# DOCUMENT RELEASE AND CHANGE FORM

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By Washington River Protection Solutions, LLC., PO Box 850, Richland, WA 99352
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DERIVATION OF BEST-BASIS INVENTORY FOR TANK 241-SY-101 AS OF OCTOBER 1, 2020

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8. **Description of Change and Justification**

This document reports the change in the best-basis inventory for tank 241-SY-101 for the first quarter of fiscal year 2021. This update incorporates an adjustment in the supernatant waste volume due to evaporation, and a correction to the supernatant PK vector spreadsheet.

9. **TBDs or Holds** ☒N/A

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| HNF-2978 | 05 | UPDATED PUMPABLE LIQUID VOLUME ESTIMATES AND JET PUMP DURATIONS FOR INTERIM STABILIZATION OF REMAINING SINGLE-SHELL TANKS |
| HNF-5177 | 00A | THE SETTLING AND COMPACTION OF NUCLEAR WASTE SLURRIES |
| RPP-10006 | 17 | Methodology and Calculations for the Assignment of Waste Groups for the Large Underground Waste Storage Tanks at the Hanford Site |
| RPP-15085 | 05C | PROCESS CONTROL PLAN FOR SALTCAKE DISSOLUTION RETRIEVAL DEMONSTRATION IN TANK 241-S-112 |
| RPP-19822 | 00A | HANFORD DEFINED WASTE MODEL - REVISION 5.0 |
| RPP-7625 | 14 | GUIDELINES FOR UPDATING BEST-BASIS INVENTORY |
| RPP-8847 | 01B | BEST-BASIS INVENTORY TEMPLATE COMPOSITIONS OF COMMON TANK WASTE LAYERS |
| RPP-CALC-64377 | 00 | Tank 241-SY-101 FY11 Q2 Supernatant Process Knowledge Vector Concentration Calculation |
| RPP-PLAN-60585 | 02 | Software Management Plan for Utility Calculation Software Tank Waste Volume Calculator |
| RPP-RPT-33822 | 00 | FINAL REPORT FOR TANK 102 GRAB SAMPLES COLLECTED IN APRIL 2007 IN SUPPORT OF 219-S TRANSFER |
| RPP-RPT-34606 | 00 | FINAL REPORT FOR TANK 241-SY-101 CORE 327 IN SUPPORT OF THE CORROSION MITIGATION COMPATIBILITY AND CRITICALITY SAFETY PROGRAMS |
| RPP-RPT-38804 | 00 | FINAL REPORT FOR TANK 102 GRAB SAMPLES COLLECTED IN JULY 2008 IN SUPPORT OF 219-S TRANSFER |
| RPP-RPT-43071 | 00 | 2009 AUTO-TCR FOR TANK 241-SY-101 |
| RPP-RPT-45839 | 00 | FINAL REPORT FOR TANK 102 GRAB SAMPLES COLLECTED IN FEBRUARY AND MARCH 2010 IN SUPPORT OF 219-S TRANSFER |
| RPP-RPT-49830 | 00 | FINAL REPORT FOR TANK 102 GRAB SAMPLES COLLECTED IN MAY 2011 IN SUPPORT OF 219-S TRANSFER |
| RPP-RPT-52568 | 00 | FINAL REPORT FOR TANK 102 GRAB SAMPLES COLLECTED IN APRIL 2012 IN SUPPORT OF 219-S TRANSFER |
| RPP-RPT-55489 | 00 | FINAL REPORT FOR TANK 102 GRAB SAMPLES COLLECTED IN JUNE 2013 IN SUPPORT OF 219-S TRANSFER |
| RPP-RPT-57238 | 00 | Final Report for Tank 102 Grab Samples Collected in March 2014 in Support of 219-S Transfer |

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13. **Related Documents** ☐N/A

| Document Number | Rev. | Title |
|---|---|---|
| RPP-RPT-59088 | 00 | FINAL REPORT FOR TANK 102 SAMPLES COLLECTED IN OCTOBER 2015 IN SUPPORT OF 219-S TRANSFER |
| RPP-RPT-59326 | 00 | FINAL REPORT FOR TANK 241-SY-101 GRAB SAMPLES IN SUPPORT OF WASTE COMPATIBILITY IN FISCAL YEAR 2016 |
| RPP-RPT-61303 | 04 | FINAL ANALYTICAL REPORT FOR TANK 241-SY-101 TBI GRAB SAMPLING 2018 |
| SVF-1141 | 00 | SPREADSHEET VERIFICATION RECORDS FOR SPREADSHEET SY 101 FY06 Q3 SUPERNATANT PK VECTOR REV 0.XLS |
| SVF-1246 | 00 | SPREADSHEET VERIFICATION RECORDS FOR SPREADSHEET SY101 FY07 Q1 SUPERNATANT PK VECTOR.XLS |
| SVF-1383 | 00 | SPREADSHEET VERIFICATION RECORDS FOR SPREADSHEET SY-101 FY08 Q1 JUNE 2007 RECONSTITUTED SALTCAKE PK VECTOR.XLS |
| SVF-1386 | 00 | SPREADSHEET VERIFICATION RECORDS FOR SPREADSHEET SY 101 FY08 Q1 SUPERNATANT PK VECTOR.XLS |
| SVF-1692 | 00 | SPREADSHEET VERIFICATION RECORDS FOR SPREADSHEET SY101 FY09 Q2 SUPERNATANT PK VECTOR REV 0.XLS |
| SVF-2046 | 00 | SY101 FY11 Q2 SUPERNATANT PK VECTOR REV 0.XLSX |
| WHC-SD-WM-DTR-026 | 00 | LABORATORY CHARACTERIZATION OF SAMPLES TAKEN IN DECEMBER 1991 WINDOWE FROM HANFORD WASTE TANK 241-SY-101 |

14. **Distribution**

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**RPP-RPT-48774**
**Revision 4**

# Derivation of Best-Basis Inventory for Tank 241-SY-101 as of October 1, 2020

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**Abbreviations and Acronyms**

| | |
|---|---|
| BBI | Best-Basis Inventory |

| | |
|---|---|
| HDW | Hanford Defined Waste |
| NA | Waste type not specified |
| PCBs | Polychlorinated biphenyls |
| PK | Process knowledge |
| S2-SltSlr | Saltcake from the second 242-S Evaporator campaign using tank 241-SY-102 feed |
| TWINS | Tank Waste Information Network System |

**Units**

| | |
|---|---|
| Ci | Curie |
| ft | foot |
| g | gram |
| in. | inch |
| kg | kilogram |
| kgal | kilogallons (1,000 gallons) |
| kL | kiloliter |
| mL | milliliter |
| wt% | weight percent |
| µCi or uCi | microcurie |
| µg or ug | microgram |

# 1.0 INTRODUCTION

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

Development and maintenance of the BBI is an ongoing effort. This BBI update incorporates an adjustment of the supernatant volume due to a 219-S dilute waste addition and a correction to the process knowledge (PK) vector for the tank 241-SY-101 supernatant. As a result, an evaluation of the BBI for tank 241-SY-101 as of October 1, 2020, was performed and is documented in the following text.

# 2.0 DERIVATION OF BEST-BASIS INVENTORY

The following data were used as input for tank 241-SY-101 BBI:

- Mean analytical results based on the liquid grab samples taken in February 2016 (RPP-RPT-59326, *Final Report for Tank 241-SY-101 Grab Samples in Support of Waste Compatibility in Fiscal Year 2016*). See the means and confidence intervals report in Appendix B of Revision 2 of this report.

- Mean analytical results (see RPP-RPT-43071, *2009 Auto-TCR for Tank 241-SY-101*) from analysis of core sample data from June 2007 (RPP-RPT-34606, *Final Report for Tank 241-SY-101, Core 327, in Support of Corrosion Mitigation, Compatibility and Criticality Safety Programs*).

- Mean analytical results in RPP-RPT-43071 from analysis of grab sample data from April 2000 (HNF-1702, *Tank 241-SY-101 Grab Samples, 1SY-00-1, 1SY-00-2, 1SY-00-3, 1SY-00-4 and 1SY-00-5 Analytical Results for the Final Report*) and June 2000 (HNF-6050, *Tank 241-SY-101 Grab Samples, 1SY-00-6, 1SY-00-7, 1SY-00-8, 1SY-00-9 and 1SY-00-10 Analytical Results for the Final Report*) following waste dilution and transfer activities.

- BBI templates for saltcake from the second 242-S Evaporator campaign using tank 241-SY-102 feed (S2-SltSlr) (RPP-8847, *Best-Basis Inventory Template Compositions of Common Tank Waste Layers*).

- Carbon-14, Selenium-79, Niobium-93m, and Zirconium-93 saltcake solids inventory estimates based on 1991 core composite samples (WHC-SD-WM-DTR-026, *Laboratory Characterization of Samples Taken in December 1991 (Window E) from Hanford Waste Tank 241-SY-101*), dilution and transfer history.

- Results of polychlorinated biphenyl (PCB) analyses of an archived composite from the June 2000 saltcake grab samples (HNF-7445, *Polychlorinated Biphenyl Baseline Project 2001 Analytical Results for the Final Report*).

- Process knowledge of waste transferred to and from tank 241-SY-101 through January 1, 2011 (RPP-CALC-64377, *Tank 241-SY-101 FY11 Q2 Supernatant Process Knowledge Vector Concentrations Calculation*), including the following sample data:

  - Mean analytical results (see SVF-1246, *Spreadsheet Verification Form for SY101 FY07 Q1 supernatant PK Vector Rev 0.x*ls) for supernatant grab samples taken in January 2006 (External letter 06-ATL-018 Reissue, "Reissued Final Letter Report for Tank 241-SY-101 Grab Samples in Support of Cross Site Transfer").

  - Mean analytical results (see SVF-1386, *Spreadsheet Verification Form for SY101 FY08 Q1 Supernatant PK Vector Rev 0.x*ls) for grab samples taken in March 2006 (External letter 06-ATL-057 Reissue 1, "Reissue: Final Report for Tank 102 Grab Samples Collected in March 2006 in Support of 219-S Transfer").

  - Mean analytical results (see SVF-1692, *Spreadsheet Verification Form* for *SY101 FY09 Q2 Supernatant PK* Vector Rev 0.xls) for TK-102 grab samples taken in April 2007 (RPP-RPT-33822, *Final Report for Tank TK-102 Grab Samples Collected in April 2007 in Support of 219-S Transfer*) and July 2008 (RPP-RPT-38804, 2008, *Final Report for Tank 102 Grab Samples Collected in July 2008 in Support of 219-S Transfer*).

  - Mean analytical results (see SVF-2046, *Spreadsheet Verification Form for SY101 FY11 Q2 Supernatant PK Vector.xlsx*) for TK-102 grab samples taken in February and March 2010 (RPP-RPT-45839, *Final Report for Tank TK-102 Grab Samples Collected in February and March 2010 in Support of 219-S Transfer*).

Table 2-1 is a summary of how the BBI for tank 241-SY-101 was derived.

**Table 2-1. Tank 241-SY-101 Best-Basis Inventory Source Data.**

| Waste Phase | Waste Type | Applicable Concentration Data[1] | Associated Density (g/mL) | Multiplier | Associated Volume[3] |
|---|---|---|---|---|---|
| Supernatant (Upper Layer) | NA[4] (Upper Liquid Layer) | SY-101 Upper Supernatant Layer Grabs (S/SY101/018) | 1.13 | 1.005 | 2,804 kL (741 kgal) |
| | | SY-101 1-1-2011 Supernatant PK Vector (P/SY101/025) | 1.13 | 0.991 | |
| Supernatant (Lower Layer) | NA (Lower Liquid Layer) | SY-101 Lower Supernatant Grab Samples (S/SY101/019) | 1.18 | 1.000 | 568 kL (150 kgal) |
| | | SY-101 1-1-2011 Supernatant PK Vector (P/SY101/025) | 1.13 | 1.000 | |
| Saltcake (Liquid & Solid)[2] | S2-SltSlr (Solid) | June 2007 Reconstituted Core 327 (P/SY101/019) | 1.66 | 1.000 | 773 kL (204 kgal) |
| | | April/June 2000 centrifuged grab solids (S/SY101/012) | 1.52 | 1.000 | |
| | | $^{14}C$, $^{79}Se$, $^{93m}Nb$, and $^{93}Zr$ 1991 Solid Core (P/SY101/005) | 1.52 | 1.000 | |
| | | SY-101 Saltcake PCBs (S/SY101/015) | 1.52 | 1.000 | |
| | | S2-SltSlr Solid Template (TS/U204/024) | 1.63 | 0.915 | |
| Retained Gas – Saltcake | NA | Supernatant Water (P/U107/004) | N/A | 1.000 | 72 kL (19 kgal) |
| Total tank volume[3] | | | | | 4,217 kL (1,114 kgal) |

Notes:
[1]Vector handles, shown in parentheses, are unique serial identifiers for the vectors used in the Best-Basis Inventory Maintenance database.
[2]The interstitial liquid volume included with the saltcake is calculated to be 203 kL (54 kgal) assuming a porosity of 0.24.
[3]The summation of the waste layers in kgal may not exactly match the total waste volume due to rounding.
[4]NA = Waste Type Not Defined

## 2.1 WASTE HISTORY

The SY Tank Farm was built between 1974 and 1976 in the 200 West area. The SY tank farm consists of three 4,391 kL (1,160 kgal) tanks, and is the only double-shell tank farm in the 200 West area. The SY Tank Farm does not use a cascade system between tanks. Tank 241-SY-101 was originally designed for use as a concentrated waste holding tank. It consists of a reinforced concrete shell with two (inner and outer) carbon steel liners on the bottom and sides. Twenty-four risers provide access to the tank, while 34 risers provide access to the annulus between the two tank liners. The following process history information was taken from LA-UR-97-311, *Waste Status and Transaction Records Summary*, WHC-EP-0576, *Assessment of Gas Accumulation and Retention*, WHC-EP-0517, *Evaluation of the Generation and Release of Flammable Gases in Tank 241-SY-101*, and PNNL-13000, *Retained Gas Sampling Results for the Flammable Gas Program*.

Tank 241-SY-101 entered service in 1977. In April 1977, the tank received double-shell slurry from the 242-S Evaporator. In the fourth quarter of 1977, the tank received Concentrated Complexant waste from tank 241-SY-102. During 1978, tank 241-SY-101 received supernatant from tanks 241-A-106, 241-SX-106, and 241-U-111. These additions nearly filled tank 241-SY-101 by October 1980. From that time, only water and dilute lab waste was added to the tank, until pumping campaigns in late 1999 and early 2000 removed waste.

After waste was added to tank 241-SY-101, the waste began to exhibit slurry growth, causing an increase in the overall waste volume. After 1980 slurry growth continued and was coupled with episodic volume decreases as large volumes were released in gas release events. An explanation of the mechanisms of gas accumulation and release in tank 241-SY-101 can be found in WHC-EP-0576, WHC-EP-0517, and WHC-SA-1364, *Understanding of Cyclic Venting Phenomena in Hanford Site High-Level Waste Tanks: The Evaluation of Tank 241-SY-101*.

A strategy was developed to mitigate the slurry growth and gas release events that included transfers from the convective slurry and back dilutions of water. These transfers and back dilutions were done in three campaigns, which took place on 12/18/99-12/19/99, 1/25/00-1/27/00, and 2/29/00-3/2/00. Following each of the transfers, back dilutions were made to the top and bottom of the waste. A total of 2,332 kL (616 kgal) were transferred, of which 1,987 kL (525 kgal) were “original” tank 241-SY-101 waste (internal memorandum 74B50-00-030, “Tank 241-SY-101 Final Calculated Transfer and Dilution Volumes for Level Growth Remediation”). Tank 241-SY-101 is listed as sound and is actively ventilated.

As of the January 1, 2001, BBI baseline, only a supernatant layer and a saltcake layer existed in tank 241-SY-101. The former crust layer had been put into solution through back dilutions of water. The three dilution and waste transfer operations between December 1999 and March 2000 removed more than 520,000 gallons of waste from the tank and added 434,000 gallons of dilution water (internal memorandum 74B50-00-030). The inventory previously in the crust layer is now included in the supernatant and saltcake inventory. Since the January 1, 2001 BBI baseline the supernatant has been removed and replaced five times. From September 30, 2003, to October 3, 2003, 241-SY-101 received 220 kgal of retrieval liquid from 241-S-112. The recent transfer history includes supernatant transfers from tank 241-SY-102 in February and March 2007. Supernatant transfers from tank 241-SY-101 to tank 241-AP-101 in

February 2007 and to tank 241-AY-101 in March 2007. A transfer of 3 kgal of dilute waste from 219-S was received in July 2007, 4 kgal of 219-S waste in 2008, 1.5 kgal of 219-S waste in 2010, 5.5 kgal of 219-S waste in 2011, 3.4 kgal of 219-S waste in 2012, 0.72 kgal of UX-302-A waste in 2012, and a total of 5.8 kgal of 219-S waste in 2014. Tank 241-SY-101 also received a transfer of 0.4 kgal of 219-S dilute waste in February 2018 and 2.5 kgal in March 2018 (TO-430-080, "TSR Compliance Data Sheet for Transfer from 219-S TANK-102 to 241-SY-101"). In August 2020, tank 241-SY-101 received a transfer of 3.4 kgal of 219-S dilute waste (TO-430-080, "Data Sheet 1 – 241-SY Start/Final Material Balance"). The waste type listed in Table 2-1 for the saltcake was taken from process knowledge and revision 4 of the Hanford Defined Waste (HDW) model (LA-UR-96-3860, *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4*). No waste type was assigned to the supernatant because of the diverse sources of the transfers to tank 241-SY-101.

## 2.2 WASTE VOLUMES

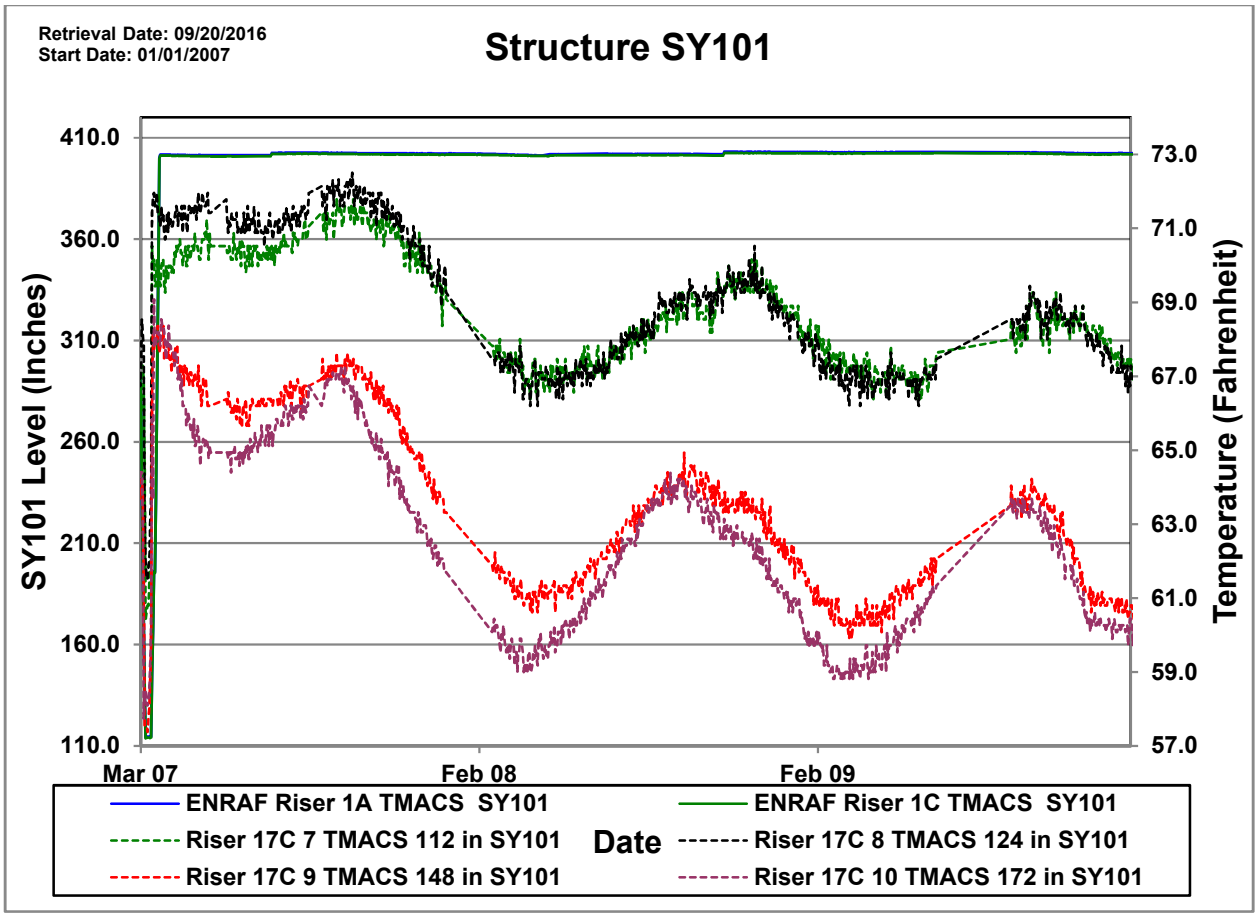
The total waste volume of 4,217 kL (1,114 kgal) for tank 241-SY-101 is based on a surface level of 405.30 inches measured on September 29, 2020, as it was the measurement date closest to the BBI effective date of October 1, 2020 [PI Data Link®[1], queried 10/06/2020, Compressed Data, SY-101-WST-LI-101, Start: 06/01/2020, End: 10/05/2020, Bounding Type: Inside, Date & Time: 09/29/2020 08:51:57, Value: 405.29999 in]. The total waste volume volume was calculated per RPP-PLAN-60585, *Software Management Plan for Utility Calculation Software Tank Waste Volume Calculator*.

Solids level data consists of two zip cord measurements of 84.54 inches taken January 15, 2006 from riser 6 and 83.12 inches taken February 25, 2016 from riser 21, [Tank Waste Information Network System (TWINS), Queried 09/06/16 (*Level/Temp, Sludge Level, Tank Name: SY-101, Measurement Date: 1/1/06 to 5/30/07, Sensor Type: Zipcord, Date: 1/15/06, 84.54*)] (Work Package #181589, see Appendix B) as well as two Enraf®[2] displacer measurements of 80.87 inches taken October 16, 2007, from riser 1 and 77.31 inches taken May 14, 2008 from riser 2 (CLO-WO-07-1770, *241-SY WST ENRAF LIT CAL/FUNC*, CLO-WO-08-0437, *241-SY WST ENRAF LIT CAL/FUNC*). The average saltcake height indicated by these measurements was 81.46 inches. The saltcake height is equivalent to 845 kL (223 kgal) per RPP-PLAN-60585. The previous solids level estimate included two gamma liquid observation well sludge level measurements both from February 9, 2006, of 105 inches from riser 19 and 105.1 inches from riser 18 (TWINS, Queried 09/06/16 (*Level/Temp, Sludge Level, Tank Name: SY-101, Measurement Date: 1/1/06 to 5/30/06, Sensor Type: Gamma, Dates: 2/9/06, 34.351 and 35.341 ft.*). These values are now thought to be outliers and are not included in the solids level average since grab sample 1SY-15-07 was taken at a height of 93.12 inches and contained no solids. Even though the solids volume has decreased since 2007 core sampling, the concentration remains unchanged because the volume decrease is a result of a decision of not to use the gamma liquid observation well measurements, not a solids compaction; therefore, no multiplier is applied to the 2007 core sample solids.

[1] PI DataLink® is a registered trademark of OSIsoft, LLC, San Leandro, California.
[2] Enraf® is a registered trademark of Honeywell International Inc., Morristown, New Jersey

Tank 241-SY-101 shows signs of layering in the supernatant waste phase. Analytical results suggest samples 1SY-15-01 through 1SY-15-05 from the 2016 grab sampling event are in a separate supernatant layer than samples 1SY-15-06 and 1SY-15-07. Sample 1SY-15-05 was taken at a height of 197.07 inches in the tank and sample 1SY-15-06 was taken at 103.12 inches. The separation of layers occurs somewhere within this range. Temperature data was analyzed to further confirm the separation of supernatant layers and hone in on the point of separation. Figure 2-1 shows a graph of thermocouple temperature data from riser 17C (SACS, Queried 09/20/16 (*Level/Temp, Tank Temperature Readings, Measurement Date: 03/01/2007 to 01/01/2010, Sensor Type: Riser 17C Thermocouple Tree)*. A large temperature jump in the graph forms two groupings, one at and below the 124-inch thermocouple, and another at or above the 148-inch thermocouple. Taking the average height between the two thermocouples, the upper and lower supernatant layers are estimated to separate at a height of about 136 inches in the tank. The 136-inch boundary between layers corresponds to waste volume of 1,413 kL (373 kgal) for the saltcake and lower supernate. Subtracting the volume at the layer boundary from the total waste volume, the volume of the upper supernatant layer is 2,804 kL (4,217 kL total – 1,413 kL boundary = 2,804 kL). Similarly, subtracting the volume corresponding to the solids level from the layer boundary results in a lower supernatant volume of 568 kL (150 kgal) (1,413 kL boundary – 845 kL solids level = 568 kL).

**Figure 2-1. 241-SY-101 Temperature Data**



During the 1998/1999 sampling event, retained gas data were taken with a Retained Gas Sampler. This information is no longer representative of the waste, and a later estimate for retained gas in the saltcake layer is 8.5% by volume (RPP-10006, *Methodology and Calculations for the Assignment of Waste for the Large Underground Waste Storage Tanks at Hanford Site*). The volume of the retained gas (and to a lesser extent the saltcake volume itself) is highly dependent on hydrostatic pressure and consequently will change as the volume and/or density of the supernatant changes as the result of waste transfers. For simplicity, the BBI will assume the saltcake and associated gas volumes are unchanged unless measurements or analytical data clearly indicate significant saltcake precipitation or dissolution. Therefore, of the 845 kL (223 kgal) of total saltcake, 72 kL (19 kgal) is estimated to be retained gas (845 kL * 0.085 = 72 kL). No inventory was attributed to the retained gas. By subtraction, the settled solids portion of the saltcake layer is 773 kL (204 kgal) (845 kL – 72 kL = 773 kL).

The concentrations and volumes provided for the saltcake represent both solids and interstitial liquids. Assuming an average in tank saltcake drainable porosity of 0.24 (HNF-2978, *Updated Pumpable Liquid Volume Estimates and Jet Pump Durations for Interim Stabilization of Remaining Single-Shell Tanks*) the volume of interstitial liquid present in the saltcake is estimated to be 203 kL (54 kgal) (845 kL × 0.24 = 203 kL).

## 2.3 SALTCAKE INVENTORY

The saltcake layer was most recently sampled in June 2007 by core sampling. Segments 18 and 21 from core 327 were analyzed in support of the corrosion mitigation and waste compatibility programs. Aliquots from both segments were centrifuged and interstitial liquid and centrifuged solids fractions were assayed separately. The chemical and radionuclide composition of the liquid and solid fractions from the two segments were very similar. Thus, although only about 50% of the saltcake layer was sampled, the analytical results from the reconstituted sample are considered representative of the entire saltcake layer. The centrifuged solids and centrifuged liquid concentrations were recombined using an average wt% centrifuged solids of 77.1 wt% calculated from the measured mass of the centrifuged solid and liquid sample phases. The derivation of the June 2007 Reconstituted Core 327 vector is found in SVF-1383, *SY-101 FY07 Q1 June 2007 Reconstituted Saltcake PK vector.xls*.

Because the grab samples were taken in April of 2000 shortly after the tank contents were mixed by a number of mixer pump runs, significant quantities of solids were found in the samples. All solid and liquid grab samples were centrifuged and analyzed to account for the solid and liquid inventories discretely. Therefore, the analyzed samples were assumed to be representative of both solids and supernatant. A rule-of-thumb for settling solids is to assume the centrifuged solids properties are a more reasonable approximation of the final in-tank conditions than are the laboratory settled solids properties. Experimental results for the settling of simulated nuclear waste slurries in a 30-foot column (HNF-5177, *The Settling and Compaction of Nuclear Waste Slurries*) tend to validate this assumption. Therefore, no correction factor was applied to the centrifuged solids results.

With the exception of data for a few radionuclides, none of the data from core sampling events prior to April 2000 were used in this BBI because all of the BBI-relevant analytes measured in

those events predate recent dilution and transfer history. Estimated radionuclide concentrations for $^{14}C$, $^{79}Se$, $^{93m}Nb$ and $^{93}Zr$ based on December 1991 core sample analytical data, have been included for use in the waste process modeling effort because more recent data are unavailable. Data from previous core sampling events were assessed to ensure proper component ratios resulting from the April 2000 grab samples. Additional discussion of these radionuclides is provided at the end of the text. All measurements were made on bulk samples except the analyses for some of the radionuclide species, e.g., $^{99}Tc$, in the convective slurry, which were done on centrifuged fractions. Centrifuged fraction data for such analytes were combined according to weighting factors based on the liquid and solid weight percents in the bulk sample.

Where possible, data from the June 2007 Reconstituted Core 327 were used to characterize the saltcake followed by the April 2000 and June 2000 grab sample results. The June 2000 grab samples were analyzed for physical properties only. Estimates for $^{14}C$, $^{79}Se$, $^{93m}Nb$, and $^{93}Zr$ were derived from the 1991 core sample data. For analytes with no sampling data or analytes with large less-than values from analysis, values from the S2 salt slurry (S2-SltSlr) template were used. Templates are based on sampling data from tanks containing the same waste type as tank 241-SY-101, supplemented with *Hanford Defined Waste Model – Revision 5*, RPP-19822 data. A multiplier was used to scale the template vectors to the sample data using sample weight percent water results and densities. The multiplier for the S2-SltSlr solids template was 0.915, as determined from the June 2007 Reconstituted Core 327 calculated weight percent water 41.5 percent and density of 1.66 g/mL. A more detailed description of template data is found in RPP-8847.

## 2.4 SUPERNATANT INVENTORY

Supernatant grab samples were taken from tank 241-SY-101 on November 15, 2018, as directed in RPP-PLAN-62774, *Tank 241-SY-101 Grab Sampling and Analysis Plan in Support of Test Bed Initiative- Phase 2.* Three grab samples (1SY-18-01, 1SY-18-02, and 1SY-18-03) and a field sample duplicate (1SY-18-01DUP) were obtained during this sampling event. All samples were collected from a single location, approximately 40 inches below the waste surface. Samples 1SY-18-01 and 1SY-18-01DUP were designated for analysis, sample 1SY-18-02 was obtained as contingency to ensure sufficient material was available for analysis, and sample 1SY-18-03 was used to complete a Phosphate Cooling Test to determine whether solids precipitation would occur under specific temperatures. Analytical results were presented in report RPP-RPT-61303, *Final Analytical Report for Tank 241-SY-101 TBI Grab Sampling 2018,* and Phosphate Cooling Test results were reported in WRPS-18-05275, *Test Results for Tank 241-SY-101 Cooling Test in Support of Test Bed Initiative-Phase 2.*

After an evaluation of the sample results obtained from the November 2018 sampling event, it was determined these samples were not representative of the overall waste contained in tank 241-SY-101 for the following reasons:

- The results were reported only for sample (1SY-18-01) and duplicate (1SY-18-01DUP).
- Samples were taken only from one location within the supernatant column (40 inches below the surface).

Therefore, the analytical results from the November 2018 grab samples were not incorporated in the inventory at the time of this BBI update.

Supernatant grab samples were obtained from tank 241-SY-101 on February 25, 2016, in support of the waste compatibility program. Ten samples were taken within the tank; nine supernatant samples (1SY-15-01, 1SY-15-01DUP, 1SY-15-02, 1SY-15-03, 1SY-15-04, 1SY-15-05, 1SY-15-06, 1SY-15-06A, and 1SY-15-07) and one field blank taken about 24 inches above the supernatant waste layer (1SY-15-01FB). All supernatant samples are described as yellow liquid, with no visible solids and no organic layer. Evidence of liquid layering can be seen in the bottom portion of the supernatant phase by analysis of $^{89/90}Sr$, $^{137}Cs$ and nitrite in the various samples taken at increasing supernatant depths. The supernatant waste phase was separated into upper and lower supernatant waste layers based on the composition and temperature data from the grab samples, and thermocouple readings (see section 2.2).

The supernatant grab sample results for tank 241-SY-101 from February 25, 2016, are the preferred data for the supernatant upper and lower waste phases. The surface level as of February 25, 2016, was 406.51 inches (Work Package #181589, see Appendix B) resulting in a total volume of 4,230 kL (1,118 kgal) per RPP-PLAN-60585. Subtracting the solids and lower supernatant volume from the total waste volume results in an upper supernatant value at the time of sampling of 2,817 kL (744 kgal) (4,230 kL- 845 kL - 568 kL = 2,817 kL). The current upper supernatant volume as of October 1, 2020 is 2,804 kL (741 kgal). This change in the upper supernatant layer volume required the adjustment of the sample concentrations using a multiplier of 1.005 (2,817 kL / 2,804 kL). No evaporation or volume change occurred to the lower supernatant layer, so no multiplier was applied. For chemical and radionuclide components not analyzed, or results less representative according to data hierarchical rules in RPP-7625, *Guidelines for Updating Best-Basis Inventory*, data from a PK vector was used (see section 2.4.1).

### 2.4.1 DERIVATION OF SUPERNATANT PROCESS KNOWLEDGE VECTOR

The supernatant PK vector concentrations are derived in RPP-CALC-64377. The starting point for the supernatant PK calculations was the April 1, 2005 BBI calculation detail report. The supernatant PK vector in previous BBI updates was derived from calculations in SVF-2046, which also started with the April 1, 2005 BBI calculation detail report. However, a review of SVF-2046 revealed the qualifier designating some concentrations as reported detection limits in the April 1, 2005 BBI calculation detail report had not been reported in the spreadsheet. The analyte concentrations in the supernatant PK vector generated from RPP-CALC-64377 have the correct qualifiers, otherwise the concentrations remain the same.

The concentration of each constituent in the PK vector was determined by converting the concentrations of each waste stream to total constituent mass, then adding the constituent masses from each waste stream together. The concentration was then calculated by dividing this total constituent mass by the current supernatant volume. Flush and dilution water were assumed to be pure water. The mass of each waste type was determined from incoming volumes and estimated specific gravities. Flush water was assigned a specific gravity of 1 g/mL. This estimate was re-baselined to the January 2006 mean grab sample analytical results and the 2007

core sample results for the SY-101 supernatant (external letter 06-ATL-018 and RPP-RPT-34606 respectively). The material balance incorporates:

- The May 2006 supernatant transfers to tank 241-AP-107 and from tank 241-SY-102.
- The August-September 2006 and July 2007 supernatant waste transfers from the 219-S tank system (external letter 06-ATL-057 and RPP-RPT-33822 respectively).
- The February-March 2007 supernatant transfers from SY-102, the February 2007 supernatant transfer to 241-AP-101, and the March 2007 supernatant transfer to tank 241-AY-101, and November 2008 supernatant transfer to tank 241-SY-101.
- The 2008 and 2009 219-S supernatant waste additions to 241-SY-101.
- The September 2010 supernatant waste transfer from 219-S to tank 241-SY-101.
- Evaporative water loss as determined by tank level measurement.

For 219-S transfers to tank 241-SY-101 after the January 2011 PK vector effective date, the 219-S liquid was sampled and the analytical results are reported in RPP-RPT-49830, *Final Report for Tank 102 Grab Samples Collected in May 2011 in Support of 219-S Transfer*, RPP-RPT-52568, *Final Report for Tank 102 Grab Samples Collected in April 2012 in Support of 219-S Transfer*, RPP-RPT-55489, *Final Report for Tank 102 Grab Samples Collected in June 2013 in Support of 219-S Transfer*, RPP-RPT-57238, *Final Report for Tank 102 Grab Samples Collected in March 2014 in Support of 219-S Transfer* and RPP-RPT-59088, *Final Report for Tank 102 Grab Samples Collected in October 2015 in Support of 219-S Transfer.* The results for all 219-S samplings indicate the liquid transferred was extremely dilute (> 96 wt% water). Sampling events from Tank 102 (containing 219-S waste) have not been performed since 2015.

The 241-SY-101 upper supernatant inventories from the process knowledge vector were adjusted for evaporation and dilution from tank transfers. The 2011 process knowledge vector is based on a surface level of 402.75 inches, resulting in a total waste volume of 4,191 kL (1,107 kgal) per RPP-PLAN-60585. Subtracting the solids and lower supernatant volume from the total waste volume results in an upper supernatant value of 2,778 kL (4,191 kL - 845 kL - 568 kL = 2,778 kL) as of January 1, 2011.

A multiplier of 0.991 (2,778 kL / 2,804 kL) is applied to the supernatant process knowledge vector to reflect the upper supernatant volume change from January 1, 2011, to October 1, 2020. Additions and evaporation are assumed to only affect the upper supernatant layer.

## 2.5 DENSITIES/WEIGHT PERCENT WATER

**Table 2-2. Tank 241-SY-101 Best-Basis Inventory Component Density and Wt% Water.**

| Waste Phase | Waste Type | Component Density (g/mL) | Component Wt% Water | Source |
|---|---|---|---|---|
| Supernatant | NA (Upper Liquid Layer) | 1.13 | 84.0% | February 25, 2016 supernatant grab sample results adjusted for water additions and evaporation. |
| Supernatant | NA (Lower Liquid Layer) | 1.18 | 77.4% | February 25, 2016 supernatant, grab sample results. |
| Saltcake (liquid and solid) | S2-SltSlr (Solid) | 1.66 | 41.5% | June 2007 Reconstituted Core 327 |

The component density and weight percent values assigned to the upper supernatant waste phase were adjusted to account for evaporation and dilute waste additions from the time of sampling (February 25, 2016) to the time of this BBI update (as of October 1, 2020). The following equations were used for the density and weight percent water adjustments.

$$\rho_2 = \frac{(V_1 * \rho_1) + \left([V_2 - V_1] * 1.00 \frac{g}{mL}\right)}{V_2}$$

$$wt\%water_2 = \frac{(V_1 * \rho_1 * wt\%water_1) + \left([V_2 - V_1] * 1.00 \frac{g}{mL} * 100\ wt\%\right)}{V_2 * \rho_2}$$

Where:
$V_1$ is the volume of supernatant at the initial point (1), as of February 25, 2016.
$\rho_1$ is the density of the supernatant at the initial point (1), as of February 25, 2016, 1.13 g/mL.
$V_2$ is the volume of supernatant at a latter point (2), as of October 1, 2020
1.0 g/mL is the density of water, and
$\rho_2$ is the density for this latter point (2), as of October 1, 2020
wt% water: is the weight percent water.

$$1.13\ g/mL = \frac{(2{,}817\ kL * 1.13\ g/mL) + \left([2{,}804\ kL - 2{,}817\ kL] * 1.00 \frac{g}{mL}\right)}{2{,}804\ kL}$$

$$84.0\ \% = \frac{\left(2{,}817\ * 1.13 \frac{g}{mL} * 84.0\ wt\%\right) + \left([2{,}804\ kL - 2{,}817\ kL] * 1.00 \frac{g}{mL} * 100\ wt\%\right)}{2{,}804\ kL * 1.13\ g/mL}$$

Evaporation and dilute waste additions did not affect the component density and component wt% water.

## 3.0 DEVELOPMENT OF THE BBI

The sample-based inventories in this BBI were developed in accordance with the BBI rules in RPP-7625 except as noted below. All inventory calculations were performed using the Best-Basis Inventory Maintenance Tool. The updated BBI values for tank 241-SY-101 can be found in the *Best-Basis Calculation Detail Report* and the *Best-Basis Calculation Detail-Supplemental Analytes report* in TWINS. Both reports are included in Appendix A in a condensed form. Radionuclides in these reports are decay corrected to July 1, 2015. Unique data treatments are discussed below by analyte.

**Alpha-emitting isotopes:** Data from analysis June 2007 core sample for UTOTAL, uranium isotopes, $^{239/240}$Pu, and $^{241}$Am were used in conjunction with the template isotope distribution to derive inventories for the saltcake. For the supernatant, the uranium and alpha-emitting isotopes from the February 2016 supernatant sample results using the isotopic distribution of the process knowledge vector were used.

**Radionuclides:** The $^{14}$C, $^{79}$Se, $^{93m}$Nb, and $^{93}$Zr solids concentration estimates have been derived for tank 241-SY-101 by using the analytical data from the December 1991 liquid and solids samples and adjusting for dilution and transfer of the waste. For $^{14}$C, $^{79}$Se, and $^{93m}$Nb, the total inventory was adjusted for the dilutions and transfers, and then the inventory was divided into the liquid and solids phases. The inventories for liquid phases are no longer used because more recent sample data is available. The $^{14}$C concentrations were derived by proportioning the diluted/transfer-adjusted value to the total inorganic carbon values measured in the liquid and solid phases during the April/June 2000 grab sample event. Selenium-79 and $^{93m}$Nb were proportioned between phases based on the mean weight percent water results from the April/June 2000 grab sample event following the dilution and transfer adjustment. Zirconium-93 was estimated from the $^{93m}$Nb daughter radionuclide. The $^{129}$I and $^{237}$Np analytical results for the solids were below detection limits and were not used because the detection limits were too high to provide reasonable inventory estimates.

**PCBs:** Total PCB inventory is estimated per guidelines established in RPP-7625. The PCB concentration of the supernatant layers is based on the January 2011 supernatant process knowledge vector (< 0.00261 µg/mL), adjusted for waste transfers. A total PCB concentration of < 0.136 µg/g (wet weight) was calculated for the saltcake from an assay of an archived April/June 2000 sample. The analytical result was adjusted for water content, [< 0.27374 µg/g (dry basis) × (100 wt% – 50.4 wt%) / 100 wt%] (HNF-7445). Sample densities from the April/June 2000 centrifuged grab solids were applied to the saltcake PCB vector.

**Samarium 151 (Sm-151):** Result for Sm-151 in the supernatant layers was calculated from the AMU-151 laboratory results, using the specific activity for Sm-151(26.3 Ci/g) (RPP-7625).

## 4.0 SUMMARY OF CHANGES

This update incorporates a supernatant volume change due to a transfer from 219-S, and a correction to the supernatant PK vector. The total tank waste volume has increased from 4,213 kL (1,113 kgal) to 4,217 kL (1,114 kgal) comprised of 773 kL (204 kgal) of saltcake, 72 kL (19 kgal) of retained gas, 568 kL (150 kgal) lower layer supernatant, and 2,804 kL (741 kgal) of upper layer supernatant.

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# APPENDIX A: CONDENSED BEST BASIS CALCULATION DETAIL REPORTS FOR TANK 241-SY-101 PRIMARY AND SUPPLEMENTAL ANALYTES

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| Ag | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 4.64E+00 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 3.61598 ug/g * 0.001 * 1 |
| Ag | Supernatant | NA (Lower Layer Liquid) | < | 6.31E-01 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 0.983169 ug/g * 0.001 * 1 |
| Ag | Supernatant | NA (Upper Liquid Layer) | < | 3.09E+00 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.983169 ug/g * 0.001 * 0.991 |
| Al | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.66E+04 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 36287.1 ug/g * 0.001 * 1 |
| Al | Supernatant | NA (Lower Layer Liquid) | | 2.18E+03 | kg | 2.16E+00 | Sample | 1.18 g/ml * 568 kL * 3253.9 ug/g * 0.001 * 1 |
| Al | Supernatant | NA (Upper Liquid Layer) | | 1.01E+04 | kg | 2.17E+00 | Sample | 1.13 g/ml * 2804 kL * 3164.17 ug/g * 0.001 * 1.005 |
| As | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 5.57E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 43.3916 ug/g * 0.001 * 1 |
| As | Supernatant | NA (Lower Layer Liquid) | < | 7.47E+00 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 11.6419 ug/g * 0.001 * 1 |
| As | Supernatant | NA (Upper Liquid Layer) | < | 3.66E+01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 11.6419 ug/g * 0.001 * 0.991 |
| B | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 5.44E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 42.396 ug/g * 0.001 * 1 |
| B | Supernatant | NA (Lower Layer Liquid) | | 7.83E+00 | kg | 7.37E+00 | Sample | 1.18 g/ml * 568 kL * 11.6869 ug/g * 0.001 * 1 |
| B | Supernatant | NA (Upper Liquid Layer) | | 2.07E+01 | kg | 5.13E+00 | Sample | 1.13 g/ml * 2804 kL * 6.48536 ug/g * 0.001 * 1.005 |
| Ba | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.73E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 13.5126 ug/g * 0.001 * 1 |
| Ba | Supernatant | NA (Lower Layer Liquid) | | 5.86E-01 | kg | 2.33E+00 | Sample | 1.18 g/ml * 568 kL * 0.873941 ug/g * 0.001 * 1 |
| Ba | Supernatant | NA (Upper Liquid Layer) | < | 2.82E+00 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 0.884956 ug/g * 0.001 * 1.005 |
| Be | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 9.40E-01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 0.732394 ug/g * 0.001 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| Be | Supernatant | NA (Lower Layer Liquid) | < | 1.25E-01 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 0.194337 ug/g * 0.001 * 1 |
| Be | Supernatant | NA (Upper Liquid Layer) | < | 6.10E-01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.194337 ug/g * 0.001 * 0.991 |
| Bi | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 2.86E+01 | kg | | Template Engineering | 1.63 g/ml * 773 kL * 24.8 ug/g * 0.001 * 0.915 |
| Bi | Supernatant | NA (Lower Layer Liquid) | < | 7.61E+00 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 11.8606 ug/g * 0.001 * 1 |
| Bi | Supernatant | NA (Upper Liquid Layer) | < | 3.72E+01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 11.8606 ug/g * 0.001 * 0.991 |
| Ca | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 5.15E+02 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 401.453 ug/g * 0.001 * 1 |
| Ca | Supernatant | NA (Lower Layer Liquid) | | 1.17E+01 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 18.2381 ug/g * 0.001 * 1 |
| Ca | Supernatant | NA (Upper Liquid Layer) | | 5.73E+01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 18.2381 ug/g * 0.001 * 0.991 |
| Cd | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 7.38E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 57.5237 ug/g * 0.001 * 1 |
| Cd | Supernatant | NA (Lower Layer Liquid) | < | 5.68E-01 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 0.847458 ug/g * 0.001 * 1 |
| Cd | Supernatant | NA (Upper Liquid Layer) | < | 2.82E+00 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 0.884956 ug/g * 0.001 * 1.005 |
| Ce | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 4.64E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 36.1598 ug/g * 0.001 * 1 |
| Ce | Supernatant | NA (Lower Layer Liquid) | | 2.77E+01 | kg | 9.42E+00 | Sample | 1.18 g/ml * 568 kL * 41.2797 ug/g * 0.001 * 1 |
| Ce | Supernatant | NA (Upper Liquid Layer) | | 1.13E+02 | kg | 5.63E+00 | Sample | 1.13 g/ml * 2804 kL * 35.3431 ug/g * 0.001 * 1.005 |
| Cl | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 6.18E+03 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 4818.19 ug/g * 0.001 * 1 |
| Cl | Supernatant | NA (Lower Layer Liquid) | | 1.03E+03 | kg | 7.61E+00 | Sample | 1.18 g/ml * 568 kL * 1537.76 ug/g * 0.001 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| Cl | Supernatant | NA (Upper Liquid Layer) | | 2.18E+03 | kg | 2.14E+00 | Sample | 1.13 g/ml * 2804 kL * 686.087 ug/g * 0.001 * 1.005 |
| Co | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 9.28E+00 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 7.23197 ug/g * 0.001 * 1 |
| Co | Supernatant | NA (Lower Layer Liquid) | < | 5.68E-01 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 0.847458 ug/g * 0.001 * 1 |
| Co | Supernatant | NA (Upper Liquid Layer) | < | 2.82E+00 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 0.884956 ug/g * 0.001 * 1.005 |
| TIC as CO3 | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 2.50E+04 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 19477.7 ug/g * 0.001 * 1 |
| TIC as CO3 | Supernatant | NA (Lower Layer Liquid) | | 8.59E+03 | kg | 5.20E+00 | Sample | 1.18 g/ml * 568 kL * 12817.8 ug/g * 0.001 * 1 |
| TIC as CO3 | Supernatant | NA (Upper Liquid Layer) | | 3.53E+04 | kg | 2.18E+00 | Sample | 1.13 g/ml * 2804 kL * 11089.6 ug/g * 0.001 * 1.005 |
| Cr | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 2.23E+04 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 17339.9 ug/g * 0.001 * 1 |
| Cr | Supernatant | NA (Lower Layer Liquid) | | 1.11E+02 | kg | 7.88E+00 | Sample | 1.18 g/ml * 568 kL * 166.047 ug/g * 0.001 * 1 |
| Cr | Supernatant | NA (Upper Liquid Layer) | | 2.81E+02 | kg | 2.12E+00 | Sample | 1.13 g/ml * 2804 kL * 88.1244 ug/g * 0.001 * 1.005 |
| Cu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.52E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 11.8506 ug/g * 0.001 * 1 |
| Cu | Supernatant | NA (Lower Layer Liquid) | < | 6.38E-01 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 0.99429 ug/g * 0.001 * 1 |
| Cu | Supernatant | NA (Upper Liquid Layer) | < | 3.12E+00 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.99429 ug/g * 0.001 * 0.991 |
| F | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.51E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 27.3908 ug/g * 0.001 * 1 |
| F | Supernatant | NA (Lower Layer Liquid) | | 1.61E+02 | kg | 8.66E+00 | Sample | 1.18 g/ml * 568 kL * 239.88 ug/g * 0.001 * 1 |
| F | Supernatant | NA (Upper Liquid Layer) | | 1.17E+03 | kg | 2.03E+00 | Sample | 1.13 g/ml * 2804 kL * 366.298 ug/g * 0.001 * 1.005 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| Fe | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.42E+03 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 1109.7 ug/g * 0.001 * 1 |
| Fe | Supernatant | NA (Lower Layer Liquid) | | 1.03E+00 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 1.61201 ug/g * 0.001 * 1 |
| Fe | Supernatant | NA (Upper Liquid Layer) | | 5.06E+00 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 1.61201 ug/g * 0.001 * 0.991 |
| Hg | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.70E-01 | kg | 1.33E+01 | Sample | 1.52 g/ml * 773 kL * 0.4 ug/g * 0.001 * 1 |
| Hg | Supernatant | NA (Lower Layer Liquid) | < | 1.19E-03 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 0.00185294 ug/g * 0.001 * 1 |
| Hg | Supernatant | NA (Upper Liquid Layer) | < | 5.82E-03 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.00185294 ug/g * 0.001 * 0.991 |
| K | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.92E+03 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 1498.76 ug/g * 0.001 * 1 |
| K | Supernatant | NA (Lower Layer Liquid) | | 3.88E+02 | kg | 9.53E+00 | Sample | 1.18 g/ml * 568 kL * 578.305 ug/g * 0.001 * 1 |
| K | Supernatant | NA (Upper Liquid Layer) | | 8.05E+02 | kg | 2.36E+00 | Sample | 1.13 g/ml * 2804 kL * 252.909 ug/g * 0.001 * 1.005 |
| La | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 2.42E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 18.8544 ug/g * 0.001 * 1 |
| La | Supernatant | NA (Lower Layer Liquid) | < | 5.68E-01 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 0.847458 ug/g * 0.001 * 1 |
| La | Supernatant | NA (Upper Liquid Layer) | < | 2.82E+00 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 0.884956 ug/g * 0.001 * 1.005 |
| Li | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.09E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 8.53329 ug/g * 0.001 * 1 |
| Li | Supernatant | NA (Lower Layer Liquid) | < | 5.68E-01 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 0.847458 ug/g * 0.001 * 1 |
| Li | Supernatant | NA (Upper Liquid Layer) | < | 2.82E+00 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 0.884956 ug/g * 0.001 * 1.005 |
| Mg | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 4.64E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 36.1598 ug/g * 0.001 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| Mg | Supernatant | NA (Lower Layer Liquid) | < | 5.11E+00 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 7.62712 ug/g * 0.001 * 1 |
| Mg | Supernatant | NA (Upper Liquid Layer) | < | 2.54E+01 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 7.9646 ug/g * 0.001 * 1.005 |
| Mn | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.26E+02 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 332.199 ug/g * 0.001 * 1 |
| Mn | Supernatant | NA (Lower Layer Liquid) | < | 5.68E-01 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 0.847458 ug/g * 0.001 * 1 |
| Mn | Supernatant | NA (Upper Liquid Layer) | < | 2.82E+00 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 0.884956 ug/g * 0.001 * 1.005 |
| Mo | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 6.69E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 52.1689 ug/g * 0.001 * 1 |
| Mo | Supernatant | NA (Lower Layer Liquid) | | 1.22E+01 | kg | 1.26E+01 | Sample | 1.18 g/ml * 568 kL * 18.2034 ug/g * 0.001 * 1 |
| Mo | Supernatant | NA (Upper Liquid Layer) | | 2.59E+01 | kg | 2.27E+00 | Sample | 1.13 g/ml * 2804 kL * 8.14895 ug/g * 0.001 * 1.005 |
| Na | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.78E+05 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 138533 ug/g * 0.001 * 1 |
| Na | Supernatant | NA (Lower Layer Liquid) | | 5.15E+04 | kg | 4.32E+00 | Sample | 1.18 g/ml * 568 kL * 76905.1 ug/g * 0.001 * 1 |
| Na | Supernatant | NA (Upper Liquid Layer) | | 1.81E+05 | kg | 2.17E+00 | Sample | 1.13 g/ml * 2804 kL * 56891.4 ug/g * 0.001 * 1.005 |
| Nd | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 9.61E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 74.8877 ug/g * 0.001 * 1 |
| Nd | Supernatant | NA (Lower Layer Liquid) | < | 2.49E+00 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 3.88159 ug/g * 0.001 * 1 |
| Nd | Supernatant | NA (Upper Liquid Layer) | < | 1.22E+01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 3.88159 ug/g * 0.001 * 0.991 |
| Ni | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.65E+02 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 284.208 ug/g * 0.001 * 1 |
| Ni | Supernatant | NA (Lower Layer Liquid) | | 4.41E+00 | kg | 1.34E+01 | Sample | 1.18 g/ml * 568 kL * 6.5825 ug/g * 0.001 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| Ni | Supernatant | NA (Upper Liquid Layer) | < | 5.64E+00 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 1.76991 ug/g * 0.001 * 1.005 |
| NO2 | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 6.91E+04 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 53814.3 ug/g * 0.001 * 1 |
| NO2 | Supernatant | NA (Lower Layer Liquid) | | 1.34E+04 | kg | 8.91E+00 | Sample | 1.18 g/ml * 568 kL * 19938.7 ug/g * 0.001 * 1 |
| NO2 | Supernatant | NA (Upper Liquid Layer) | | 2.70E+04 | kg | 2.04E+00 | Sample | 1.13 g/ml * 2804 kL * 8477.76 ug/g * 0.001 * 1.005 |
| NO3 | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.03E+05 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 80135.9 ug/g * 0.001 * 1 |
| NO3 | Supernatant | NA (Lower Layer Liquid) | | 4.97E+04 | kg | 4.19E+00 | Sample | 1.18 g/ml * 568 kL * 74106.4 ug/g * 0.001 * 1 |
| NO3 | Supernatant | NA (Upper Liquid Layer) | | 1.69E+05 | kg | 2.02E+00 | Sample | 1.13 g/ml * 2804 kL * 52946.8 ug/g * 0.001 * 1.005 |
| Free OH | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 2.51E+04 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 19597.7 ug/g * 0.001 * 1 |
| Free OH | Supernatant | NA (Lower Layer Liquid) | | 9.09E+03 | kg | 4.74E+00 | Sample | 1.18 g/ml * 568 kL * 13563.1 ug/g * 0.001 * 1 |
| Free OH | Supernatant | NA (Upper Liquid Layer) | | 2.48E+04 | kg | 2.13E+00 | Sample | 1.13 g/ml * 2804 kL * 7777.09 ug/g * 0.001 * 1.005 |
| Oxalate | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.15E+05 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 89860.9 ug/g * 0.001 * 1 |
| Oxalate | Supernatant | NA (Lower Layer Liquid) | | 7.94E+02 | kg | 1.40E+01 | Sample | 1.18 g/ml * 568 kL * 1184.51 ug/g * 0.001 * 1 |
| Oxalate | Supernatant | NA (Upper Liquid Layer) | | 5.79E+03 | kg | 2.04E+00 | Sample | 1.13 g/ml * 2804 kL * 1818.46 ug/g * 0.001 * 1.005 |
| Pb | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.54E+02 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 276.105 ug/g * 0.001 * 1 |
| Pb | Supernatant | NA (Lower Layer Liquid) | < | 6.55E+00 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 10.2048 ug/g * 0.001 * 1 |
| Pb | Supernatant | NA (Upper Liquid Layer) | < | 3.20E+01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 10.2048 ug/g * 0.001 * 0.991 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| PO4 | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 5.67E+03 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 4417.09 ug/g * 0.001 * 1 |
| PO4 | Supernatant | NA (Lower Layer Liquid) | | 3.43E+03 | kg | 4.88E+00 | Sample | 1.18 g/ml * 568 kL * 5113.46 ug/g * 0.001 * 1 |
| PO4 | Supernatant | NA (Upper Liquid Layer) | | 2.44E+04 | kg | 2.14E+00 | Sample | 1.13 g/ml * 2804 kL * 7666.15 ug/g * 0.001 * 1.005 |
| Aroclors (Total PCB) | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 1.60E-01 | kg | 1.01E+02 | Sample | 1.52 g/ml * 773 kL * 0.135775 ug/g * 0.001 * 1 |
| Aroclors (Total PCB) | Supernatant | NA (Lower Layer Liquid) | < | 1.48E-03 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 0.00230972 ug/g * 0.001 * 1 |
| Aroclors (Total PCB) | Supernatant | NA (Upper Liquid Layer) | < | 7.25E-03 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.00230972 ug/g * 0.001 * 0.991 |
| Pd | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 9.28E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 72.3197 ug/g * 0.001 * 1 |
| Pd | Supernatant | NA (Lower Layer Liquid) | < | 6.82E+00 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 10.1695 ug/g * 0.001 * 1 |
| Pd | Supernatant | NA (Upper Liquid Layer) | < | 3.38E+01 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 10.6195 ug/g * 0.001 * 1.005 |
| Pr | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 4.64E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 36.1598 ug/g * 0.001 * 1 |
| Pr | Supernatant | NA (Lower Layer Liquid) | < | 6.23E+00 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 9.70112 ug/g * 0.001 * 1 |
| Pr | Supernatant | NA (Upper Liquid Layer) | < | 3.05E+01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 9.70112 ug/g * 0.001 * 0.991 |
| Ru | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 9.28E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 72.3197 ug/g * 0.001 * 1 |
| Ru | Supernatant | NA (Lower Layer Liquid) | | 3.49E+00 | kg | 6.24E+00 | Sample | 1.18 g/ml * 568 kL * 5.21072 ug/g * 0.001 * 1 |
| Ru | Supernatant | NA (Upper Liquid Layer) | < | 1.45E+01 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 4.55394 ug/g * 0.001 * 1.005 |
| Sb | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 7.84E+01 | kg | 1.24E+01 | Sample | 1.52 g/ml * 773 kL * 66.7 ug/g * 0.001 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| Sb | Supernatant | NA (Lower Layer Liquid) | < | 1.02E+01 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 15.2542 ug/g * 0.001 * 1 |
| Sb | Supernatant | NA (Upper Liquid Layer) | < | 5.07E+01 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 15.9292 ug/g * 0.001 * 1.005 |
| Se | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 5.92E+01 | kg | 1.01E+02 | Sample | 1.52 g/ml * 773 kL * 50.4 ug/g * 0.001 * 1 |
| Se | Supernatant | NA (Lower Layer Liquid) | < | 1.25E+01 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 19.4034 ug/g * 0.001 * 1 |
| Se | Supernatant | NA (Upper Liquid Layer) | < | 6.09E+01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 19.4034 ug/g * 0.001 * 0.991 |
| Si | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.24E+02 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 252.212 ug/g * 0.001 * 1 |
| Si | Supernatant | NA (Lower Layer Liquid) | | 1.36E+01 | kg | 3.64E+01 | Sample | 1.18 g/ml * 568 kL * 20.3292 ug/g * 0.001 * 1 |
| Si | Supernatant | NA (Upper Liquid Layer) | | 6.41E+01 | kg | 2.51E+01 | Sample | 1.13 g/ml * 2804 kL * 20.1248 ug/g * 0.001 * 1.005 |
| SO4 | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.33E+03 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 2598.69 ug/g * 0.001 * 1 |
| SO4 | Supernatant | NA (Lower Layer Liquid) | | 1.56E+03 | kg | 4.49E+00 | Sample | 1.18 g/ml * 568 kL * 2333.42 ug/g * 0.001 * 1 |
| SO4 | Supernatant | NA (Upper Liquid Layer) | | 6.03E+03 | kg | 2.14E+00 | Sample | 1.13 g/ml * 2804 kL * 1894.29 ug/g * 0.001 * 1.005 |
| Sr | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.34E+00 | kg | | Calculated | 90Sr * 2.4436e-005 |
| Sr | Supernatant | NA (Lower Layer Liquid) | < | 6.28E-01 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 0.978935 ug/g * 0.001 * 1 |
| Sr | Supernatant | NA (Upper Liquid Layer) | < | 3.07E+00 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.978935 ug/g * 0.001 * 0.991 |
| Ta | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 4.64E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 36.1598 ug/g * 0.001 * 1 |
| Ta | Supernatant | NA (Lower Layer Liquid) | < | 2.84E+00 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 4.23729 ug/g * 0.001 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| Ta | Supernatant | NA (Upper Liquid Layer) | < | 1.41E+01 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 4.42478 ug/g * 0.001 * 1.005 |
| Te | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 9.28E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 72.3197 ug/g * 0.001 * 1 |
| Te | Supernatant | NA (Lower Layer Liquid) | < | 5.11E+00 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 7.62712 ug/g * 0.001 * 1 |
| Te | Supernatant | NA (Upper Liquid Layer) | < | 2.54E+01 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 7.9646 ug/g * 0.001 * 1.005 |
| Th | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.46E-01 | kg | | Template Engineering | 1.63 g/ml * 773 kL * 0.3 ug/g * 0.001 * 0.915 |
| Th | Supernatant | NA (Lower Layer Liquid) | | 4.64E-03 | kg | 3.90E+00 | Sample | 1.18 g/ml * 568 kL * 0.00691928 ug/g * 0.001 * 1 |
| Th | Supernatant | NA (Upper Liquid Layer) | < | 5.81E-03 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 0.00182368 ug/g * 0.001 * 1.005 |
| Ti | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 6.39E+00 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 4.98034 ug/g * 0.001 * 1 |
| Ti | Supernatant | NA (Lower Layer Liquid) | < | 6.23E-01 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 0.970249 ug/g * 0.001 * 1 |
| Ti | Supernatant | NA (Upper Liquid Layer) | < | 3.05E+00 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.970249 ug/g * 0.001 * 0.991 |
| Tl | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 9.28E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 72.3197 ug/g * 0.001 * 1 |
| Tl | Supernatant | NA (Lower Layer Liquid) | < | 8.52E+00 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 12.7119 ug/g * 0.001 * 1 |
| Tl | Supernatant | NA (Upper Liquid Layer) | < | 4.23E+01 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 13.2743 ug/g * 0.001 * 1.005 |
| TOC | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.85E+04 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 30012.6 ug/g * 0.001 * 1 |
| TOC | Supernatant | NA (Lower Layer Liquid) | | 8.92E+02 | kg | 7.90E+00 | Sample | 1.18 g/ml * 568 kL * 1330.51 ug/g * 0.001 * 1 |
| TOC | Supernatant | NA (Upper Liquid Layer) | | 2.68E+03 | kg | 2.71E+00 | Sample | 1.13 g/ml * 2804 kL * 840.582 ug/g * 0.001 * 1.005 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| UTOTAL | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.35E+02 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 339.261 ug/g * 0.001 * 1 |
| UTOTAL | Supernatant | NA (Lower Layer Liquid) | | 3.29E+00 | kg | 5.94E+00 | Sample | 1.18 g/ml * 568 kL * 4.91525 ug/g * 0.001 * 1 |
| UTOTAL | Supernatant | NA (Upper Liquid Layer) | | 9.95E+00 | kg | 2.39E+00 | Sample | 1.13 g/ml * 2804 kL * 3.12389 ug/g * 0.001 * 1.005 |
| V | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.15E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 8.99346 ug/g * 0.001 * 1 |
| V | Supernatant | NA (Lower Layer Liquid) | | 7.48E-01 | kg | 2.13E+01 | Sample | 1.18 g/ml * 568 kL * 1.11657 ug/g * 0.001 * 1 |
| V | Supernatant | NA (Upper Liquid Layer) | | 5.06E+00 | kg | 3.34E+00 | Sample | 1.13 g/ml * 2804 kL * 1.58963 ug/g * 0.001 * 1.005 |
| W | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 2.06E+02 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 160.223 ug/g * 0.001 * 1 |
| W | Supernatant | NA (Lower Layer Liquid) | | 2.11E+01 | kg | 1.20E+01 | Sample | 1.18 g/ml * 568 kL * 31.547 ug/g * 0.001 * 1 |
| W | Supernatant | NA (Upper Liquid Layer) | | 5.55E+01 | kg | 6.93E+00 | Sample | 1.13 g/ml * 2804 kL * 17.4421 ug/g * 0.001 * 1.005 |
| Y | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.20E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 9.34119 ug/g * 0.001 * 1 |
| Y | Supernatant | NA (Lower Layer Liquid) | < | 6.23E-01 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 0.970159 ug/g * 0.001 * 1 |
| Y | Supernatant | NA (Upper Liquid Layer) | < | 3.05E+00 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.970159 ug/g * 0.001 * 0.991 |
| Zn | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 5.97E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 46.5377 ug/g * 0.001 * 1 |
| Zn | Supernatant | NA (Lower Layer Liquid) | | 2.59E+00 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 4.03108 ug/g * 0.001 * 1 |
| Zn | Supernatant | NA (Upper Liquid Layer) | | 1.27E+01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 4.03108 ug/g * 0.001 * 0.991 |
| Zr | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.53E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 27.5318 ug/g * 0.001 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| Zr | Supernatant | NA (Lower Layer Liquid) | < | 5.68E-01 | kg | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 0.847458 ug/g * 0.001 * 1 |
| Zr | Supernatant | NA (Upper Liquid Layer) | < | 2.82E+00 | kg | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 0.884956 ug/g * 0.001 * 1.005 |
| 3H | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 7.91E+00 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 0.00685768 uCi/g * 1 * 0.915 |
| 3H | Supernatant | NA (Lower Layer Liquid) | | 5.69E-02 | Ci | 3.13E+00 | Sample | 1.18 g/ml * 568 kL * 8.49645e-005 uCi/g * 1 * 1 |
| 3H | Supernatant | NA (Upper Liquid Layer) | | 2.23E-01 | Ci | 4.19E+00 | Sample | 1.13 g/ml * 2804 kL * 7.01567e-005 uCi/g * 1 * 1.005 |
| 14C | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 5.32E-01 | Ci | | Process Knowledge | 1.52 g/ml * 773 kL * 0.000452721 uCi/g * 1 * 1 |
| 14C | Supernatant | NA (Lower Layer Liquid) | | 3.60E-01 | Ci | 3.67E+00 | Sample | 1.18 g/ml * 568 kL * 0.00053691 uCi/g * 1 * 1 |
| 14C | Supernatant | NA (Upper Liquid Layer) | | 1.41E+00 | Ci | 2.21E+00 | Sample | 1.13 g/ml * 2804 kL * 0.000443314 uCi/g * 1 * 1.005 |
| 59Ni | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.05E+00 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 0.000914879 uCi/g * 1 * 0.915 |
| 59Ni | Supernatant | NA (Lower Layer Liquid) | | 5.69E-01 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 0.00088598 uCi/g * 1 * 1 |
| 59Ni | Supernatant | NA (Upper Liquid Layer) | | 2.78E+00 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.00088598 uCi/g * 1 * 0.991 |
| 60Co | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.21E+00 | Ci | 1.01E+02 | Template Sample | 1.63 g/ml * 773 kL * 0.00278016 uCi/g * 1 * 0.915 |
| 60Co | Supernatant | NA (Lower Layer Liquid) | < | 4.97E-02 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 7.73956e-005 uCi/g * 1 * 1 |
| 60Co | Supernatant | NA (Upper Liquid Layer) | < | 2.43E-01 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 7.73956e-005 uCi/g * 1 * 0.991 |
| 63Ni | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 9.11E+01 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 0.0790459 uCi/g * 1 * 0.915 |
| 63Ni | Supernatant | NA (Lower Layer Liquid) | | 5.80E+00 | Ci | 1.63E+01 | Sample | 1.18 g/ml * 568 kL * 0.00865227 uCi/g * 1 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| 63Ni | Supernatant | NA (Upper Liquid Layer) | | 1.62E+00 | Ci | 2.28E+00 | Sample | 1.13 g/ml * 2804 kL * 0.000507441 uCi/g * 1 * 1.005 |
| 79Se | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.55E-01 | Ci | | Process Knowledge | 1.52 g/ml * 773 kL * 0.000131993 uCi/g * 1 * 1 |
| 79Se | Supernatant | NA (Lower Layer Liquid) | | 8.61E-02 | Ci | 1.46E+01 | Sample | 1.18 g/ml * 568 kL * 0.000128441 uCi/g * 1 * 1 |
| 79Se | Supernatant | NA (Upper Liquid Layer) | | 1.98E-01 | Ci | 2.66E+00 | Sample | 1.13 g/ml * 2804 kL * 6.21327e-005 uCi/g * 1 * 1.005 |
| 90Sr | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 5.50E+04 | Ci | | Process Knowledge | 1.66 g/ml * 773 kL * 42.8419 uCi/g * 1 * 1 |
| 90Sr | Supernatant | NA (Lower Layer Liquid) | | 2.61E+02 | Ci | 1.89E+01 | Sample | 1.18 g/ml * 568 kL * 0.389974 uCi/g * 1 * 1 |
| 90Sr | Supernatant | NA (Upper Liquid Layer) | | 2.39E+01 | Ci | 6.10E+00 | Sample | 1.13 g/ml * 2804 kL * 0.00749146 uCi/g * 1 * 1.005 |
| 90Y | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 5.50E+04 | Ci | | Calculated | 90Sr * 1 |
| 90Y | Supernatant | NA (Lower Layer Liquid) | | 2.61E+02 | Ci | | Calculated | 90Sr * 1 |
| 90Y | Supernatant | NA (Upper Liquid Layer) | | 2.39E+01 | Ci | | Calculated | 90Sr * 1 |
| 93mNb | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.29E+00 | Ci | | Process Knowledge | 1.52 g/mL * 773 kL * 0.00364943 uCi/g |
| 93mNb | Supernatant | NA (Lower Layer Liquid) | | 3.38E+00 | Ci | | Process Knowledge | 0.00594932 uCi/mL * 568 kL |
| 93mNb | Supernatant | NA (Upper Liquid Layer) | | 1.65E+01 | Ci | | Process Knowledge | 0.00589577 uCi/mL * 2804 kL |
| 93Zr | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.76E+00 | Ci | | Process Knowledge | 1.52 g/ml * 773 kL * 0.00404996 uCi/g * 1 * 1 |
| 93Zr | Supernatant | NA (Lower Layer Liquid) | | 3.76E+00 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 0.0058618 uCi/g * 1 * 1 |
| 93Zr | Supernatant | NA (Upper Liquid Layer) | | 1.84E+01 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.0058618 uCi/g * 1 * 0.991 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| 99Tc | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 2.27E+02 | Ci | 1.11E+01 | Sample | 1.52 g/ml * 773 kL * 0.192991 uCi/g * 1 * 1 |
| 99Tc | Supernatant | NA (Lower Layer Liquid) | | 2.61E+01 | Ci | 1.45E+01 | Sample | 1.18 g/ml * 568 kL * 0.0389153 uCi/g * 1 * 1 |
| 99Tc | Supernatant | NA (Upper Liquid Layer) | | 6.33E+01 | Ci | 2.06E+00 | Sample | 1.13 g/ml * 2804 kL * 0.0198847 uCi/g * 1 * 1.005 |
| 106Ru | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 2.82E-09 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 2.44843e-012 uCi/g * 1 * 0.915 |
| 106Ru | Supernatant | NA (Lower Layer Liquid) | | 5.47E-10 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 8.52401e-013 uCi/g * 1 * 1 |
| 106Ru | Supernatant | NA (Upper Liquid Layer) | | 2.68E-09 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 8.52401e-013 uCi/g * 1 * 0.991 |
| 113mCd | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.22E+01 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 0.0105437 uCi/g * 1 * 0.915 |
| 113mCd | Supernatant | NA (Lower Layer Liquid) | | 3.03E+00 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 0.00471423 uCi/g * 1 * 1 |
| 113mCd | Supernatant | NA (Upper Liquid Layer) | | 1.48E+01 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.00471423 uCi/g * 1 * 0.991 |
| 125Sb | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 8.18E-02 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 7.09511e-005 uCi/g * 1 * 0.915 |
| 125Sb | Supernatant | NA (Lower Layer Liquid) | | 6.68E-02 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 0.000104131 uCi/g * 1 * 1 |
| 125Sb | Supernatant | NA (Upper Liquid Layer) | | 3.27E-01 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.000104131 uCi/g * 1 * 0.991 |
| 126Sn | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.79E+00 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 0.00155434 uCi/g * 1 * 0.915 |
| 126Sn | Supernatant | NA (Lower Layer Liquid) | | 6.82E-02 | Ci | 1.05E+01 | Sample | 1.18 g/ml * 568 kL * 0.000101789 uCi/g * 1 * 1 |
| 126Sn | Supernatant | NA (Upper Liquid Layer) | | 3.28E-01 | Ci | 4.23E+00 | Sample | 1.13 g/ml * 2804 kL * 0.000103143 uCi/g * 1 * 1.005 |
| 129I | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.29E-01 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 0.000112 uCi/g * 1 * 0.915 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| 129I | Supernatant | NA (Lower Layer Liquid) | | 3.16E-02 | Ci | 8.83E+00 | Sample | 1.18 g/ml * 568 kL * 4.70754e-005 uCi/g * 1 * 1 |
| 129I | Supernatant | NA (Upper Liquid Layer) | | 6.73E-02 | Ci | 9.44E+00 | Sample | 1.13 g/ml * 2804 kL * 2.11245e-005 uCi/g * 1 * 1.005 |
| 134Cs | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.56E-03 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 1.34932e-006 uCi/g * 1 * 0.915 |
| 134Cs | Supernatant | NA (Lower Layer Liquid) | | 1.90E-04 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 2.96216e-007 uCi/g * 1 * 1 |
| 134Cs | Supernatant | NA (Upper Liquid Layer) | | 9.30E-04 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 2.96216e-007 uCi/g * 1 * 0.991 |
| 137Cs | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.44E+05 | Ci | | Process Knowledge | 1.66 g/ml * 773 kL * 112.17 uCi/g * 1 * 1 |
| 137Cs | Supernatant | NA (Lower Layer Liquid) | | 2.87E+04 | Ci | 9.34E+00 | Sample | 1.18 g/ml * 568 kL * 42.7578 uCi/g * 1 * 1 |
| 137Cs | Supernatant | NA (Upper Liquid Layer) | | 5.76E+04 | Ci | 2.17E+00 | Sample | 1.13 g/ml * 2804 kL * 18.0821 uCi/g * 1 * 1.005 |
| 137mBa | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.36E+05 | Ci | | Calculated | 137Cs * 0.944 |
| 137mBa | Supernatant | NA (Lower Layer Liquid) | | 2.71E+04 | Ci | | Calculated | 137Cs * 0.944 |
| 137mBa | Supernatant | NA (Upper Liquid Layer) | | 5.44E+04 | Ci | | Calculated | 137Cs * 0.944 |
| 151Sm | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 2.75E+03 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 2.38798 uCi/g * 1 * 0.915 |
| 151Sm | Supernatant | NA (Lower Layer Liquid) | < | 7.42E+01 | Ci | 1.00E+02 | Sample | 1.18 g/ml * 568 kL * 0.110768 uCi/g * 1 * 1 |
| 151Sm | Supernatant | NA (Upper Liquid Layer) | < | 3.68E+02 | Ci | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 0.115669 uCi/g * 1 * 1.005 |
| 152Eu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.07E+00 | Ci | | Calculated | 1.66 g/mL * 773 kL * 0.00317148 uCi/g |
| 152Eu | Supernatant | NA (Lower Layer Liquid) | | 2.46E-01 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 0.000382711 uCi/g * 1 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| 152Eu | Supernatant | NA (Upper Liquid Layer) | | 1.20E+00 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.000382711 uCi/g * 1 * 0.991 |
| 154Eu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.95E+02 | Ci | | Process Knowledge | 1.66 g/ml * 773 kL * 0.152039 uCi/g * 1 * 1 |
| 154Eu | Supernatant | NA (Lower Layer Liquid) | < | 2.38E-01 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 0.000370992 uCi/g * 1 * 1 |
| 154Eu | Supernatant | NA (Upper Liquid Layer) | < | 1.16E+00 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.000370992 uCi/g * 1 * 0.991 |
| 155Eu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.45E+01 | Ci | | Calculated | 1.66 g/mL * 773 kL * 0.0268577 uCi/g |
| 155Eu | Supernatant | NA (Lower Layer Liquid) | < | 1.55E+00 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 0.00241293 uCi/g * 1 * 1 |
| 155Eu | Supernatant | NA (Upper Liquid Layer) | < | 7.58E+00 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 0.00241293 uCi/g * 1 * 0.991 |
| 226Ra | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.61E-05 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 3.13027e-008 uCi/g * 1 * 0.915 |
| 226Ra | Supernatant | NA (Lower Layer Liquid) | | 1.21E-05 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 1.88439e-008 uCi/g * 1 * 1 |
| 226Ra | Supernatant | NA (Upper Liquid Layer) | | 5.92E-05 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 1.88439e-008 uCi/g * 1 * 0.991 |
| 227Ac | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.40E-03 | Ci | | Template Engineering | 1.63 g/mL * 773 kL * 3.49205e-006 uCi/g |
| 227Ac | Supernatant | NA (Lower Layer Liquid) | | 6.44E-04 | Ci | | Process Knowledge | 1.13377e-006 uCi/mL * 568 kL |
| 227Ac | Supernatant | NA (Upper Liquid Layer) | | 3.15E-03 | Ci | | Process Knowledge | 1.12356e-006 uCi/mL * 2804 kL |
| 228Ra | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.80E-05 | Ci | | Calculated | 232Th * 1 |
| 228Ra | Supernatant | NA (Lower Layer Liquid) | | 5.10E-07 | Ci | | Calculated | 232Th * 1 |
| 228Ra | Supernatant | NA (Upper Liquid Layer) | | 6.39E-07 | Ci | | Calculated | 232Th * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| 229Th | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.09E-05 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 9.45698e-009 uCi/g * 1 * 0.915 |
| 229Th | Supernatant | NA (Lower Layer Liquid) | | 6.47E-05 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 1.00775e-007 uCi/g * 1 * 1 |
| 229Th | Supernatant | NA (Upper Liquid Layer) | | 3.16E-04 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 1.00775e-007 uCi/g * 1 * 0.991 |
| 231Pa | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.15E-02 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 9.99694e-006 uCi/g * 1 * 0.915 |
| 231Pa | Supernatant | NA (Lower Layer Liquid) | | 1.55E-03 | Ci | | Process Knowledge | 1.13 g/ml * 568 kL * 2.42242e-006 uCi/g * 1 * 1 |
| 231Pa | Supernatant | NA (Upper Liquid Layer) | | 7.61E-03 | Ci | | Process Knowledge | 1.13 g/ml * 2804 kL * 2.42242e-006 uCi/g * 1 * 0.991 |
| 232Th | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.80E-05 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 3.3e-008 uCi/g * 1 * 0.915 |
| 232Th | Supernatant | NA (Lower Layer Liquid) | | 5.10E-07 | Ci | 3.90E+00 | Sample | 1.18 g/ml * 568 kL * 7.61605e-010 uCi/g * 1 * 1 |
| 232Th | Supernatant | NA (Upper Liquid Layer) | < | 6.39E-07 | Ci | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 2.00733e-010 uCi/g * 1 * 1.005 |
| 232U | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.44E-03 | Ci | | Calculated | 1.66 g/mL * 773 kL * 3.46296e-006 uCi/g |
| 232U | Supernatant | NA (Lower Layer Liquid) | < | 5.01E-05 | Ci | | Calculated | 1.18 g/mL * 568 kL * 7.46796e-008 uCi/g |
| 232U | Supernatant | NA (Upper Liquid Layer) | < | 1.51E-04 | Ci | | Calculated | 1.13 g/mL * 2804 kL * 4.77e-008 uCi/g |
| 233U | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 7.17E-01 | Ci | | Process Knowledge | 1.66 g/mL * 773 kL * 0.000559056 uCi/g |
| 233U | Supernatant | NA (Lower Layer Liquid) | | 5.81E-03 | Ci | 1.07E+01 | Sample | 1.18 g/mL * 568 kL * 8.67286e-006 uCi/g |
| 233U | Supernatant | NA (Upper Liquid Layer) | | 9.52E-03 | Ci | 3.67E+00 | Sample | 1.13 g/mL * 2804 kL * 3.00525e-006 uCi/g |
| 234U | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.64E-01 | Ci | | Process Knowledge | 1.66 g/mL * 773 kL * 0.000128112 uCi/g |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| 234U | Supernatant | NA (Lower Layer Liquid) | | 1.55E-03 | Ci | 8.56E+00 | Sample | 1.18 g/mL * 568 kL * 2.31037e-006 uCi/g |
| 234U | Supernatant | NA (Upper Liquid Layer) | | 5.25E-03 | Ci | 5.11E+00 | Sample | 1.13 g/mL * 2804 kL * 1.65588e-006 uCi/g |
| 235U | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 6.24E-03 | Ci | | Process Knowledge | 1.66 g/mL * 773 kL * 4.86249e-006 uCi/g |
| 235U | Supernatant | NA (Lower Layer Liquid) | | 4.76E-05 | Ci | 4.68E+00 | Sample | 1.18 g/mL * 568 kL * 7.102e-008 uCi/g |
| 235U | Supernatant | NA (Upper Liquid Layer) | | 1.47E-04 | Ci | 2.60E+00 | Sample | 1.13 g/mL * 2804 kL * 4.62678e-008 uCi/g |
| 236U | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.52E-03 | Ci | | Process Knowledge | 1.66 g/mL * 773 kL * 2.74576e-006 uCi/g |
| 236U | Supernatant | NA (Lower Layer Liquid) | | 3.66E-05 | Ci | 4.00E+00 | Sample | 1.18 g/mL * 568 kL * 5.46251e-008 uCi/g |
| 236U | Supernatant | NA (Upper Liquid Layer) | | 1.17E-04 | Ci | 1.11E+01 | Sample | 1.13 g/mL * 2804 kL * 3.68253e-008 uCi/g |
| 237Np | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 5.02E-01 | Ci | | Template Engineering | 1.63 g/ml * 773 kL * 0.000434998 uCi/g * 1 * 0.915 |
| 237Np | Supernatant | NA (Lower Layer Liquid) | | 1.05E-03 | Ci | 4.87E+00 | Sample | 1.18 g/ml * 568 kL * 1.56843e-006 uCi/g * 1 * 1 |
| 237Np | Supernatant | NA (Upper Liquid Layer) | | 2.25E-03 | Ci | 3.24E+00 | Sample | 1.13 g/ml * 2804 kL * 7.05639e-007 uCi/g * 1 * 1.005 |
| 238Pu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.09E+01 | Ci | | Process Knowledge | 1.66 g/mL * 773 kL * 0.0084593 uCi/g |
| 238Pu | Supernatant | NA (Lower Layer Liquid) | | 1.95E-03 | Ci | 4.69E+00 | Sample | 1.18 g/mL * 568 kL * 2.90296e-006 uCi/g |
| 238Pu | Supernatant | NA (Upper Liquid Layer) | | 1.63E-02 | Ci | 5.09E+00 | Sample | 1.13 g/mL * 2804 kL * 5.13789e-006 uCi/g |
| 238U | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.45E-01 | Ci | | Process Knowledge | 1.66 g/mL * 773 kL * 0.000113214 uCi/g |
| 238U | Supernatant | NA (Lower Layer Liquid) | | 1.10E-03 | Ci | 5.94E+00 | Sample | 1.18 g/mL * 568 kL * 1.63986e-006 uCi/g |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| 238U | Supernatant | NA (Upper Liquid Layer) | | 3.32E-03 | Ci | 2.39E+00 | Sample | 1.13 g/mL * 2804 kL * 1.04654e-006 uCi/g |
| 239/240Pu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 6.72E+01 | Ci | | Process Knowledge | 1.66 g/ml * 773 kL * 0.0523524 uCi/g * 1 * 1 |
| 239/240Pu | Supernatant | NA (Lower Layer Liquid) | | 1.86E-02 | Ci | 1.09E+01 | Sample | 1.18 g/ml * 568 kL * 2.77924e-005 uCi/g * 1 * 1 |
| 239/240Pu | Supernatant | NA (Upper Liquid Layer) | | 1.50E-01 | Ci | 2.80E+00 | Sample | 1.13 g/ml * 2804 kL * 4.71652e-005 uCi/g * 1 * 1.005 |
| 239Pu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 5.53E+01 | Ci | | Calculated | 1.66 g/mL * 773 kL * 0.0430914 uCi/g |
| 239Pu | Supernatant | NA (Lower Layer Liquid) | | 1.53E-02 | Ci | | Calculated | 1.18 g/mL * 568 kL * 2.27811e-005 uCi/g |
| 239Pu | Supernatant | NA (Upper Liquid Layer) | | 1.23E-01 | Ci | | Calculated | 1.13 g/mL * 2804 kL * 3.88541e-005 uCi/g |
| 240Pu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.19E+01 | Ci | | Calculated | 1.66 g/mL * 773 kL * 0.00923553 uCi/g |
| 240Pu | Supernatant | NA (Lower Layer Liquid) | | 3.36E-03 | Ci | | Calculated | 1.18 g/mL * 568 kL * 5.01208e-006 uCi/g |
| 240Pu | Supernatant | NA (Upper Liquid Layer) | | 2.71E-02 | Ci | | Calculated | 1.13 g/mL * 2804 kL * 8.54829e-006 uCi/g |
| 241Am | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 6.22E+02 | Ci | | Process Knowledge | 1.66 g/mL * 773 kL * 0.484478 uCi/g |
| 241Am | Supernatant | NA (Lower Layer Liquid) | | 1.51E-02 | Ci | 2.52E+01 | Sample | 1.18 g/mL * 568 kL * 2.25668e-005 uCi/g |
| 241Am | Supernatant | NA (Upper Liquid Layer) | < | 1.76E-03 | Ci | 1.00E+02 | Sample | 1.13 g/mL * 2804 kL * 5.5609e-007 uCi/g |
| 241Pu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.49E+01 | Ci | | Calculated | 1.66 g/mL * 773 kL * 0.0349981 uCi/g |
| 241Pu | Supernatant | NA (Lower Layer Liquid) | | 8.27E-03 | Ci | | Calculated | 1.18 g/mL * 568 kL * 1.23328e-005 uCi/g |
| 241Pu | Supernatant | NA (Upper Liquid Layer) | | 6.66E-02 | Ci | | Calculated | 1.13 g/mL * 2804 kL * 2.10341e-005 uCi/g |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| 242Cm | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.54E+00 | Ci | | Calculated | 1.66 g/mL * 773 kL * 0.00120335 uCi/g |
| 242Cm | Supernatant | NA (Lower Layer Liquid) | < | 1.71E-05 | Ci | | Calculated | 1.18 g/mL * 568 kL * 2.54885e-008 uCi/g |
| 242Cm | Supernatant | NA (Upper Liquid Layer) | < | 1.79E-04 | Ci | | Process Knowledge | 1.13 g/mL * 2804 kL * 5.63586e-008 uCi/g |
| 242Pu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 7.41E-04 | Ci | | Calculated | 1.66 g/mL * 773 kL * 5.77566e-007 uCi/g |
| 242Pu | Supernatant | NA (Lower Layer Liquid) | | 1.37E-07 | Ci | | Calculated | 1.18 g/mL * 568 kL * 2.03986e-010 uCi/g |
| 242Pu | Supernatant | NA (Upper Liquid Layer) | | 1.10E-06 | Ci | | Calculated | 1.13 g/mL * 2804 kL * 3.47907e-010 uCi/g |
| 243Am | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 3.66E-01 | Ci | | Calculated | 1.66 g/mL * 773 kL * 0.000285561 uCi/g |
| 243Am | Supernatant | NA (Lower Layer Liquid) | < | 4.65E-06 | Ci | | Calculated | 1.18 g/mL * 568 kL * 6.9346e-009 uCi/g |
| 243Am | Supernatant | NA (Upper Liquid Layer) | < | 5.64E-07 | Ci | | Calculated | 1.13 g/mL * 2804 kL * 1.77942e-010 uCi/g |
| 243Cm | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 4.21E-02 | Ci | | Calculated | 1.66 g/mL * 773 kL * 3.28386e-005 uCi/g |
| 243Cm | Supernatant | NA (Lower Layer Liquid) | | 1.51E-05 | Ci | | Calculated | 1.18 g/mL * 568 kL * 2.25083e-008 uCi/g |
| 243Cm | Supernatant | NA (Upper Liquid Layer) | < | 4.29E-05 | Ci | | Calculated | 1.13 g/mL * 2804 kL * 1.35431e-008 uCi/g |
| 244Cm | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 8.34E-01 | Ci | | Calculated | 1.66 g/mL * 773 kL * 0.000649976 uCi/g |
| 244Cm | Supernatant | NA (Lower Layer Liquid) | | 2.98E-04 | Ci | | Calculated | 1.18 g/mL * 568 kL * 4.45211e-007 uCi/g |
| 244Cm | Supernatant | NA (Upper Liquid Layer) | < | 8.49E-04 | Ci | | Calculated | 1.13 g/mL * 2804 kL * 2.67881e-007 uCi/g |
| 243/244Cm | Supernatant | NA (Lower Layer Liquid) | | 3.05E-04 | Ci | 1.65E+01 | Sample | 1.18 g/ml * 568 kL * 4.55508e-007 uCi/g * 1 * 1 |

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|
| 243/244Cm | Supernatant | NA (Upper Liquid Layer) | < | 8.68E-04 | Ci | 1.00E+02 | Sample | 1.13 g/ml * 2804 kL * 2.72714e-007 uCi/g * 1 * 1.005 |
| Eu | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 9.28E+00 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 7.23197 ug/g * 0.001 * 1 |
| Eu | Supernatant | NA (Lower Layer Liquid) | < | 1.25E+00 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 1.94027 ug/g * 0.001 * 1 |
| Eu | Supernatant | NA (Upper Liquid Layer) | < | 6.09E+00 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 1.94027 ug/g * 0.001 * 0.991 |
| Nb | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | < | 4.64E+01 | kg | | Process Knowledge | 1.66 g/ml * 773 kL * 36.1598 ug/g * 0.001 * 1 |
| Nb | Supernatant | NA (Lower Layer Liquid) | < | 6.23E+00 | kg | | Process Knowledge | 1.13 g/ml * 568 kL * 9.70142 ug/g * 0.001 * 1 |
| Nb | Supernatant | NA (Upper Liquid Layer) | < | 3.05E+01 | kg | | Process Knowledge | 1.13 g/ml * 2804 kL * 9.70142 ug/g * 0.001 * 0.991 |
| Component wt% water | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 41.5 | wt % | | | |
| Component wt% water | Supernatant | NA (Lower Layer Liquid) | | 77.4 | wt % | | | |
| Component wt% water | Supernatant | NA (Upper Liquid Layer) | | 84.0 | wt% | | | |
| Component density | Saltcake (Liquid & Solid) | S2-SltSlr (Solid) | | 1.66 | g/mL | | | |
| Component density | Supernatant | NA (Lower Layer Liquid) | | 1.18 | g/mL | | | |
| Component density | Supernatant | NA (Upper Liquid Layer) | | 1.13 | g/mL | | | |

Notes:
Ci = Curies
g/mL = grams per milliliter
kL = kiloliters
PCB = polychlorinated biphenyls
RSD = relative standard deviation
uCi/g = microcuries per gram
Wt% = weight percent

## Table A-1. Condensed Best-Basis Calculation Detail Reports for Tank 241-SY-101 Primary and Supplemental Analytes

Radionuclide Decay Date 7/1/2015

| Analyte | Phase | Waste Type | Qualifier | Inventory | Units | RSD (%) | Basis | Calculation (density*volume* concentration*conversion*multiplier)[a] |
|---|---|---|---|---|---|---|---|---|

[a] This is a generic equation used for most calculations. The conversion factors and multipliers for the radionuclides involved in second-order decay or radionuclide distributions have already been incorporated in the concentrations shown. The concentrations of $^{90}Y$, $^{137}mBa$, and $^{228}Ra$ are based on the concentration of the parent radionuclide and the radioactive decay yield factor.

# APPENDIX B: WORK PACKAGE 181589

| SY-101 Riser 021 | | Top Hat 53" | | Date 2/25/16 | | Work Package 181589 |
|---|---|---|---|---|---|---|
| Sample # | Sample Depth + Top Hat | Time | Dose (WO, RO-7 Uncorrected) | Liquid Color | Pig# | Organic Layer _____ Color _____ Solids %_____ Setting Characteristics _____ |
| **Liquid Zip Cord** | | | | | | **L=24' 6.5" includes tophat** |
| 1SY-15-01FB | 22' 6.5" | 9:04 | <0.5 mr/hr | None | 7 | %Full 100 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth **L-24"** |
| 1SY-15-01 | 24' 6.75" | 9:07 | 500 mr/hr | Yellow | 21 | %Full 100 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth **L+1/4" Wait 5 Mins** |
| 1SY-15-01DUP | 24' 6.75" | 9:15 | 600 mr/hr | yellow | 9 | %Full 100 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth **L+1/4" Wait 5 Mins** |
| 1SY-15-02 | 24' 6" | 9:21 | 600 mr/hr | yellow | 5 | %Full 75 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth **L-1/2"** |
| 1SY-15-03 | 25' 4.5" | 9:30 | 700 mr/hr | Unknown (Amber bottle) | 3 | %Full 100 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth **L+10"** |
| 1SY-15-04 | 33' 8.5" | 9:35 | 600 mr/hr | Unknown (Amber bottle) | 38 | %Full 100 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth **L+9'2** |
| 1SY-15-05 | 42' 0.5" | 9:40 | 800 mr/hr | Unknown (Amber bottle) | 33 | %Full 100 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth **L+17'6** |
| Zipcord | Liquid 24' 6.5" | | | | | |
| | Solid 51' 6" | | | | | FLM Info Print/Sign Joe Insbett Date 3/2/16 |

| SY-101 Riser 021 | | Top Hat 53" | | Date 2/25/16 | | Work Package 181589 |
|---|---|---|---|---|---|---|
| Sample # | Sample Depth + Top Hat | Time | Dose (WO, RO-7 Uncorrected) | Liquid Color | Pig# | Organic Layer _____ Color _____ Solids % _____ Setting Characteristics _____ |
| | Sludge Level | | | | | S= 51' 6" includes tophat |
| 1SY-15-06 | 49' 10" | 9:48 | 1.4 r/hr | None | 34 | %Full 100 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth S-20" |
| 1SY-15-06A | 49' 10" | 9:53 | 1.5 r/hr | None | 2 | %Full 100 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth S-20" |
| 1SY-15-07 | 50' 8" | 9:57 | 1.8 r/hr | Foam on top/clear | 25 | %Full 100 Organic Layer None Color N/A Solids % 0 Setting Characteristics N/A Expected Depth S-10" |
| | | | | | | |
| | | | | | | |
| Zipcord | Liquid 24' 6.5" | | | | | |
| | Solid 51' 6" | | | | | FLM Info Print/Sign Joe Tribbett Date 3/2/16 |

# INFORMATION CLEARANCE REVIEW AND RELEASE APPROVAL

## Part I: Background Information

Title: DERIVATION OF BEST-BASIS INVENTORY FOR TANK 241-SY-101 AS OF OCTOBER 1, 2020

Information Category:
☐ Abstract ☐ Journal Article ☐ Summary
☐ Internet ☐ Visual Aid ☐ Software
☐ Full Paper ☑ Report ☐ Other

Publish to OSTI? ☐ Yes ☑ No

| Trademark/Copyright "Right to Use" Information or Permission Documentation | Yes ☐ | NA ☑ |
|---|---|---|

Document Number: RPP-RPT-48774 Revision 4 Date: November 2020

Author: Prindiville, Kerry A

## Part II: External/Public Presentation Information

Conference Name:

Sponsoring Organization(s): DOE ORP

Date of Conference: Conference Location:

Will Material be Handed Out? ☐ Yes ☑ No Will Information be Published? ☐ Yes ☑ No *(If Yes, attach copy of Conference format instructions/guidance.)*

## Part III: WRPS Document Originator Checklist

| *Description* | *Yes* | *N/A* | *Print/Sign/Date* |
|---|---|---|---|
| Information Product meets requirements in TFC-BSM-AD-C-01? | ☐ | ☑ | |
| Document Release Criteria in TFC-ENG-DESIGN-C-25 completed? (Attach checklist) | ☐ | ☑ | |
| If product contains pictures, safety review completed? | ☐ | ☑ | |

## Part IV: WRPS Internal Review

| *Function* | *Organization* | *Date* | *Print Name/Signature/Date* |
|---|---|---|---|
| Subject Matter Expert | WRPS | 03/17/2021 | Prindiville, Kerry A IDMS data attached |
| Responsible Manager | WRPS | 02/08/2021 | Cunningham, Buddy M IDMS data attached |
| Other: | | | |

## Part V: IRM Clearance Services Review

| *Description* | *Yes* | *No* | *Print Name/Signature* |
|---|---|---|---|
| Document Contains Classified Information? | ☐ | ☒ | If Answer is "Yes," ADC Approval Required<br>Print Name/Signature/Date |
| Document Contains Information Restricted by DOE Operational Security Guidelines? | ☐ | ☒ | Reviewer Signature:<br>Print Name/Signature/Date |
| Document is Subject to Release Restrictions?<br>*If the answer is "Yes," please mark category at right and describe limitation or responsible organization below:* | ☐ | ☒ | Document contains:<br>☐ Applied Technology ☐ Protected CRADA<br>☐ Personal/Private ☐ Export Controlled<br>☐ Proprietary ☐ Procurement – Sensitive<br>☐ Patentable Info. ☐ OUO<br>☐ Predecisional Info. ☐ UCNI<br>☐ Restricted by Operational Security Guidelines<br>☐ Other (Specify) |
| Additional Comments from Information Clearance Specialist Review? | ☐ | ☒ | Information Clearance Specialist Approval<br>APPROVED<br>By Lynn M. Ayers at 10:59 am, Mar 17, 2021<br>Print Name/Signature/Date |

**When IRM Clearance Review is Complete – Return to WRPS Originator for Final Signature Routing (Part VI)**

## INFORMATION CLEARANCE REVIEW AND RELEASE APPROVAL

**Part VI: Final Review and Approvals**

| *Description* | *Approved for Release* | | *Print Name/Signature* |
|---|---|---|---|
| | *Yes* | *N/A* | |
| WRPS External Affairs | ☒ | ☐ | McCune, Hal C - IDMS approval attached |
| WRPS Office of Chief Counsel | ☒ | ☐ | Peters, Amber D - IDMS approval attached |
| DOE – ORP Public Affairs/Communications | ☒ | ☐ | Tyree, Geoff T - IDMS approval attached |
| Other: DOE OCC | ☒ | ☐ | Hellstrom, George W - IDMS approval attached |
| Other: DOE ORP SME | ☒ | ☐ | Mauss, Billie M - IDMS approval attached |

Comments Required for WRPS-Indicate Purpose of Document:

To support NRC review of the Test Bed Initiative Draft Waste Incidental to Reprocessing Evaluation.

APPROVED
*By Lynn M. Ayers at 10:59 am, Mar 17, 2021*

**Approved for Public Release; Further Dissemination Unlimited**

**Information Release Station**

Was/Is Information Product Approved for Release? ☒ Yes ☐ No

If Yes, what is the Level of Releaser? ☑ Public/Unrestricted ☐ Other (Specify) _____

Date Information Product Stamped/Marked for Release: 03/17/2021

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      <comments>DUE: Thu, Feb 26, 2021 - 11 AM Please approve for public
        release, DERIVATION OF BEST-BASIS INVENTORY FOR TANK 241-SY-101
        AS OF OCTOBER 1, 2020, requested by Kerry Prindiville. This request for
        clearance is to support NRC review of the Test Bed Initiative Draft Waste
        Incidental to Reprocessing Evaluation. Thank you, Lynn Ayers
        Information Clearance</comments>
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