	1,383
		Total	159,000	1,539

Table B3-14. 241-T-204 Anion Mass and Charge Data.

Analyte	Concentration (μg/g)	Assumed Species	Concentration of Assumed Species (μg/g)	Charge (μeq/g)
TIC	1,400	CO_3^{-2}	7,000	(233)
F	5,940	F^-	5,940	(312)
NO_3-	55,200	NO_3-	55,200	(890)
TOC	312	$C_2O_4^{-2}$	1,150	(26)
P	2,650	PO_4^{-3}	As $BiPO_4$	0
Si	1,500	SiO_2	3,210	0
		Total	72,500	(1,461)

Table B3-15. Mass and Charge Balance Totals for Tank 241-T-204.

Totals	Concentrations (μg/g)	Charge (μeq/g)
Total from Table B3-2 (cations)	159,000	1,539
Total from Table B3-3 (anions)	72,500	(1,461)
Water percent	751,000	0
Subtotal	982,500	78
Added OH to charge balance	1,330	(78)
Total	984,000	0

B3.4 MEAN CONCENTRATIONS AND CONFIDENCE INTERVALS

The following statistical evaluation was performed using the analytical data generated from the solid portion of one core composite sample from each of tanks 241-T-201, -T-202, -T-203, and -T-204. From the data set from each of these tanks, a mean concentration was calculated for each analyte. These mean concentrations are denoted by $\hat{\mu}$(T201), $\hat{\mu}$(T202), $\hat{\mu}$(T203), and $\hat{\mu}$(T204) respectively. Because only one core sample was obtained from the T-200 tanks, an estimate of the variance of the mean, with both spatial and analytical variability, cannot be computed.

To obtain an estimate of the variance of the mean (standard deviation of the mean), similar sets of data from tanks 241-B-201, -B-203, and -B-204 were used. There were two core samples from each of these three tanks. However, the analytical data from tank 241-B-201 were based on a chemical analysis of core composite samples, and the data from tanks 241-B-203 and -B-204 were based on core-segment samples. For each of these tanks, the mean for each of the two core samples was computed, and the variance (standard deviation) of the two means was computed. The three standard deviations are denoted by $\hat{\sigma}$(B201), $\hat{\sigma}$(B203), and $\hat{\sigma}$(B204) respectively.

The three standard deviations, $\hat{\sigma}$(B201), $\hat{\sigma}$(B203), and $\hat{\sigma}$(B204), each have one degree of freedom. These three estimates were used as estimates of the variability associated with the means from the four T-200 tanks. The estimate of the standard deviation of $\hat{\mu}$(T201) was taken to be $\hat{\sigma}$(B201), with one degree of freedom. For the other three means, $\hat{\mu}$(T202), $\hat{\mu}$(T203), and $\hat{\mu}$(T204), the two standard deviations were pooled into a combined standard deviation, denoted by $\hat{\sigma}$(pooled). The pooled standard deviation has two degrees of freedom. The method used to obtain the pooled estimate is described in Snedecor and Cochran (1980)

It is appropriate to use a pooled estimate of the standard deviation whenever the variances in the two tanks, 241-B-203 and -B-204, are not significantly different from each other. The equality of variances was tested using an F-test with one degree of freedom for the numerator and denominator. The variances were not significantly different except for bromide, copper, lithium, silver and zinc.

In tank 241-B-204, a majority of the bromide and copper observations were below the instrument detection limits. Consequently, the estimate of the standard deviation for these analytes is $\hat{\sigma}$(B203), with one degree of freedom. In tank 241-B-203, a majority of the lithium and silver observations were below the instrument detection limits. For these two analytes, the estimate of the standard deviation is $\hat{\sigma}$(B204), with one degree of freedom. For zinc, observations were available from both tanks. The magnitude of the data from tank 241-B-203 was closer to that observed in tanks 241-T-202, -T-203, and -T-204. For this analyte, the standard deviation $\hat{\sigma}$(B203), with one degree of freedom, was used.

A two-sided 95 percent confidence interval for the mean concentration in tanks 241-T-201, -T-202, -T-203 and -T204 was calculated using the standard deviations described above. This was done for each analyte. The confidence interval takes into account the sampling and analytical uncertainties. The upper and lower limits (UL and LL) of a two-sided 95 percent confidence interval for the mean are as follows:

$$\text{Tank T-201:}\quad \hat{\mu}(T201) \pm t_{(df=1,\,0.025)} \times \hat{\sigma}(B201)$$
$$\text{Tank T-202:}\quad \hat{\mu}(T202) \pm t_{(df=2,\,0.025)} \times \hat{\sigma}(\text{pooled})$$
$$\text{Tank T-203:}\quad \hat{\mu}(T203) \pm t_{(df=2,\,0.025)} \times \hat{\sigma}(\text{pooled})$$
$$\text{Tank T-204:}\quad \hat{\mu}(T204) \pm t_{(df=2,\,0.025)} \times \hat{\sigma}(\text{pooled})$$

In these equations, $\hat{\mu}$ is the estimate of the mean concentration from each of the T-200 tanks, $\hat{\sigma}$ is the estimate of the standard deviation from the B-200 tanks, and $t_{(df,0.025)}$ is the quantile from Student's t distribution with *df=1 or 2* degrees of freedom for a two-sided 95 percent confidence interval. Bromide, copper, lithium, silver, and zinc are special cases, each with one degree of freedom.

The confidence intervals were computed when at least 50 percent of the observations were above the detection limit. If more that 50 percent of the observations were below the detection limit only the mean of the observations is reported. A concentration is a positive number, consequently, whenever the lower limit to the confidence interval was negative it was truncated at zero.

For each analyte and tank, Tables B3-16 to B3-19 report the relevant summary statistics. The tables give the estimate of the mean concentration ($\hat{\mu}$), the standard deviation of the mean ($\hat{\sigma}$), and the lower (LL) and upper limits (UL) to the 95 percent confidence interval on the mean.

Table B3-16. Summary Statistics for Tank 241-T-201.
(Standard Deviation of the Mean is from Tank 241-B-201) (2 sheets)

Analyte	Method	Units	$\hat{\mu}$	$\hat{\sigma}$	LL	UL
Aluminum	ICP:A	µg/g	1.01E+02	3.59E+03	0.00E+00	4.57E+04
Americium-241	GEA:F	µCi/g	<3.19E-02	6.10E-03	0.00E+00	1.09E-01
Antimony	ICP:A	µg/g	<4.59E+01	NA	NA	NA
Arsenic	ICP:A	µg/g	<7.66E+01	NA	NA	NA
Barium[1]	ICP:A	µg/g	5.64E+01	4.69E+01	0.00E+00	6.53E+02
Beryllium	ICP:A	µg/g	<3.83E+00	NA	NA	NA
Bismuth	ICP:A	µg/g	1.19E+05	1.82E+04	0.00E+00	3.50E+05
Boron	ICP:A	µg/g	1.72E+02	3.47E+01	0.00E+00	6.13E+02
Bromide	IC:W	µg/g	<2.78E+02	NA	NA	NA
Bulk density	Bulk density	g/mL	1.27E+00	NA	NA	NA
Cadmium	ICP:A	µg/g	<3.83E+00	NA	NA	NA
Calcium	ICP:A	µg/g	1.24E+03	1.00E+04	0.00E+00	1.28E+05
Cerium	ICP:A	µg/g	<8.43E+01	NA	NA	NA
Cesium-137	GEA:F	µCi/g	4.57E-02	1.80E+01	0.00E+00	2.29E+02
Chloride	IC:W	µg/g	1.08E+03	2.12E+02	0.00E+00	3.77E+03
Chromium	ICP:A	µg/g	5.35E+03	2.09E+02	2.69E+03	8.01E+03
Cobalt-60	GEA:F	µCi/g	<6.00E-03	NA	0.00E+00	3.50E-01
Cobalt	ICP:A	µg/g	<1.53E+01	NA	NA	NA
Copper	ICP:A	µg/g	<7.66E+00	NA	0.00E+00	5.87E+02
Europium-154	GEA:F	µCi/g	<1.84E-02	NA	NA	NA
Europium-155	GEA:F	µCi/g	<1.43E-02	NA	NA	NA
Fluoride	IC:W	µg/g	5.08E+03	1.41E+02	4.18E+03	5.97E+03
Iron	ICP:A	µg/g	9.86E+03	6.55E+03	3.28E+03	6.87E+03
Lanthanum	ICP:A	µg/g	2.49E+04	2.17E+03	0.00E+00	9.31E+04
Lead	ICP:A	µg/g	2.12E+02	1.81E+02	0.00E+00	5.24E+04
Lithium	ICP:A	µg/g	<7.66E+00	NA	0.00E+00	2.51E+03
Magnesium	ICP:A	µg/g	3.23E+02	1.25E+03	NA	NA
Manganese	ICP:A	µg/g	4.43E+04	2.00E+03	0.00E+00	1.62E+04
Molybdenum	ICP:A	µg/g	<3.83E+01	NA	1.89E+04	6.96E+04
Neodymium	ICP:A	µg/g	<7.66E+01	NA	NA	NA

Table B3-16. Summary Statistics for Tank 241-T-201.
(Standard Deviation of the Mean is from Tank 241-B-201) (2 sheets)

Analyte	Method	Units	$\hat{\mu}$	$\hat{\sigma}$	LL	UL
Nickel	ICP:A	μg/g	6.30E+02	1.39E+01	NA	NA
Nitrate	IC:W	μg/g	4.83E+04	1.77E+03	4.53E+02	8.06E+02
Nitrite	IC:W	μg/g	3.14E+02	1.68E+02	2.58E+04	7.08E+04
Oxalate	IC:W	μg/g	1.14E+03	NA	0.00E+00	2.45E+03
Percent water	DSC/TGA	%	6.16E+01	NA	NA	NA
Phosphate	IC:W	μg/g	4.43E+02	2.09E+02	NA	NA
Phosphorus	ICP:A	μg/g	4.56E+03	1.68E+03	0.00E+00	3.09E+03
Potassium[1]	ICP:A	μg/g	4.81E+03	1.07E+03	0.00E+00	2.59E+04
Samarium	ICP:A	μg/g	<7.66E+01	NA	0.00E+00	1.83E.+04
Selenium	ICP:A	μg/g	<7.66E+01	NA	NA	NA
Silicon	ICP:A	μg/g	1.86E+03	7.10E+02	NA	NA
Silver	ICP:A	μg/g	<7.66E+00	NA	0.00E+00	1.09E+04
Sodium	ICP:A	μg/g	3.23E+04	4.77E+03	NA	NA
Strontium-89/90	Sr:F	μCi/g	1.41E-01	NA	0.00E+00	9.0E+03
Strontium	ICP:A	μg/g	1.12E+03	6.46E+01	NA	NA
Sulfate	IC:W	μg/g	<7.79E+02	NA	2.99E+02	1.94E+03
Sulfur	ICP:A	μg/g	9.22E+01	NA	0.00E+00	3.52E+03
Thallium	ICP:A	μg/g	<1.53E+02	NA	NA	NA
Titanium	ICP:A	μg/g	9.92E+00	3.03E+02	NA	NA
Total inorganic carbon	TIC/TOC	μg/g	8.10E+02	1.53E+03	0.00E+00	3.86E+03
Total organic carbon	TIC/TOC	μg/g	3.04E+02	NA	0.00E+00	2.03E+04
Uranium	ICP:A	μg/g	<3.83E+02	NA	NA	NA
Vanadium	ICP:A	μg/g	<3.83E+01	NA	NA	NA
Zinc	ICP:A	μg/g	9.45E+01	1.44E+01	NA	NA
Zirconium	ICP:A	μg/g	<7.66E+00	NA	0.00E+00	2.78E+02

Notes:

NA = not available

< = at least 50 percent of tank 241-T-201 data is below the detection limit.

[1]Less than detection limit values used in the standard deviation

Table B3-17. Summary Statistics for Tank 241-T-202. (2 sheets)

Analyte	Method	Units	$\hat{\mu}$	$\hat{\sigma}$	df[1]	LL	UL
Aluminum	ICP:A	μg/g	7.22E+01	1.78E+01	2	0.00E+00	1.49E+02
Americium-241	GEA:F	μCi/g	<1.14E-01	NA	NA	NA	NA
Antimony	ICP:A	μg/g	<1.21E+01	NA	NA	NA	NA
Arsenic	ICP:A	μg/g	<2.02E+01	NA	NA	NA	NA
Barium	ICP:A	μg/g	1.27E+03	NA	NA	NA	NA
Beryllium	ICP:A	μg/g	<1.01E+00	NA	NA	NA	NA
Bismuth	ICP:A	μg/g	4.10E+04	3.67E+03	2	2.52E+04	5.67E+04
Boron	ICP:A	μg/g	1.58E+02	2.02E+01	2	7.13E+01	2.45E+02
Bromide	IC:W	μg/g	<3.03E+02	NA	NA	NA	NA
Bulk density	Bulk density	g/mL	1.24E+00	NA	NA	NA	NA
Cadmium	ICP:A	μg/g	<1.01E+00	NA	NA	NA	NA
Calcium	ICP:A	μg/g	3.10E+02	8.38E+01	2	0.00E+00	6.71E+02
Cerium	ICP:A	μg/g	5.37E+01	7.63E+00	2	2.09E+01	8.65E+01
Cesium-137	GEA:F	μCi/g	<2.82E-02	NA	NA	NA	NA
Chloride	IC:W	μg/g	6.93E+02	1.49E+02	2	4.97E+01	1.34E+03
Chromium	ICP:A	μg/g	3.76E+03	1.02E+02	2	3.32E+03	4.19E+03
Cobalt-60	GEA:F	μCi/g	<1.67E-02	NA	NA	NA	NA
Cobalt	ICP:A	μg/g	<4.04E+00	NA	NA	NA	NA
Copper	ICP:A	μg/g	<2.02E+00	NA	NA	NA	NA
Europium-154	GEA:F	μCi/g	<4.13E-02	NA	NA	NA	NA
Europium-155	GEA:F	μCi/g	<3.96E-02	NA	NA	NA	NA
Fluoride	IC:W	μg/g	6.56E+03	1.45E+03	2	3.04E+02	1.28E+04
Iron	ICP:A	μg/g	7.62E+03	5.29E+02	2	5.34E+03	9.89E+03
Lanthanum	ICP:A	μg/g	1.26E+04	3.87E+02	2	1.09E+04	1.42E+04
Lead	ICP:A	μg/g	5.80E+01	NA	NA	NA	NA
Lithium	ICP:A	μg/g	<2.02E+00	NA	NA	NA	NA
Magnesium	ICP:A	μg/g	8.88E+01	3.86E+00	2	7.22E+01	1.05E+02
Manganese	ICP:A	μg/g	1.48E+04	6.41E+02	2	1.20E+04	1.76E+04
Molybdenum	ICP:A	μg/g	<1.01E+01	NA	NA	NA	NA
Neodymium	ICP:A	μg/g	<2.02E+01	NA	NA	NA	NA
Nickel	ICP:A	μg/g	1.32E+02	1.76E+01	2	5.64E+01	2.08E+02

Table B3-17. Summary Statistics for Tank 241-T-202. (2 sheets)

Analyte	Method	Units	$\hat{\mu}$	$\hat{\sigma}$	df[1]	LL	UL
Nitrate	IC:W	μg/g	6.56E+04	1.18E+04	2	1.48E+04	1.16E+05
Nitrite	IC:W	μg/g	5.25E+02	6.22E+01	2	2.57E+02	7.92E+02
Oxalate	IC:W	μg/g	4.82E+02	4.19E+02	2	0.00E+00	2.29E+03
Percent water	DSC/TGA	%	7.28E+01	1.00E+00	2	6.85E+01	7.71E+01
Phosphate	IC:W	μg/g	1.84E+03	6.65E+02	2	0.00E+00	4.70E+03
Phosphorus	ICP:A	μg/g	2.39E+03	2.20E+01	2	2.30E+03	2.48E+03
Potassium	ICP:A	μg/g	7.14E+03	2.39E+02	2	6.11E+03	8.16E+03
Samarium	ICP:A	μg/g	<2.02E+01	NA	NA	NA	NA
Selenium	ICP:A	μg/g	<2.02E+01	NA	NA	NA	NA
Silicon	ICP:A	μg/g	1.87E+03	2.59E+02	2	7.56E+02	2.98E+03
Silver	ICP:A	μg/g	<2.24E+00	NA	NA	NA	NA
Sodium	ICP:A	μg/g	3.59E+04	1.09E+03	2	3.11E+04	4.06E+04
Strontium-89/90	Sr:F	μCi/g	2.49E-03	NA	NA	NA	NA
Strontium	ICP:A	μg/g	4.97E+02	1.57E+01	2	4.30E+02	5.64E+02
Sulfate	IC:W	μg/g	1.11E+03	1.39E+02	2	5.07E+02	1.70E+03
Sulfur	ICP:A	μg/g	3.02E+02	1.45E+01	2	2.39E+02	3.64E+02
Thallium	ICP:A	μg/g	<4.04E+01	NA	NA	NA	NA
Titanium	ICP:A	μg/g	4.68E+00	NA	NA	NA	NA
Total inorganic carbon	TIC/TOC	μg/g	2.08E+03	NA	NA	NA	NA
Total organic carbon	TIC/TOC	μg/g	3.47E+02	NA	NA	NA	NA
Uranium	ICP:A	μg/g	<1.02E+02	NA	NA	NA	NA
Vanadium	ICP:A	μg/g	<1.01E+01	NA	NA	NA	NA
Zinc	ICP:A	μg/g	4.41E+01	2.15E+01	1	0.00E+00	3.17E+02
Zirconium	ICP:A	μg/g	<2.02E+00	NA	NA	NA	NA

Notes:

< = at least 50 percent of tank 241-T-202 data is below the detection limit.

[1]If df =2, the standard deviation of the mean is $\hat{\sigma}$(pooled), for zinc the standard deviation of the mean is $\hat{\sigma}$(B203)

Table B3-18. Summary Statistics for Tank 241-T-203. (2 sheets)

Analyte	Method	Units	$\hat{\mu}$	$\hat{\sigma}$	df[1]	LL	UL
Aluminum	ICP:A	μg/g	5.63E+01	1.78E+01	2	0.00E+00	1.33E+02
Americium-241	GEA:F	μCi/g	3.59E-02	NA	NA	NA	NA
Antimony	ICP:A	μg/g	<1.20E+01	NA	NA	NA	NA
Arsenic	ICP:A	μg/g	<2.00E+01	NA	NA	NA	NA
Barium	ICP:A	μg/g	7.48E+01	NA	NA	NA	NA
Beryllium	ICP:A	μg/g	<9.98E-01	NA	NA	NA	NA
Bismuth	ICP:A	μg/g	4.87E+04	3.67E+03	2	3.29E+04	6.44E+04
Boron	ICP:A	μg/g	9.31E+01	2.02E+01	2	6.36E+00	1.80E+02
Bromide	IC:W	μg/g	<2.97E+02	8.96E+01	2	NA	NA
Bulk density	Bulk density	g/mL	1.23E+00	NA	NA	NA	NA
Cadmium	ICP:A	μg/g	<9.98E-01	NA	NA	NA	NA
Calcium	ICP:A	μg/g	3.46E+02	8.38E+01	2	0.00E+00	7.07E+02
Cerium	ICP:A	μg/g	5.53E+01	7.63E+00	2	2.24E+01	8.81E+01
Cesium-137	GEA:F	μCi/g	<1.81E-02	NA	NA	NA	NA
Chloride	IC:W	μg/g	6.58E+02	1.49E+02	2	1.49E+01	1.30E+03
Chromium	ICP:A	μg/g	3.79E+03	1.02E+02	2	3.35E+03	4.23E+03
Cobalt-60	GEA:F	μCi/g	<1.26E-02	NA	NA	NA	NA
Cobalt	ICP:A	μg/g	<3.99E+00	NA	NA	NA	NA
Copper	ICP:A	μg/g	<2.00E+00	8.63E-01	1	NA	NA
Endotherm-transition 1	DSC/TGA	J/g	NA	NA	NA	NA	NA
Europium-154	GEA:F	μCi/g	<4.12E-02	NA	NA	NA	NA
Europium-155	GEA:F	μCi/g	<3.36E-02	NA	NA	NA	NA
Fluoride	IC:W	μg/g	6.34E+03	1.45E+03	2	7.79E+01	1.26E+04
Iron	ICP:A	μg/g	6.81E+03	5.29E+02	2	4.53E+03	9.09E+03
Lanthanum	ICP:A	μg/g	1.17E+04	3.87E+02	2	1.00E+04	1.34E+04
Lead	ICP:A	μg/g	<2.08E+01	NA	NA	NA	NA
Lithium	ICP:A	μg/g	<2.00E+00	NA	NA	NA	NA
Magnesium	ICP:A	μg/g	7.90E+01	3.86E+00	2	6.24E+01	9.56E+01
Manganese	ICP:A	μg/g	1.61E+04	6.41E+02	2	1.33E+04	1.88E+04
Molybdenum	ICP:A	μg/g	<9.98E+00	NA	NA	NA	NA

Table B3-18. Summary Statistics for Tank 241-T-203. (2 sheets)

Analyte	Method	Units	$\hat{\mu}$	$\hat{\sigma}$	df[1]	LL	UL
Neodymium	ICP:A	μg/g	<2.00E+01	NA	NA	NA	NA
Nickel	ICP:A	μg/g	1.48E+02	1.76E+01	2	7.19E+01	2.23E+02
Nitrate	IC:W	μg/g	6.44E+04	1.18E+04	2	1.37E+04	1.15E+05
Nitrite	IC:W	μg/g	2.95E+02	6.22E+01	2	2.68E+01	5.62E+02
Oxalate	IC:W	μg/g	1.37E+03	4.19E+02	2	0.00E+00	3.17E+03
Percent water	DSC/TGA	%	7.10E+01	1.00E+00	2	6.67E+01	7.53E+01
Phosphate	IC:W	μg/g	2.91E+03	6.65E+02	2	4.89E+01	5.77E+03
Phosphorus	ICP:A	μg/g	2.39E+03	2.20E+01	2	2.29E+03	2.48E+03
Potassium	ICP:A	μg/g	6.85E+03	2.39E+02	2	5.82E+03	7.88E+03
Samarium	ICP:A	μg/g	<2.00E+01	NA	NA	NA	NA
Silicon	ICP:A	μg/g	1.60E+03	2.59E+02	2	4.86E+02	2.71E+03
Silver	ICP:A	μg/g	<2.21E+00	NA	NA	NA	NA
Sodium	ICP:A	μg/g	3.48E+04	1.09E+03	2	3.01E+04	3.95E+04
Strontium	ICP:A	μg/g	5.57E+02	1.57E+01	2	4.90E+02	6.24E+02
Sulfate	IC:W	μg/g	<4.38E+02	NA	NA	NA	NA
Sulfur	ICP:A	μg/g	1.28E+02	1.45E+01	2	6.52E+01	1.90E+02
Thallium	ICP:A	μg/g	<3.99E+01	NA	NA	NA	NA
Titanium	ICP:A	μg/g	3.27E+00	NA	NA	NA	NA
Uranium	ICP:A	μg/g	<9.98E+01	NA	NA	NA	NA
Vanadium	ICP:A	μg/g	<9.98E+00	NA	NA	NA	NA
Zinc	ICP:A	μg/g	2.06E+01	2.15E+01	1	0.00E+00	2.94E+02
Zirconium	ICP:A	μg/g	<2.00E+00	NA	NA	NA	NA

Notes:

< = at least 50 percent of tank 241-T-203 data is below the detection limit.

1If df =2, the standard deviation of the mean is $\hat{\sigma}$(pooled); for copper df =1 and the standard deviation of the mean is $\hat{\sigma}$(B203); for zinc df = 1 and the standard deviation of the mean is $\hat{\sigma}$(B203)

Table B3-19. Summary Statistics for Tank 241-T-204. (2 sheets)

Analyte	Method	Units	$\hat{\mu}$	$\hat{\sigma}$	df[a]	LL	UL
Aluminum	ICP:A	μg/g	5.36E+01	1.78E+01	2	0.00E+00	1.30E+02
Americium-241	GEA:F	μCi/g	2.44E-02	NA	NA	NA	NA
Antimony	ICP:A	μg/g	3.37E+01	NA	NA	NA	NA
Arsenic	ICP:A	μg/g	2.08E+02	NA	NA	NA	NA
Barium	ICP:A	μg/g	<1.42E+01	NA	NA	NA	NA
Beryllium	ICP:A	μg/g	<1.42E+00	NA	NA	NA	NA
Bismuth	ICP:A	g/g	5.15E+04	3.67E+03	2	3.57E+04	6.73E+04
Boron	ICP:A	μg/g	9.51E+01	2.02E+01	2	8.36E+00	1.82E+02
Bromide	IC:W	μg/g	<2.83E+02	8.96E+01	2	NA	NA
Bulk density	Bulk density	g/mL	1.21E+00	NA	NA	NA	NA
Cadmium	ICP:A	μg/g	<1.42E+00	NA	NA	NA	NA
Calcium	ICP:A	μg/g	2.06E+02	8.38E+01	2	0.00E+00	3.62E+02
Cerium	ICP:A	μg/g	6.30E+01	7.63E+00	2	1.73E+02	2.39E+02
Cesium-137	GEA:F	μCi/g	7.76E-03	NA	NA	NA	NA
Chloride	IC:W	μg/g	6.73E+02	1.49E+02	2	0.00E+00	6.43E+02
Chromium	ICP:A	μg/g	4.49E+03	1.02E+02	2	2.34E+02	1.11E+03
Cobalt-60	GEA:F	μCi/g	<1.59E-03	NA	NA	NA	NA
Cobalt	ICP:A	μg/g	6.52E+00	NA	NA	NA	NA
Copper	ICP:A	μg/g	6.84E+00	8.63E-01	1	0.00E+00	1.75E+01
Endotherm - transition 1	DSC/ TGA	J/g	NA	NA	NA	NA	NA
Europium-154	GEA:F	μCi/g	<4.21E-03	NA	NA	NA	NA
Europium-155	GEA:F	μCi/g	<3.41E-03	NA	NA	NA	NA
Fluoride	IC:W	μg/g	5.94E+03	1.45E+03	2	0.00E+00	1.22E+04
Iron	ICP:A	μg/g	4.04E+03	5.29E+02	2	9.22E+03	1.38E+04
Lanthanum	ICP:A	μg/g	1.15E+04	3.87E+02	2	0.00E+00	1.98E+03
Lead	ICP:A	μg/g	3.10E+02	NA	NA	NA	NA
Lithium	ICP:A	μg/g	<2.84E+00	NA	NA	NA	NA
Magnesium	ICP:A	μg/g	3.46E+01	3.86E+00	2	1.40E+04	1.41E+04
Manganese	ICP:A	μg/g	1.41E+04	6.41E+02	2	0.00E+00	2.77E+03
Molybdenum	ICP:A	μg/g	<1.42E+01	NA	NA	NA	NA

Table B3-19. Summary Statistics for Tank 241-T-204. (2 sheets)

Analyte	Method	Units	$\hat{\mu}$	$\hat{\sigma}$	df[1]	LL	UL
Neodymium	ICP:A	μg/g	<2.84E+01	NA	NA	NA	NA
Nickel	ICP:A	μg/g	2.42E+02	1.76E+01	2	5.51E+04	5.52E+04
Nitrate	IC:W	μg/g	5.52E+04	1.18E+04	2	0.00E+00	5.10E+04
Nitrite	IC:W	μg/g	2.84E+02	6.22E+01	2	1.06E+03	1.60E+03
Oxalate	IC:W	μg/g	1.33E+03	4.19E+02	2	0.00E+00	1.88E+03
Percent water	DSC/ TGA	%	7.51E+01	1.00E+00	2	2.45E+03	2.46E+03
Phosphate	IC:W	μg/g	2.46E+03	6.65E+02	2	3.26E+03	8.98E+03
Phosphorus	ICP:A	μg/g	2.65E+03	2.20E+01	2	0.00E+00	1.23E+02
Potassium	ICP:A	μg/g	6.12E+03	2.39E+02	2	4.66E+02	2.52E+03
Samarium	ICP:A	μg/g	<2.84E+01	NA	NA	NA	NA
Silicon	ICP:A	μg/g	1.50E+03	2.59E+02	2	0.00E+00	1.11E+03
Silver	ICP:A	μg/g	<2.84E+00	NA	NA	NA	NA
Sodium	ICP:A	μg/g	3.18E+04	1.09E+03	2	0.00E+00	5.07E+03
Strontium-89/90	Sr:F	μCi/g	4.60E-03	NA	NA	NA	NA
Strontium	ICP:A	μg/g	4.99E+02	1.57E+01	2	0.00E+00	9.58E+01
Sulfate	IC:W	μg/g	<3.63E+02	NA	NA	NA	NA
Sulfur	ICP:A	μg/g	<2.84E+01	NA	NA	NA	NA
Thallium	ICP:A	μg/g	2.99E+02	NA	NA	NA	NA
Titanium	ICP:A	μg/g	3.47E+00	NA	NA	NA	NA
Total inorganic carbon	TIC/TOC	μg/g	1.40E+03			NA	NA
Total organic carbon	TIC/TOC	μg/g	3.12E+02			NA	NA
Uranium	ICP:A	μg/g	<1.42E+02	NA	NA	NA	NA
Vanadium	ICP:A	μg/g	<1.42E+01	NA	NA	NA	NA
Zinc	ICP:A	μg/g	6.27E+01	2.15E+01	1	0.00E+00	3.36E+02
Zirconium	ICP:A	μg/g	<2.84E+00	NA	NA	NA	NA

Notes:

< = at least 50 percent of tank 241-T-204 data is below the detection limit.

[1]If df = 2, the standard deviation of the mean is $\hat{\sigma}$(pooled); for copper df = 1 and the standard deviation of the mean is $\hat{\sigma}$(B203); for zinc df = 1 and the standard deviation of the mean is $\hat{\sigma}$(B203)

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APPENDIX C

STATISTICAL ANALYSIS FOR ISSUE RESOLUTION

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APPENDIX C

STATISTICAL ANALYSIS FOR ISSUE RESOLUTION

Appendix C documents the results of the analyses and statistical and numerical manipulations required by the DQOs applicable for the T-200 series tanks. The analyses required are reported as follows:

- **Section C1.0**: Statistical analysis and numerical manipulations supporting the safety screening DQO (Dukelow et al. 1995)
- **Section C2.0**: Appendix C References

C1.0 STATISTICS FOR THE SAFETY SCREENING DATA QUALITY OBJECTIVE

The safety screening DQO (Dukelow et al. 1995) defines acceptable decision confidence limits in terms of one-sided 95 percent confidence intervals. In this appendix, one-sided confidence limits supporting the safety screening DQO are calculated for the T-200 series tanks. All data in this section are from the final laboratory data packages for the 1997 core sampling events (Nuzum 1997a, Esch 1997, Steen 1997, and Nuzum 1997b).

Confidence intervals were computed for the analytical data associated with each solid sample number from tanks 241-T-201, T-202, T-203, and T-204 using existing statistical software (Statistical Science 1993). The sample numbers and confidence intervals are in Table C1-1 for alpha. Drainable liquid alpha measurements were sufficiently low that confidence interval calculations were not necessary. Typically, there would also be data associated with the DSC results. However, there were almost no exotherms observed in the waste samples tested. What few exotherms were observed had extremely low values; therefore, no confidence interval calculation was performed on the DSCs.

The upper limit (UL) of a one-sided 95 percent confidence interval on the mean is

$$\hat{\mu} + t_{(df,0.05)} * \hat{\sigma}_{\hat{\mu}}.$$

In this equation, $\hat{\mu}$ is the arithmetic mean of the data, $\hat{\sigma}_{\hat{\mu}}$ is the estimate of the standard deviation of the mean, and $t_{(df,0.05)}$ is the quantile from Student's t distribution with df degrees of freedom for a one-sided 95 percent confidence interval. For each T-200 series tank dataset (per sample number), df equals the number of observations minus one; i.e., df = 1.

Table C1-1 lists the upper limit of the 95 percent confidence interval for each sample number based on alpha data. Each confidence interval can be used to make the following statement. If the upper limit is less than 41 μCi/g, reject the null hypothesis that the alpha is greater than or equal to 41 μCi/g at the 0.05 level of significance. The upper limit to the 95 percent confidence interval is less than 41 μCi/g for all 22 intervals in Table C1-1. This means that the null hypothesis that the alpha concentration is greater than or equal to 41 μCi/g, cannot be rejected. Therefore, for these tanks, criticality is not a concern.

Table C1-1. 95 Percent Confidence Interval Upper Limits for Alpha for Tanks 241-T-201, -T-202, -T-203, and -T-204 (Units are μCi/g). (2 sheets)

Tank	Analyte	Units	Lab. Sample ID (Core-Seg.)	Review Comment	UL (95%)
241-T-201	Gross alpha	μCi/g	S97T000901F (192-06)		6.30E-01
241-T-201	Gross alpha	μCi/g	S97T000919F (192-07)		7.06E-01
241-T-201	Gross alpha	μCi/g	S97T000920F (192-08)	Possible outlier (high)	1.63E+00
241-T-202	Gross alpha	μCi/g	S97T000939F (191-01)		2.57E-01
241-T-202	Gross alpha	μCi/g	S97T000940F (191-02)		2.90E-01
241-T-202	Gross alpha	μCi/g	S97T000941F (191-03)		2.37E-01
241-T-202	Gross alpha	μCi/g	S97T000942F (191-04)	RPD greater than 20%	4.09E-01
241-T-202	Gross alpha	μCi/g	S97T000943F (191-05)		2.70E-01
241-T-203	Gross alpha	μCi/g	S97T000759F (190-01)		3.03E-01
241-T-203	Gross alpha	μCi/g	S97T000760F (190-01R)		2.07E-01
241-T-203	Gross alpha	μCi/g	S97T000757F (190-02)		3.56E-01
241-T-203	Gross alpha	μCi/g	S97T000761F (190-03)	RPD greater than 20%	4.69E-01

Table C1-1. 95 Percent Confidence Interval Upper Limits for Alpha for Tanks 241-T-201, -T-202, -T-203, and -T-204 (Units are μCi/g). (2 sheets)

Tank	Analyte	Units	Lab. Sample ID (Core-Seg.)	Review Comment	UL (95%)
241-T-203	Gross alpha	μCi/g	S97T000762F (190-04)		2.53E-01
241-T-203	Gross alpha	μCi/g	S97T000763F (190-05)		2.80E-01
241-T-203	Gross alpha	μCi/g	S97T000764F (190-06)		1.30E-01
241-T-203	Gross alpha	μCi/g	S97T000765F (190-07)		1.93E-01
241-T-203	Gross alpha	μCi/g	S97T000766F (190-08)		2.60E-01
241-T-203	Gross alpha	μCi/g	S97T000767F (190-09)	RPD greater than 20%	2.66E-01
241-T-204	Gross alpha	μCi/g	S97T000587F (188-01)		2.60E-01
241-T-204	Gross alpha	μCi/g	S97T000588F (188-02)		1.77E-01
241-T-204	Gross alpha	μCi/g	S97T000589F (188-03)		1.93E-01
241-T-204	Gross alpha	μCi/g	S97T000590F (188-04)		1.40E-01
241-T-204	Gross alpha	μCi/g	S97T000621F (188-05)	RPD greater than 20%	2.76E-01
241-T-204	Gross alpha	μCi/g	S97T000622F (188-06)		1.67E-01
241-T-204	Gross alpha	μCi/g	S97T000623F (188-07)	RPD greater than 20%	5.49E-01
241-T-204	Gross alpha	μCi/g	S97T000624F (188-08)		2.33E-01
241-T-204	Gross alpha	μCi/g	S97T000625F (188-09)		2.63E-01
241-T-204	Gross alpha	μCi/g	S97T000626F (188-10)		2.13E-01

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APPENDIX D

EVALUATION TO ESTABLISH BEST-BASIS INVENTORY FOR THE T-200 SERIES SINGLE-SHELL TANKS (241-T-201, 241-T-202, 241-T-203, AND 241-T-204)

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APPENDIX D

EVALUATION TO ESTABLISH BEST-BASIS INVENTORY FOR THE T-200 SERIES SINGLE-SHELL TANKS (241-T-201, 241-T-202, 241-T-203, AND 241-T-204)

An effort is underway to provide waste inventory estimates that will serve as standard characterization source terms for waste management activities (Hodgson and LeClair 1996). As part of this effort, an evaluation of available information for single-shell tanks 241-T-201, -T-202, -T-203, and -T-204 was performed, and a best-basis inventory was established for each tank. This work, detailed in the following sections, follows the methodology that was established by the standard inventory task.

D1.0 CHEMICAL INFORMATION SOURCES

The data for the T-200 series tanks (Nuzum [1997a], Esch [1997], Steen [1997], and Nuzum [1997b]) provide characterization results from the most recent sampling events for these tanks. One full-depth core sample was obtained from each tank in March and April 1997. Each core was obtained from the same location on each tank, riser 3. The sample based inventories calculated in this report uses the core composite analytical results. The waste volumes and densities used are particular to each tank and are based on the most current analytical or surveillance data.

Before sampling data was available, inventories were calculated using the data provided in Conner et al. (1997), Dougherty et al. (1997), Jo et al. (1997), and Sasaki et al. (1997). Process history suggested that characterization results for tanks 241-B-201, -B-202, -B-203, and -B-204 could be used to characterize tanks 241-T-201, -T-202, -T-203, and -T-204 because they contain the same type of wastes.

The HDW model (Agnew et al. 1997a) provides tank content estimates in terms of component concentrations and inventories. A projected inventory for selected waste components in the T-200 series tanks has been prepared based on process flowsheets, production records, and waste volume records.

D2.0 COMPARISON OF COMPONENT INVENTORY VALUES

The engineering-based inventories listed in Tables D2-1 and D2-2 were calculated by multiplying the sample-based inventories for B-200 series tanks (such as 241-B-201 [Conner et al. 1997]) by the ratio of the waste volume in tank 241-T-201 to the waste volume in tank 241-B-201 (1.00). (The chemical species are reported without charge designation per the best-basis inventory convention.)

Table D2-1. Engineering and Hanford Defined Waste-Based Inventory Estimates for Tank 241-T-201 Nonradioactive Components.

Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)	Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)
Al	473	0.00	Na	5,250	10,300
Bi	13,000	1,230	Ni	65.9	8.85
Ca	1,680	1,040	NO_2	121	15.6
Ce	9.57	n/r	NO_3	6,780	8,050
Cl	227	89.1	oxalate	n/r	9,900
Cr	459	33.3	P as PO_4	2,300	846
Cu	6.63	n/r	Si	2,780	0
F	802	2,030	SO_4	47.9	27.2
Fe	1,840	2,150	Sr	127	0
K	799	851	TIC as CO_3	n/r	1,550
La	2,080	49.8	Zn	29.8	n/r
Mg	208	n/r	H_2O (wt%)	60.7	69.5
Mn	2,640	26.4	Density (g/mL)	1.25	1.20

Notes:

n/r = not reported

[1]Conner et al. (1997) ratioed to the volume of tank 241-T-201
[2]Agnew et al. (1997a)

Table D2-2. Engineering and Hanford Defined Waste-based Inventory Estimates for Radioactive Components for Tank 241-T-201 (Decayed to January 1, 1994).

Analyte	Engineering[1] Inventory Estimate (Ci)	HDW[2] Inventory Estimate (Ci)	Analyte	Engineering[1] Inventory Estimate (Ci)	HDW[2] Inventory Estimate (Ci)
^{14}C	0.0435	1.75E-04	$^{239/240}Pu$	155	0.0505
^{90}Sr	275	18.2	^{241}Am	4.25	3.80E-04
^{137}Cs	105	20.7	Total α	180	n/r
^{154}Eu	0.512	8.99E-04			

Notes:

[1]Conner et al. (1997) decayed to January 1, 1994

[2]Agnew et al. (1997a) decayed to January 1, 1994

Tank 241-T-201 is reported to contain 110 kL (29 kgal) of waste, and tank 241-B-201 is reported to contain 110 kL (29 kgal) (Hanlon 1997). Similarly, tanks 241-T-202, -T-203, and -T-204 contain 79 kL (21 kgal), 132 kL (35 kgal), and 144 kL (38 kgal), respectively. In calculating the initial inventory estimates for the T-200 series tanks, the wastes in the corresponding B-200 and T-200 tanks were assumed to be the same. An inventory based on a volume ratio between the tanks was derived using the B-200 sampling information as a basis. The HDW model (Agnew et al. 1997a) inventory also is derived using these same waste volumes and similar density values. Those estimates are given in Tables D2-1 through D2-6. Sampling information has been obtained recently from the T-200 series tanks, and estimates based on that information will be developed and presented later in this section.

Table D2-3. Engineering and Hanford Defined Waste-based Inventory Estimates for Tank 241-T-202 Nonradioactive Components. (2 sheets)

Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)	Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)
Al	93.0	0.00	Na	3,530	7,740
Bi	3,110	923	Ni	19.1	6.64
Ca	149	779	NO_2	52.0	11.7
Ce	10.0	n/r	NO_3	6,020	6,040
Cl	79.0	66.8	Pb	60.0	n/r
Cr	230	25.0	P as PO_4	856	634
Cu	25.0	n/r	Si	311	0

Table D2-3. Engineering and Hanford Defined Waste-based Inventory Estimates for Tank 241-T-202 Nonradioactive Components. (2 sheets)

Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)	Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)
F	593	1,530	SO_4	134	20.4
Fe	622	1,610	Sr	55.0	0
K	631	638	TIC as CO_3	172	1,170
La	1,250	37.3	Zn	52.0	n/r
Mg	23.0	n/r	H_2O (wt%)	75.8	68.6
Mn	1,250	19.8	Density (g/mL)	1.21	1.21

Notes:
[1]Dougherty et al. (1997) multiplied by 0.78
[2]Agnew et al. (1997a)

Table D2-4. Engineering and Hanford Defined Waste-based Inventory Estimates for Radioactive Components in Tank 241-T-202.

Analyte	Sampling[1] Inventory Estimate (Ci)	HDW[2] Inventory Estimate (Ci)	Analyte	Sampling[1] Inventory Estimate (Ci)	HDW[2] Inventory Estimate (Ci)
^{90}Sr	349	13.7	$^{239/240}$Pu	19	0.0379
^{137}Cs	2.4	15.5	^{241}Am	6.14	2.85 E-04

Notes:
[1]Dougherty et al. (1997) multiplied by 0.78
[2]Agnew et al. (1997a) decayed to January 1, 1994

Table D2-5. Engineering and Hanford Defined Waste-based Inventory Estimates for Tank 241-T-203 Nonradioactive Components.

Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)	Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)
Al	8.03	0.00	Na	4,570	12,900
Bi	6,430	1,540	Ni	28.2	11.1
Ca	34.3	1,300	NO_2	117	19.5
Ce	7.82	n/r	NO_3	10,000	10,100
Cl	135	111	oxalate	312	12,400
Cr	476	41.7	P as PO_4	1,040	1,060
Cu	108	n/r	Si	142	0
F	1,210	2,540	SO_4	110	34.0
Fe	681	2,680	Sr	76.1	0
K	803	1,060	TIC as CO_3	528	1,940
La	1,610	62.2	Zn	9.33	n/r
Mg	8.16	n/r	H_2O (wt%)	75.8	68.6
Mn	2,180	33.0	Density (g/mL)	1.19	1.21

Notes:

[1]Jo et al. (1997) multiplied by 0.686

[2]Agnew et al. (1997a)

Table D2-6. Engineering Assessment- and Hanford Defined Waste-Based Inventory Estimates for Tank 241-T-204 Nonradioactive Components. (2 sheets)

Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)	Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)
Al	10.9	0	Ni	39.1	12.0
Bi	8,130	1,670	NO_2	122	21.2
Ca	51.1	1,410	NO_3	8,970	10,900
Ce	9.35	n/r	OH	n/r	2,690
Cl	118	121	oxalate	286	13,400
Cr	543	45.2	P as PO_4	1,200	1,150
Cu	3.71	n/r	Si	179	0

Table D2-6. Engineering Assessment- and Hanford Defined Waste-Based Inventory Estimates for Tank 241-T-204 Nonradioactive Components. (2 sheets)

Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)	Analyte	Engineering[1] Inventory Estimate (kg)	HDW[2] Inventory Estimate (kg)
F	1,200	2,760	SO_4	111	36.9
Fe	638	2,910	Sr	65.4	0
K	980	1,150	TIC as CO_3	n/r	2,110
La	1,740	67.5	Zn	8.97	n/r
Mg	13.9	n/r	H_2O (wt%)	77.1	68.6
Mn	2,480	35.8	density (g/mL)	1.19	1.21
Na	4,470	14,000			

Notes:

[1]Sasaki et al. (1997) multiplied by 0.76

[2]Agnew et al. (1997a)

D3.0 COMPONENT INVENTORY EVALUATION

The following evaluation provides a best-basis inventory estimate for chemical and radionuclide components for tanks 241-T-201, -T-202, -T-203, and -T-204.

D3.1 CONTRIBUTING WASTE TYPES

The following abbreviations were used to designate waste types:

224 = Final plutonium decontamination and concentration waste from the $BiPO_4$ process using LaF_3

Agnew et al. (1997b) shows waste in the 200 series tanks in 1952 for B and T Tank Farms and in 1956 for U Tank Farm. However, Borsheim (1994) reports that 224 wastes were routed to the 6.1-m (20-ft)-diameter concrete settling tank (241-361) and then overflowed to a dry well. The dry well was replaced with a crib by June 1945.

Cell drainage (5 to 6 waste) also was routed to the 241-361 tank. High-activity cell drainage was supposed to be routed to tanks 241-B-107 and 241-T-107 in the 1C waste cascades. Borsheim also notes that each 200 series tanks had two inlet lines, was not cascaded, and had no overflow lines. Experiments (as of November 1944) indicated that 224 wastes should contain three percent solids by volume.

Borsheim notes that Hanford Works Monthly Reports show a plan to provide a separate crib for the B Plant cell drainage. At the time the cell drainage was disposed of to tank 241-B-201 along with the 224 waste. Tank 241-B-201 and the T tanks were in service as sludge settling tanks for 224-B and T wastes, respectively. The remaining 200 series tanks (241-T-202, -T-203, and -T-204) were being excavated and piped in series to increase settling capacity.

Borsheim reports that by July 1950, tank 241-B-204, which had been in service since November 1948, was filled to a depth of 6.1 m (20 ft) with sludge. The tank overflowed to tank 241-B-203 which had received 10.2 cm (4 in.) of sludge by that time. This suggests tanks 241-B-201 and 241-T-201 received 224 waste before other B-200 and T-200 series tanks. When other B-200 series tanks received 224 waste, it overflowed from tank 241-B-204 to tanks 241-B-203 and -B-202. The T-200 series tanks received 224 waste in a similar fashion.

Expected Types of Solids in the Waste

Hill et al. (1995):	224
Agnew et al. (1997a):	224

D3.2 EVALUATION OF FLOWSHEET INFORMATION

Table D3-1 shows the technical flowsheet information (Kupfer et al. 1997) for 224 streams and the comparative Los Alamos National Laboratory-defined waste streams.

Table D3-1. Technical Flowsheet and Hanford Defined Waste Streams.

Analyte	Flowsheet 224[1] (M)	HDW 224[2] (M)
Bi	0.00595	0.006
C_2O_4	0.0458	0.046
Cr	0.00362	0.0068
F	0.272	0.27
K	0.223	0.231
La	0.00376	0.0038
Mn	0.00514	0.0051
Na	1.62	1.60
NO_3	1.06	1.38
PO_4	0.0322	0.038
SO_4	0.00140	0.003
NH_4	n/r	n/r

Notes:

M = moles per liter

[1]Appendix C of Kupfer et al. (1997), see Bismuth Phosphate Process Flowsheet
[2]Agnew et al. (1997a)

D3.3 ASSUMPTIONS FOR RECONCILING WASTE INVENTORIES

Reference inventories in the T-200 series tanks were estimated using an engineering assessment based on the results of a sampling event from the B-200 series tanks. Tanks in T farm were assumed to have nearly identical process histories and contain the same waste type as the corresponding tank in B farm (for example, 241-B-201 and 241-T-201). Current inventories were calculated using recently obtained sampling data. These inventories were then compared with the HDW model inventories.

The assumptions and observations for the engineering assessment were based on best technical judgment pertaining to input information that can significantly influence tank inventories. This includes the following: 1) correct prediction of contributing waste types and correct relative proportions of the waste types; 2) accurate predictions of flowsheet conditions, fuel processed, and waste volumes; 3) accurate predictions of partitioning of components; and 4) accurate predictions of physical parameters such as density, percent solids, etc. By using this evaluation, the assumptions can be modified as necessary to provide a basis for identifying potential errors and/or missing information that could influence the sample- and model-based inventories. The simplified assumptions and observations used for the evaluation are as follows.

- Tank waste mass is calculated using the measured density and the tank volume listed in Hanlon (1997). Engineering assessment-based, sample-based, and model-based inventories are derived using this volume. As a result, inventory comparisons are made on the same volume basis.

- Only the 224 waste stream contributed to solids formation. It is assumed that tanks with the same waste type will have the same concentrations of individual analytes.

- Bulk component (chemical species) information is sufficient for comparing the computed data sets. This information can be obtained from technical flowsheets, model bases, and sample data.

D3.4 BASIS FOR CALCULATIONS USED IN THE ENGINEERING EVALUATION AND SAMPLE-BASED ESTIMATES

The best-basis evaluations for the B-200 tanks (Appendix D of Conner et al. [1997], Dougherty et al. [1997], Jo et al. [1997], and Sasaki et al. [1997]) compares sample data to flowsheet predictions for 224 waste and shows good agreement between them. Because tanks 241-B-201 and 241-T-201 received the same waste in the same time period and are located in the same position in their respective tank farms, it is considered appropriate to use the tank 241-B-201 sample results to estimate the inventories for tank 241-T-201 (Field and Winward 1997a). The other T-200 series tanks were assessed in a similar fashion (for example, tanks 241-B-202 and 241-T-202 [Field and Winward 1997b], tanks 241-B-203 and 241-T-203 [Field and Winward 1997c] and tanks 241-B-204 and 241-T-204 [Field and Winward 1997d]).

The initial inventories for the T-200 tanks were estimated using the inventories for the B-200 tanks and adjusting them by a factor equal to the ratio of the volumes of waste in the corresponding tank. Estimated component inventories from this engineering evaluation are compared with the HDW-based and sample-based inventories in Table D3-2.

The sample-based inventories were derived using the mean core composite sample analyses in Appendix B, measured tank waste volumes, and densities. The volumes used in calculating inventories for tanks 241-T-201, -T-202, -T-203, and -T-204 are 110 kL (29 kgal), 79 kL (21 kgal), 132 kL (35 kgal), and 144 kL (38 kgal), respectively. The densities measured in each tank were 1.27 g/mL (-T-201), 1.24 g/mL (-T-202), 1.23 g/mL (-T-203), and 1.21 g/mL (-T-204). Observations regarding these inventories are noted by component.

Table D3-2. Comparison of Selected Component Inventory Estimates for T-200 Series Tanks. (2 sheets)

Component	Sample-Based Evaluation (kg)	Engineering-based Evaluation (kg)	HDW Estimate[1] (kg)
T-201			
Bi	16,600	13,000	1,230
K	671	799	851
La	3,470	2,080	49.8
NO_3	6,730	6,780	8,050
Mn	6,180	2,640	26.4
SO_4	38.6	47.9	27.2
Cr	746	459	33.3
PO_4	1,940	2,300	846
F	708	802	2,030
Na	4,500	5,250	10,300
H_2O%	61.6	60.7	69.5
T-202			
Bi	4,040	3,110	923
K	704	631	638
La	1,240	1,250	37.3
NO_3	6,470	6,020	6,040
Mn	1,460	1,250	19.8
SO_4	109	134	20.4
Cr	371	230	25.0
PO_4	720	856	634
F	647	593	1,530
Na	3,540	3,530	7,740
H_2O%	72.8	75.8	68.6

Table D3-2. Comparison of Selected Component Inventory Estimates for T-200 Series Tanks. (2 sheets)

Component	Sample-Based Evaluation (kg)	Engineering-based Evaluation (kg)	HDW Estimate[1] (kg)
T-203			
K	1,120	803	1,060
La	1,910	1,610	62.2
NO_3	10,500	10,000	10,100
Mn	2,620	2,180	33.0
SO_4	71.4	110	34.0
Cr	618	476	41.7
PO_4	1,190	1,040	1,060
F	1,030	1,210	2,540
Na	5,670	4,570	12,900
H_2O%	71.0	75.8	68.6
T-204			
Bi	8,960	8,130	1,670
K	1,070	980	1,150
La	2,000	1,740	67.5
NO_3	9,610	8,970	10,900
Mn	2,450	2,480	35.8
SO_4	63.2	111	36.9
Cr	781	543	45.2
PO_4	1,310	1,200	1,150
F	1,030	1,200	2,760
Na	5,530	4,470	14,000
H_2O%	75.1	77.1	68.6

Bismuth. The HDW (Agnew et al. 1997a) estimate is between 5 to 10 times lower than both the sample data and engineering inventory estimates. This appears to be caused by the incorrect assumption in the HDW that bismuth is partially soluble.

Nitrate. The HDW estimate, the engineering assessment result, and the sample data are relatively close. The HDW-estimated inventory is derived from the HDW model defined 224 waste stream in which the nitrate concentration is about 30 percent higher than Appendix C of Kupfer et al. (1997).

Sulfate. The HDW-estimated inventory is generally smaller than the sample data or engineering assessment-based inventories. However, sulfate was not a substantial process chemical in the 224 waste.

Chromium. The HDW-estimated inventory is considerably lower (approximately 10 to 20 percent) than the engineering-based assessment or sample-based inventories. The data for tank 241-B-201 (see Appendix D of Conner et al. 1997) suggests that about 24 percent of the chromium precipitated; the HDW model assumes a much smaller percent.

Phosphate. Although the engineering-based assessment and sample-based values agree closely, no trend can be established between these values and the HDW estimate. The HDW model-defined waste stream phosphate concentration is approximately three times the flowsheet value used.

Fluoride. The sample-based inventories and engineering-based assessments are based on water soluble fluoride only. Insoluble fluoride, such as that associated with LaF_3, is not accounted for in the chemical analyses. The assessment value is about 2.5 times lower than the HDW value. Until a sample is analyzed by a methodology that measures total fluoride, these differences cannot be reconciled.

Sodium. The HDW value is approximately twice the value from the sample-based and engineering-assessment evaluations.

Potassium. The HDW and sampling values for potassium agree closely.

Lanthanum. Based on the tank 241-B-201 (see Appendix D of Conner et al. 1997) data, lanthanum appears to partition between the phases in the tank. The HDW (Agnew et al. 1997a) estimate is over 100 times lower than both the sample data and engineering inventory estimates. This appears to be caused by the incorrect assumption in the HDW that lanthanum is partially soluble.

Manganese. Similar to bismuth and lanthanum, the value from this evaluation is much larger than that predicted by Agnew et al. (1997a). The HDW model treats manganese as highly soluble for the B and T-200 series tanks and predicts much less manganese in the waste.

Total Hydroxide. Once the best-basis inventories were determined, the hydroxide inventory was calculated by performing a charge balance with the valences of other analytes. In some cases, this approach requires that other analyte (for example, sodium or nitrate) inventories be adjusted to achieve the charge balance. During such adjustments, the number of significant figures is not increased. This charge balance approach was consistent with that used by Agnew et al. (1997a). The calculated total hydroxide inventories based on engineering-based assessments and HDW model estimates were 14,600 kg , 3,640 kg, 6,690 kg and 6,640 kg, respectively, for tanks 241-T-201, -T-202, -T-203, and -T-204.

D4.0 DEFINE THE BEST-BASIS AND ESTABLISH COMPONENT INVENTORIES

Information about chemical, radiological, and/or physical properties is used to perform safety analyses, engineering evaluations, and risk assessment associated with waste management activities and to address regulatory issues. These activities include overseeing tank farm operations and identifying, monitoring, and resolving safety issues associated with these operations and with the tank wastes. Disposal activities include designing equipment, processes, and facilities for retrieving wastes; and processing them into a form suitable for long-term storage/disposal.

Chemical and radiological inventory information are generally derived using three approaches: 1) component inventories are estimated using the results of sample analyses, 2) component inventories are predicted using the HDW model based on process knowledge and historical information, or 3) a tank-specific process estimate is made based on process flowsheets, reactor fuel data, essential material usage, and other operating data. The information derived from these different approaches is often inconsistent.

As part of this effort, an evaluation of available chemical information for the T-200 series tanks was performed, including the following:

- Data from core samples of tank 241-B-201, -B-202, -B-203, -B-204 (Shaver [1993], Pool [1994], Jo [1996], and Sasaki [1996])
- Data from the 1997 core sample of tanks 241-T-201, -T-202, -T-203, and -T-204 (Nuzum 1997a, Esch 1997, Steen 1997, and Nuzum 1997b)
- An inventory estimate generated by the HDW model (Agnew et al. 1997a).

The calculations based on information determined from the B-200 tanks have been compared to the T-200 analytical data of Engel et al. (1997) and the HDW model (Agnew et al. 1997a). These calculations compare well with the analytical data and, in some cases, with the HDW model. Given current resources, the best source of inventory data appears to be the analytical

data which was obtained during the 1997 core sampling and analysis events. One analyte, for which the analytical data is suspect, is fluoride. Only the water soluble forms of fluoride are reported in the analytical data because water insoluble fluoride was not measured.
Tables D4-1 and D4-2 present the best-basis inventory estimates for the nonradioactive and radioactive waste components. For the most current inventory values, refer to the Tank Characterization Database.

Best-basis tank inventory values are derived for 46 key radionuclides (as defined in Section 3.1 of Kupfer et al. 1997), all decayed to a common report date of January 1, 1994. Often, waste sample analyses have only reported ^{90}Sr, ^{137}Cs, $^{239/240}Pu$, and total uranium (or total beta and total alpha), while other key radionuclides such as ^{60}Co, ^{99}Tc, ^{129}I, ^{154}Eu, ^{155}Eu, and ^{241}Am, have been infrequently reported. For this reason, it has been necessary to derive most of the 46 key radionuclides by computer models. These models estimate radionuclide activity in batches of reactor fuel, account for the split of radionuclides to separations plant waste streams, and track their movement with tank waste transactions. (These computer models are described in Kupfer et al. 1997, Section 6.1 and in Watrous and Wootan 1997.) Model generated values for radionuclides in any of 177 tanks are reported in the HDW Rev. 4 model results (Agnew et al. 1997a). The best-basis value for any one analyte may be either a model result or a sample-based or engineering assessment-based result if available. (No attempt has been made to ratio or normalize model results for all 46 radionuclides when values for measured radionuclides disagree with the model.) For a discussion of typical error between model derived values and sample derived values, see Kupfer et al. 1997, Section 6.1.10. The radionuclide inventories shown in Table D4-1 are based primarily on Agnew et al. (1997a) HDW model estimates for the T-200 series tanks.

Table D4-1. Best-Basis Inventory Estimates for Nonradioactive Components in T-200 Series Tanks (Effective May 31, 1997). (2 sheets)

Analyte	Total Inventory (kg)				Basis (S, M, C or E)[1]	Comment
	T-201	T-202	T-203	T-204		
Al	14.0	7.12	9.17	9.33	S	
Bi	16,600	4,040	7,940	8,960	S	
Ca	173	30.6	56.4	35.9	S	
Cl	151	68.3	107	117	S	
TIC as CO_3	564	1,025	1,290	1,220	S	
Cr	746	371	618	781	S	
F	708	647	1,030	1,030	S	
Fe	1,380	751	1,110	703	S	
Hg	0	0	0	0	M	

Table D4-1. Best-Basis Inventory Estimates for Nonradioactive Components in T-200 Series Tanks (Effective May 31, 1997). (2 sheets)

Analyte	Total Inventory (kg)				Basis (S, M, C or E)[1]	Comment
	T-201	T-202	T-203	T-204		
K	671	704	1,120	1,070	S	
La	3,470	1,240	1,910	2,000	S	
Mn	6,180	1,460	2,620	2,450	S	
Na	4,500	3,540	5,670	5,530	S	
Ni	87.8	13.0	24.1	42.0	S	
NO_2	43.8	51.7	48.1	49.4	S	
NO_3	6,730	6,470	10,500	9,610	S	
OH	14,600	3,640	6,690	6,640	C	
Pb	29.6	5.72	3.39	54.0	S	
PO_4	1,940	721	1,190	1,310	S	
Si	259	184	261	261	S	
SO_4	38.6	109	71.4	63.2	S	
Sr	156	50.0	90.8	87.0	S	
TOC	42.4	34.2	68.4	54.3	S	
U_{TOTAL}	8.12	10.1	10.2	11.0	M, S, M, M	
Zr	0	0.2	0	0	S	

Note:

[1]S = Sample-based, M = Hanford Defined Waste model-based, E = Engineering assessment-based, C = Calculated by charge balance; includes oxides as hydroxides, not including CO_3, NO_2, NO_3, PO_4, SO_4, and SiO_3.

Table D4-2. Best-Basis Inventory Estimate for Radioactive Components in T-200 Series Tanks Decayed to January 1, 1994 (Effective May 31, 1997). (2 sheets)

Analyte	Total Inventory (Ci)				Basis (S,M or E)[1]	Comment
	T-201	T-202	T-203	T-204		
^{3}H	2.86E+00	2.02E+00	3.34E+00	3.57E+00	E	Based on B-201
^{14}C	4.41E-02	3.11E-02	5.15E-02	5.50E-02	E	Based on B-201
^{59}Ni	9.56E-04	6.76E-04	1.12E-03	1.19E-03	E	Based on B-201
^{60}Co	2.73E-01	1.93E-01	3.19E-01	3.41E-01	E	Based on B-201
^{63}Ni	2.62E-02	1.85E-02	3.06E-02	3.27E-02	E	Based on B-201
^{79}Se	3.68E-05	2.76E-05	4.60E-05	5.00E-05	M	
^{90}Sr	2.17E+01	2.70E-01	4.61E-01	8.82E-01	S	
^{90}Y	2.17E+01	2.70E-01	4.61E-01	8.82E-01	S	Based on ^{90}Sr
^{93m}Nb	1.45E-04	1.08E-04	1.81E-04	1.96E-04	M	
^{93}Zr	1.75E-04	1.31E-04	2.18E-04	2.37E-04	M	
^{99}Tc	1.21E-03	9.09E-04	1.51E-03	1.64E-03	M	
^{106}Ru	4.20E-11	3.15E-11	5.25E-11	5.70E-11	M	
^{113m}Cd	4.89E-04	3.67E-04	6.12E-04	6.64E-04	M	
^{125}Sb	6.46E-05	4.84E-05	8.07E-05	8.77E-05	M	
^{126}Sn	5.55E-05	4.16E-05	6.94E-05	7.53E-05	M	
^{129}I	2.29E-06	1.72E-06	2.86E-06	3.10E-06	M	
^{134}Cs	3.32E-01	2.35E-01	3.88E-01	4.14E-01	E	Based on B-201
^{137m}Ba	6.60E+00	2.88E+00	3.05E+00	1.40E+00	S	Based on ^{137}Cs
^{137}Cs	6.98E+00	3.04E+00	3.22E+00	1.48E+00	S	
^{151}Sm	0.139	0.104	0.174	0.189	M	
^{152}Eu	1.82E-04	1.37E-04	2.28E-04	2.47E-04	M	
^{154}Eu	6.11E-01	4.32E-01	7.14E-01	7.62E-01	E	Based on B-201
^{155}Eu	4.57E-01	3.23E-01	5.34E-01	5.71E-01	E	Based on B-201
^{226}Ra	8.22E-09	6.16E-09	1.03E-08	1.12E-08	M	
^{227}Ac	4.34E-08	3.25E-08	5.42E-08	5.89E-08	M	
^{228}Ra	5.28E-13	3.96E-13	6.61E-13	7.17E-13	M	
^{229}Th	1.02E-10	7.67E-11	1.28E-10	1.39E-10	M	
^{231}Pa	1.00E-07	7.51E-08	1.25E-07	1.36E-07	M	
^{232}Th	4.62E-14	3.46E-14	5.77E-14	6.27E-14	M	
^{232}U	5.36E-08	4.02E-08	6.70E-08	7.27E-08	M	

Table D4-2. Best-Basis Inventory Estimate for Radioactive Components in T-200 Series Tanks Decayed to January 1, 1994 (Effective May 31, 1997). (2 sheets)

Analyte	Total Inventory (Ci)				Basis (S,M or E)[1]	Comment
	T-201	T-202	T-203	T-204		
^{233}U	2.45E-09	1.83E-09	3.06E-09	3.32E-09	M	
^{234}U	2.67E-03	2.00E-03	3.34E-03	3.63E-03	M	
^{235}U	1.19E-04	8.92E-05	1.49E-04	1.61E-04	M	
^{236}U	2.33E-05	1.75E-05	2.91E-05	3.16E-05	M	
^{237}Np	7.51E-06	5.63E-06	9.39E-06	1.02E-05	M	
^{238}Pu	4.85E-01	3.43E-01	5.67E-01	6.06E-01	E	Based on B-201
^{238}U	2.71E-03	3.30E-03	3.39E-03	3.68E-03	M, S,M, M	
^{239}Pu	1.06E+02	2.20E+01	3.24E+01	2.51E+01	E	Based on alpha[2]
^{240}Pu	4.07E-03	3.06E-03	5.09E-03	5.53E-03	E	Based on alpha[2]
^{241}Am	4.32E+00	3.06E+00	5.85E+00	4.25E+00	E, E, S, S	"E" based on B-201
^{241}Pu	1.35E-02	1.01E-02	1.68E-02	1.83E-02	M	
^{242}Cm	3.70E-06	2.78E-06	4.63E-06	5.03E-06	M	
^{242}Pu	6.23E-08	4.67E-08	7.79E-08	8.45E-08	M	
^{243}Am	3.08E-09	2.31E-09	3.86E-09	4.19E-09	M	
^{243}Cm	7.98E-08	5.99E-08	9.98E-08	1.08E-07	M	
^{244}Cm	7.84E-08	5.88E-08	9.80E-08	1.06E-07	M	

Notes

[1]S=Sample-based, M=Hanford Defined Waste model-based, E=Engineering assessment-based

[2]Assumed total alpha was plutonium-based,and the ratio of ^{239}PU to ^{240}Pu was 94% to 6%. The other plutonium contributors estimated by the HDW model fell within the uncertainty of the measurement.

D5.0 APPENDIX D REFERENCES

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APPENDIX E

BIBLIOGRAPHY FOR TANKS 241-T-201, 241-T-202, 241-T-203, AND 241-T-204

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APPENDIX E

BIBLIOGRAPHY FOR TANKS 241-T-201, 241-T-202, 241-T-203, AND 241-T-204

Appendix E is a bibliography that supports the characterization of the T-200 series tanks. This bibliography represents an in-depth literature search of all known information sources that provide sampling, analysis, surveillance, modeling information, and processing occurrences associated with these tanks and their respective waste types.

The references in this bibliography are separated into three categories containing references broken down into subgroups. These categories and their subgroups are listed below.

I. NON-ANALYTICAL DATA

- Ia. Models/Waste Type Inventories/Campaign Information
- Ib. Fill History/Waste Transfer Records
- Ic. Surveillance/Tank Configuration
- Id. Sample Planning/Tank Prioritization
- Ie. Data Quality Objectives/Customers of Characterization Data

II. ANALYTICAL DATA - SAMPLING OF TANK WASTE AND WASTE TYPES

- IIa. Sampling of tanks 241-T-201, -T-202, -T-203, and -T-204
- IIb. Sampling and Analysis of 224 Waste

III. COMBINED ANALYTICAL/NON-ANALYTICAL DATA

- IIIa. Inventories using both Campaign and Analytical Information
- IIIb. Compendium of Existing Physical and Chemical Documented Data Sources

The bibliography is broken down into the appropriate sections of material with an annotation at the end of each reference describing the information source. Most information listed below is available in the Lockheed Martin Hanford Corporation Tank Characterization and Safety Resource Center.

I. NON-ANALYTICAL DATA

Ia. Models/Waste Type Inventories/Campaign Information

Agnew, S. F., J. Boyer, R. A. Corbin, T. B. Duran, J. R. Fitzpatrick, K. A. Jurgensen, T. P. Ortiz, and B. L. Young, 1997, *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4*, LA-UR-96-3860, Rev. 0, Los Alamos National Laboratory, Los Alamos, New Mexico.

- Contains waste type summaries and primary chemical compound/analyte and radionuclide estimates for sludge, supernatant, and solids.

Hill, J. G., G. S. Anderson, and B. C. Simpson, 1995, *The Sort on Radioactive Waste Type Model: A Method to Sort Single-Shell Tanks into Characteristic Groups*, PNL-9814, Rev. 2, Pacific Northwest Laboratory, Richland, Washington.

- Contains a qualitative grouping scheme based on waste types and an assessment of the process histories for the tanks

Watrous, R. A., and D. W. Wootan, 1997, *Activity of Fuel Batches Processed Through Hanford Separations Plants, 1944 Through 1989,* HNF-SD-WM-TI-794, Rev. 0, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

- Contains estimates of the overall production of radionuclides at the Hanford Site using ORIGEN2.

Ib. Fill History/Waste Transfer Records

Agnew, S. F., R. A. Corbin, T. B. Duran, K. A. Jurgensen, T. P. Ortiz, and B. L. Young, 1997, *Waste Status and Transaction Record Summary (WSTRS) Rev. 4*, LA-UR-97-311, Rev. 0, Los Alamos National Laboratory, Los Alamos, New Mexico.

- Contains spreadsheets showing all available data on tank additions and transfers.

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- Contains single-shell tank fill history and primary campaign and waste information to 1981.

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Ic. Surveillance/Tank Configuration

Alstad, A. T., 1993, *Riser Configuration Document for Single-Shell Waste Tanks*, WHC-SD-RE-TI-053, Rev. 9, Westinghouse Hanford Company, Richland, Washington.

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Lipnicki, J., 1997, *Waste Tank Risers Available for Sampling*, WHC-SD-RE-TI-710, Rev. 4, Numatec Hanford Corporation for Fluor Daniel Hanford, Inc., Richland, Washington.

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Tran, T. T, 1993, *Thermocouple Status Single-Shell & Double-Shell Waste Tanks*, WHC-SD-WM-TI-553, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

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- Contains consolidated historical, physical, and chemical information on the high-level waste tanks at Hanford.

Smith, D. A., 1986, *Single-Shell Tank Isolation Safety Analysis Report*, WHC-SD-WM-SAR-006, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

- Contains information regarding the accepted operating thresholds for the single-shell tanks.

Id. Sample Planning/Tank Prioritization

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IIa. Sampling of T-200 Tanks

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- Contains results for 1997 sample analyses for each tank.

Horton, J. E., 1978, *Analysis of Tanks 011-BXR; 201-C; and 204-T*, (letter 60120-78-132J to J. E. Mirabella, December 4), Rockwell Hanford Operations, Richland, Washington.

- Contains results for 1978 sample analyses from tank 241-T-204.

IIb. Sampling and Analysis of 224 Waste

Conner, J. M., K. M. Hodgson, L. C. Amato, J. L. Stroup, S. R. Wilmarth, and R. T. Winward, 1997, *Tank Characterization Report for Single-Shell Tank 241-B-201*, HNF-SD-WM-ER-550, Rev. 1, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

Dougherty, L. F., J. G. Field, S. M. Hodgson, and R. T. Winward, 1997, *Tank Characterization Report for Single-Shell Tank 241-B-202*, HNF-SD-WM-ER-371, Rev. 0A, Lockheed Martin Hanford Corp.for Fluor Daniel Hanford, Inc., Richland, Washington.

Jo, J., J. G. Field, S. M. Hodgson, and R. T. Winward, 1997, *Tank Characterization Report for Single-Shell Tank 241-B-203,* HNF-SD-WM-ER-587, Rev. 0A, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

Sasaki, L. M., J. G. Field, S. M. Hodgson, and R. T. Winward, 1997, *Tank Characterization Report for Single-Shell Tank 241-B-204,* HNF-SD-WM-ER-581, Rev. 0A, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

- Contains the results of 224 waste analysis from B-200 series tanks.

Kupfer, M. J., A. L. Boldt, B. A. Higley, K. M. Hodgson, L. W. Shelton, B. C. Simpson, S. L. Lambert, D. E. Place, R. M. Orme, G. L. Borsheim, N. G. Colton, M. D. LeClair, R. T. Winward, and W. W. Schulz, 1997, *Standard Inventories of Chemicals and Radionuclides in Hanford Site Tank Wastes*, HNF-SD-WM-TI-740, Rev. 0A, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

- Contains the method for deriving a single-point inventory estimate for a selected number of chemicals and radionuclides for all Hanford high-level waste tanks.

Engel, D. W., T. A. Ferryman, K. M. Remund, D. S. Daly, G. Chen, S. A. Hartley, and B. C. Simpson, 1997, *T-200 Series Tank Concentration Predictions*, PNNL-11550, Pacific Northwest National Laboratory, Richland, Washington.

- Contains the results of a statistical study to define the 224 waste composition using existing data.

III. COMBINED ANALYTICAL/NON-ANALYTICAL DATA

IIIa. Inventories from Campaign and Analytical Information

Allen, G. K., 1976, *Estimated Inventory of Chemicals Added to Underground Waste Tanks, 1944 -1975*, ARH-CD-601B, Rev. 0, Atlantic Richfield Hanford Company, Richland, Washington.

- Contains major components for waste types and some assumptions. Purchase records are used to estimate chemical inventories.

Allen, G. K., 1975, *Hanford Liquid Waste Inventory as of September 30, 1974*, ARH-CD-229, Rev. 0, Atlantic Richfield Company, Richland, Washington.

- Contains major components for waste types and some assumptions.

Schmittroth, F. A., 1995, *Inventories for Low-Level Tank Waste*, WHC-SD-WM-RPT-164, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

- Contains a global inventory based on process knowledge and radioactive decay estimations using ORIGEN2. Pu and U waste contributions are taken at one percent of the amount used in processes. Also compares information on Tc-99 from both ORIGEN2 and analytical data.

Agnew, S. F., and J. G. Watkin, 1994, *Estimation of Limiting Solubilities for Ionic Species in Hanford Waste Tank Supernates*, LA-UR-94-3590, Los Alamos National Laboratory, Los Alamos, New Mexico.

- Gives solubility ranges for key chemical and radionuclide components based on supernatant sample analyses.

Field, J. G., and R. T. Winward, 199, *Preliminary Tank Characterization Report for Single-Shell Tank 241-T-201*, HNF-SD-WM-ER-726, Rev. 0, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

Field, J. G., and R. T. Winward, 1997, *Preliminary Tank Characterization Report for Single-Shell Tank 241-T-202*, HNF-SD-WM-ER-727, Rev. 0, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

Field, J. G., and R. T. Winward, 1997, *Preliminary Tank Characterization Report for Single-Shell Tank 241-T-203*, HNF-SD-WM-ER-728, Rev. 0, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

Field, J. G., and R. T. Winward, 1997, *Preliminary Tank Characterization Report for Single-Shell Tank 241-T-204*, HNF-SD-WM-ER-729, Rev. 0, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

- Contain initial inventory estimates for the T-200 series tanks.

IIIb. Compendium of Data from Other Physical and Chemical Sources

Hanlon, B. M., 1997, *Waste Tank Summary Report for Month Ending March 31, 1997*, HNF-EP-0182-*108*, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

- Contains a monthly summary of the following: fill volumes, Watch List tanks, occurrences, integrity information, equipment readings, equipment status, tank location, and other miscellaneous tank information.

Husa, E. I., 1993, *Hanford Site Waste Storage Tank Information Notebook*, WHC-EP-0625, Westinghouse Hanford Company, Richland, Washington.

- Contains in-tank photographs and summaries of the tank descriptions, leak detection systems, and tank status.

Husa, E. I., 1995, *Hanford Waste Tank Preliminary Dryness Evaluation*, WHC-SD-WM-TI-703, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

- Assesses relative dryness between tanks.

Klem, M. J., 1990, *Total Organic Carbon Concentration of Single-Shell Tank Waste*, (internal letter 82316-90-032 to R. E. Raymond, April 27), Westinghouse Hanford Company, Richland, Washington.

- Assesses total organic carbon content in single-shell tanks.

Kummerer, M., 1995, *Topical Report on Heat Removal Characteristics of Waste Storage Tanks*, WHC-SD-WM-SARR-010, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

- Assesses heat load using a heat transfer model and dome space temperature information.

Shelton, L. W., 1996, *Chemical and Radionuclide Inventory for Single- and Double-Shell Tanks*, (internal memorandum 74A20-96-30 to D. J. Washenfelder, February 28), Westinghouse Hanford Company, Richland, Washington.

- Contains a tank inventory estimate based on analytical information.

Van Vleet, R. J., 1993, *Radionuclide and Chemical Inventories for the Single-Shell Tanks*, WHC-SD-WM-TI-565, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

- Contains selected sample analysis tables prior to 1993 for single-shell tanks.

TWINS: Tank Waste Information Network System, PNNL, 1997, In: SYBASE version 4. Available: Hanford Local Area Network (HLAN), Fluor Daniel Hanford Inc. or TCP/IP access at http://twins.pnl.gov:8001/htbin/TCD/main.html

- Contains physical and analytical data for each of the 177 Hanford Site waste tanks.

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