This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-WM-DP-147

Section 1 **of** 5

Title: 60 DAY WASTE COMPATIBILITY SAFETY ISSUE and FINAL RESULTS for TANK 241-AW-106, GRAB SAMPLES 6AW-95-1, 6AW-95-2 and 6AW-95-3

Date: 10/31/95 **Revision:** 0

Originator: RUTH A. ESCH
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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

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Document Title:	60-Day Waste Compatibility Safety Issue and Final Results for Tank 241-AW-106, Grab Samples 6AW-95-1, 6AW-95-2 and 6AW-95-3,
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ANALYTICAL SERVICES

60-DAY COMPATIBILITY SAFETY ISSUE AND FINAL RESULTS FOR TANK 241-AW-106, GRAB SAMPLES 6AW-95-1, 6AW-95-2 AND 6AW-95-3

Date Printed: OCTOBER 24, 1995

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TABLE OF CONTENTS (Continued)

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NARRATIVE

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60 DAY WASTE COMPATIBILITY SAFETY ISSUE AND FINAL RESULTS FOR TANK 241-AW-106 GRAB SAMPLES 6AW-95-1, 6AW-95-2 AND 6AW-95-3

Summary

Three grab samples (6AW-95-1, 6AW-95-2, and 6AW-95-3) were taken from tank 241-AW-106 riser 16B on August 24, 1995, and received by the 222-S Laboratory on August 24, 1995. Sample 6AW-95-1 was designated as a supernate liquid, and samples 6AW-95-2 and -3 were designated as sludge samples. These samples were analyzed to support both the waste compatibility safety program and to resolve process control questions from the most recent evaporator campaign. Accuracy and precision criteria were met for all analyses, with the following exceptions. The relative percent difference (RPD) between the sample and the duplicate for ^{137}Cs for sample 6AW-95-2 solid portion was 21.2% after one rerun. The required precision was ±20%. No reruns were performed (see analytical results section for explanation). No notifications were required based on sample results.

Appearance, OTR and Sample Breakdown

6AW-95-1

Visual observation indicated that sample 6AW-95-1 was a clear yellow liquid with only a trace of settled solids. There was no organic layer present.

The dose rate measured with the CP window open was 3.0 rad/hr and it was 2.5 R/hr with the window closed.

Two 20 mL subsamples were created. One was analyzed for inorganic analytes, and the other for radionuclides. The remainder of the liquids, with the trace solids, was archived for possible future analysis.

6AW-95-2

Visual observation indicated that sample 6AW-95-2 was approximately 80% settled solids with a clear yellow liquid layer above. There was no organic layer present.

The dose rate measured with the CP window open was 1.5 rad/hr and it was 1.1 R/hr with the window closed.

The percent settled solids was determined by calculating the ratio of the measured height of the settled solids to that of the entire sample. This method gives a close approximation of the actual percent solids. The result was 84% settled solids.

In a sludge sample, the solids will generally settle in the sample bottle. This makes it very difficult to get representative duplicate sample portions. Therefore, the sample was centrifuged to separate the liquid and solid portion. Each portion was analyzed separately for the same set of analyses.

The following data was collected after the sample was centrifuged:

Total weight of sample:	226.8 g	Bulk Density = 1.77 g/mL
Total volume of sample:	128 mL	Total Sample
Weight of solids:	184.2 g	Bulk Density = 2.02 g/mL
Volume of solids:	91 mL	Solids alone
Weight of liquids:	42.6 g	Bulk Density = 1.15 g/mL
Volume of liquids:	37 mL	Liquids alone

The volume percent solids by centrifugation is:

$$\frac{\text{Volume of solids}}{\text{Total volume of sample}} \times 100 = \frac{91\ \text{mL}}{128\ \text{mL}} \times 100 = 71.1\%$$

After the sample was centrifuged there was a thin layer of sludge material at the top of the liquid layer that was described as a "floating scum" layer. Refer to photograph #1 in the photograph section of this document. To collect this material, the liquid was poured off into a smaller centrifuge cone, and recentrifuged. After the second centrifugation, more solid was centrifuged out of the upper layer, but the upper layer still existed (refer to photograph #3 showing the same layer for sample 6AW-95-3). This "floating scum" material was a layer of solid that, at first touch, broke away from the side of the cone as if it were a plug of solids. It was difficult to collect this material for analysis because it kept dispersing back into the liquid layer. Evaporator Project Engineering requested that the material be analyzed for energetics (differential scanning calorimetry (DSC)), total organic carbon (TOC), total inorganic carbon (TIC), and aluminum (Al) (refer to cc:MAIL message from M. D. Guthrie to J. M. Jones (cc: to R. A. Esch), in the correspondence section of this document).

The solid portion was subsampled for analysis (47.6 g), and 110.5 g was archived for possible future analysis.

The liquid portion was also subsampled for analysis (19.4 g; ~17 mL), and 9.3 g (~8 mL) was archived.

6AW-95-3

Visual observation indicated that sample 6AW-95-3 was approximately 90% settled solids with a clear green-yellow liquid layer above. There was no organic layer present.

The dose rate measured with the CP window open was 4.0 rad/hr and it was 2.5 R/hr with the window closed.

The percent settled solids was determined by calculating the ratio of the measured height of the settled solids to that of the entire sample. This method gives a close approximation of the actual percent solids. The result was 84% settled solids.

This sample was also centrifuged to separate the liquid and solid portions. The following data was collected after the sample was centrifuged.

Total weight of sample:	223.5 g	Bulk Density = 1.80 g/mL
Total volume of sample:	124.5 mL	Total Sample
Weight of solids:	181.8 g	Bulk Density = 2.02 g/mL
Volume of solids:	90 mL	Solids alone
Weight of liquids:	41.7 g	Bulk Density = 1.21 g/mL
Volume of liquids:	34.5 mL	Liquids alone

The volume percent solids by centrifugation is:

$$\frac{\text{Volume of solids}}{\text{Total volume of sample}} \times 100 = \frac{90\ \text{mL}}{124.5\ \text{mL}} \times 100 = 72.3\%$$

A "floating scum" layer also appeared on this sample after centrifuging. It behaved the same as that described above (refer to photographs #2 and #3 in the photograph section of this document) and was analyzed for the same analytes as listed above, at the request of the Evaporator Project Engineering.

The solid portion was subsampled for analysis (41.5 g), and 86.8 g was archived for possible future analysis.

The liquid portion was also subsampled for analysis (11.7 g; ~10 mL), and 17.4 g (~14 mL) was archived.

Analytical Results

Attachments

Four tables are included with this report. Table 1 is the summary report from the Laboratory Information Management System (LIMS). Table 2 provides additional DSC results for the net energy (exothermic energy - endothermic energy) for the "floating scum layer", sample numbers S95T002285 and S95T002286. These were the only samples that had an exotherm greater than 0.0 joules/g. This additional information was requested by the East Tank Farms Transition Projects Engineering cognizant engineer, and the 242-A Evaporator Projects engineer. The endothermic energy and temperatures were obtained from the raw data.

Table 3 provides the inductively coupled plasma (ICP) serial dilution results. The serial dilution values were obtained from the raw data. The accuracy of the ICP results was assessed using these results in addition to matrix spikes. The sample was analyzed both undiluted and with a 5-fold serial dilution. For acceptable performance, the relative percent difference (RPD) between the serial dilution and the undiluted results must be $\leq$10%.

Table 4 is provided as a cross-reference for relating the tank farm customer ID numbers with the 222-S laboratory LABCORE sample numbers, and the portion of the sample that was analyzed.

The viscosity results for 6AW-95-1 were previously reported in Internal Memo 75765-PCS95-096 "Results of 106-AW Viscosity Measurements". This memo is included as Attachment 1.

Following the sample data summary tables is a section which contains the Radiochemistry Sample Summary Report called the Data Verification and Deliverable (DVD) report for the radionuclide analyses. This report summarizes the radionuclide results and provides data qualifiers and total propagated uncertainty (TPU) values for results. The TPU values are based on the uncertainties inherent in each step of the analysis process. They are used to calculate "reasonable" RPD values which may be used to accept valid data that do not meet the TSAP acceptance criteria. A report guide is provided at the front of this section to assist in understanding the "flagging" of the data presented.

Analytical Deviations

6AW-95-1
Sample number S95T002015 (the archive portion of the supernate sample) was used to perform viscosity measurements as requested by Evaporator Project Engineering (refer to cc:MAIL message from R. A. Esch to J. F. O'Rourke, in the correspondence section of this document). Procedure LT-519-115 Rev. A-0 was used for the determination, as described in memorandum number 75764-PCS95-082, referenced in the correspondence section of this document.

Sample number S95T002016 was analyzed for inorganic analytes, and S95T002017 was analyzed for radionuclides. All requested analytes are listed in Table 4 of the TSAP.

The average pH for this sample was reported as 14.18. Results for pH that are greater than 12.5 are suspect and should be considered estimates because the highest calibration buffer available is 12.5 and pH electrode performance degrades at high pH.

The method blank that was analyzed with the ^{137}Cs analysis gave a result (7.28e-4 μCi/mL) that was at the detection limit for the sample. This indicates that the samples may have become contaminated during the preparation. However, since the result was statistically insignificant compared to the sample result (112 μCi/mL), no rerun was requested.

The method blank that was analyzed with the ^{79}Se analysis for this sample gave a result (4.10e-6 μCi/mL) that was above the detection limit for the sample (2.21e-6 μCi/mL). However, since the blank result was near the detection limit, and statistically insignificant compared to the sample result (1.22e-4 μCi/mL), no rerun was requested.

The total carbon (TC) results may be biased high due to interferences from high concentrations of NO_3^- and NO_2^-. No reruns were requested due to this matrix incompatibility.

6AW-95-2
The solid portion of the sludge was analyzed directly for TIC, TC, and specific gravity (SpG) as sample number S95T002020. All of the radionuclide

determinations, listed in Table 4 of the TSAP, were performed on a fusion digest as sample number S95T002021.

The liquid portion of the sludge was analyzed directly for all requested analytes listed in Table 4 of the TSAP, as sample number S95T002031.

The "floating scum" layer was analyzed directly for TIC, TOC, and DSC as sample number S95T002285, and for Al on an acid digest as sample number S95T002287.

The method blank that was analyzed with the ^{137}Cs analysis for the solid portion of this sample gave a result (4.31e-2 μCi/g) that was above the detection limit for the sample (4.30e-2 μCi/g). This indicates that the samples may have become contaminated during the preparation. However, since the blank result was near the detection limit, and statistically insignificant compared to the sample result (~31 μCi/g), no rerun was requested.

The only requested analyte for gamma energy analysis (GEA) for this sample was ^{137}Cs. However, during the analysis ^{134}Cs was detected and measured to be present at 5.13e-2 μCi/g for the solid portion and 1.67e-1 μCi/mL for the decanted liquid portion. ^{60}Co results are given in Table 1 with the ^{137}Cs results.

The RPD for the ^{137}Cs for this sample was 21.2%. This result was obtained after one rerun of the sample batch. The result for the sample for the first run (28.19 μCi/g) was comparable to the rerun result of 27.90 μCi/g. Based on the total propagated uncertainty for this analysis, an RPD up to 32% would be considered reasonable due to sampling errors. Therefore, no further reruns were requested.

The method blank that was analyzed with the ^{90}Sr analysis for the solid portion of this sample gave a result (1.14e-2 μCi/g) that was above the detection limit for the sample (~9.00e-3 μCi/g). This indicates that the samples may have become contaminated during the preparation. However, since the blank result was near the detection limit, and statistically insignificant compared to the sample result (~39 μCi/g), no rerun was requested.

The method blank that was analyzed with the total uranium (U) analysis for the solid portion of this sample gave a result (1.48 μg/g) that was above the detection limit for the sample (~1.60e-2 μg/g). This indicates that the samples may have become contaminated during the preparation. However, since the blank result was statistically insignificant compared to the sample result (~1.10e+3 μg/g), no rerun was requested. The method blank that was analyzed with the liquid portion of this sample gave a result of 2.93e-3 μg/mL. Although this result was flagged in the DVD report, it is less than the sample detection limit of 4.48e-2 μg/mL, so no rerun was requested.

The spike recovery for the total uranium analysis for the solid portion of this sample was 158.2%. This result is high. However, since the concentration of uranium in the sample was more than four times that of the spike added, a high spike recovery is of little consequence. Since the spike recovery analysis was not required by the TSAP, no rerun was requested by 242-A Evaporator Engineering or East Tank Farms Transition Projects Engineering.

The spike recovery for the total uranium analysis for the liquid portion of this sample was 59.58% for the first run. Although sample spikes were not requested for this sample, the test was rerun once to try to improve the spike recovery. The spike recovery for the rerun was 139.5%. Since the spike recovery analysis was not required by the TSAP, no rerun was requested by 242-A Evaporator Engineering or East Tank Farms Transition Projects Engineering.

The method blank that was analyzed with the total beta analysis for the solid portion of this sample gave a result (4.30e-2 μCi/g) that was above the detection limit for the sample (3.11e-2 μCi/g). This indicates that the samples may have become contaminated during the preparation. However, since the blank result was near the detection limit, and statistically insignificant compared to the sample result (~119 μCi/g), no rerun was requested.

The TC results may be biased high due to interferences from high concentrations of NO_3^- and NO_2^-. No reruns were requested due to this matrix incompatibility.

6AW-95-3

The solid portion of the sludge was analyzed directly for TIC, TC, and specific gravity (SpG) as sample number S95T002036. All of the radionuclide determinations, listed in Table 4 of the TSAP, were performed on a fusion digest, as sample number S95T002037.

The liquid portion of the sludge was analyzed directly for all requested analytes listed in Table 4 of the TSAP, as sample number S95T002039.

The "floating scum" layer was analyzed directly for TIC, TOC, and DSC as sample number S95T002286, and for Al on an acid digest as sample number S95T002288.

The method blank that was analyzed with the ^{137}Cs analysis for the solid portion of this sample gave a result (4.31e-2 μCi/g) that was above the detection limit for the sample (4.30e-2 μCi/g). This indicates that the samples may have become contaminated during the preparation. However, since the blank result was near the detection limit, and statistically insignificant compared to the sample result (~32 μCi/g), no rerun was requested.

^{134}Cs was detected for this sample, and reported as 7.45e-2 μCi/g for the solid portion and 1.72e-1 μCi/mL for the decanted liquid portion. In addition, ^{154}Eu was also found in the solid portion of this sample at a concentration of 1.33e-1 μCi/mL.

The method blank that was analyzed with the ^{90}Sr analysis for the solid

portion of this sample gave a result (1.14e-2 μCi/g) that was above the detection limit for the sample (~9.00e-3 μCi/g). This indicates that the samples may have become contaminated during the preparation. However, since the blank result was near the detection limit, and statistically insignificant compared to the sample result (~69 μCi/g), no rerun was requested.

The ^{241}Am standard that was analyzed with the liquid portion of this sample gave a percent recovery of 74.27%, which was outside of the requested accuracy limits of 80% - 120%. However, since the result was within the laboratory statistical control limits for this analyte, no rerun was requested by 242-A Evaporator Engineering or East Tank Farms Transition Projects Engineering.

The method blank that was analyzed with the total uranium (U) analysis for the solid portion of this sample gave a result (1.48 μg/g) that was above the detection limit for the sample (~1.70e-2 μg/g). This indicates that the samples may have become contaminated during the preparation. However, since the blank result was statistically insignificant compared to the sample result (~1.70e+3 μg/g), no rerun was requested. The method blank that was analyzed with the liquid portion of this sample gave a result of 2.93e-3 μg/mL. Although this result was flagged in the DVD report, it is less than the sample detection limit of 4.48e-2 μg/mL, so no rerun was requested.

The spike recovery for the total uranium analysis for the solid portion of this sample was 179.3%. This result is high. However, since the concentration of uranium in the sample was more than four times that of the spike added, a high spike recovery is of little consequence. Since the spike recovery analysis was not required by the TSAP, no rerun was requested by 242-A Evaporator Engineering or East Tank Farms Transition Projects Engineering.

The method blank that was analyzed with the total beta analysis for the solid portion of this sample gave a result (4.30e-2 μCi/g) that was above the detection limit for the sample (3.20e-2 μCi/g). This indicates that the samples may have become contaminated during the preparation. However, since the blank result was near the detection limit, and statistically insignificant compared to the sample result (~188 μCi/g), no rerun was requested.

The TC results may be biased high due to interferences from high concentrations of NO_3^- and NO_2^-. No reruns were requested due to this matrix incompatibility.

Procedures

Procedure LA-514-113 Rev. C-0 was used to perform the differential scanning calorimetry (DSC) analysis. All analyses were run on direct samples. No analytical problems were noted.

Procedure LA-560-112 Rev. B-0 was used to perform the thermogravimetric analysis (TGA) for percent moisture. All analyses were run on direct samples. No analytical problems were noted.

Procedure LA-344-105 Rev. C-0 was used to perform the TOC analysis on the supernate sample and the "floating scum" layer. All analyses were run on

direct samples. No analytical problems were noted.

Procedure LA-548-121 Rev. D-1 was used for the GEA for ^{60}Co, ^{94}Nb, ^{106}Ru, ^{134}Cs, ^{137}Cs, ^{144}Ce, ^{154}Eu, ^{155}Eu, and ^{226}Ra in the supernate sample, and ^{137}Cs in the sludge sample. Liquid samples were analyzed directly. Solid samples were prepared by a fusion digestion, using procedure LA-549-141 Rev. D-0, prior to the ^{137}Cs analysis.

Procedure LA-220-101 Rev. D-1 was used for the analysis of ^{90}Sr. Liquid samples were analyzed directly. Solid samples were prepared by a fusion digestion, using procedure LA-549-141 Rev. D-0, prior to the ^{137}Cs analysis.

Procedure LA-505-161 Rev. B-0 was used to perform the inductively coupled plasma (ICP) analysis for Al, Fe, and Na on the supernate sample and for Al on the "floating scum" layer. This procedure is for ICP analysis using the Thermo Jarrell Ash (TJA) ICP instrument. Procedure LA-505-151, referenced in the TSAP, is the procedure for ICP analysis using the Analytical Research Laboratory (ARL) instrument. The two procedures are analytically equivalent. The "floating scum" layer was prepared by an acid digest, using procedure number LA-505-159 Rev. C-0, prior to the ICP analysis. No analytical problems were noted.

Procedure LA-211-102 Rev. C-0 was used to perform the hydroxide (OH^-) analysis on the direct supernate sample. No analytical problems were noted.

Procedure LA-533-105 Rev. D-1 was used to perform the ion chromatography (IC) analysis for Cl^-, F^-, PO_4^{3-}, SO_4^{2-}, NO_3^-, and NO_2^- on the supernate sample. The analysis was performed on the direct sample. No analytical problems were noted.

Procedure LA-212-106 Rev. A-0 was used to perform the pH analysis on the supernate sample. No analytical problems were noted.

Procedure LA-622-102 Rev. C-0 was used to perform the TIC analysis. The procedure referenced in the TSAP (LA-344-105) is incorrect for this analysis. All analyses were performed on direct samples. No analytical problems were noted.

Procedure LA-943-127 Rev. B-0 was used to analyze ^{238}Pu and $^{239/240}Pu$ in the supernate sample, and $^{239/240}Pu$ in the sludge samples. The procedure specified in the TSAP (LA-503-156) was superseded by the above procedure. Liquid samples were analyzed directly. Solid samples were prepared by a fusion digestion, using procedure LA-549-141 Rev. D-0, prior to the $^{239/240}Pu$ analysis.

Procedure LA-953-103 Rev. A-4 was used for the analysis of ^{241}Am, ^{244}Cm in the supernate sample, and ^{241}Am in the sludge samples. Liquid samples were analyzed directly. Solid samples were prepared by a fusion digestion, using procedure LA-549-141 Rev. D-0, prior to the ^{241}Am analysis.

Procedure LA-510-112 Rev. C-3 was used to perform the specific gravity (SpG) analysis. The analysis was performed on direct samples. No analytical problems were noted.

Procedure LA-925-009 Rev. A-1 was used to determine gross uranium by the phosphorescence method. Liquid samples were analyzed directly. Solid samples were prepared by a fusion digestion, using procedure LA-549-141 Rev. D-0, prior to the uranium analysis.

Procedure LA-508-101 Rev. D-2 was used for the AT and total beta (TB) determinations. Liquid samples were analyzed directly. Solid samples were prepared by a fusion digestion, using procedure LA-549-141 Rev. D-0, prior to the total alpha and total beta analyses. No analytical problems were noted.

The ^{3}H analysis was performed on the direct supernate sample using procedure LA-218-114 Rev. A-4. No analytical problems were noted.

The ^{14}C analysis was performed on the direct supernate sample using procedure LA-348-104 Rev. B-1. No analytical problems were noted.

The ^{99}Tc analysis was performed on the direct supernate sample using procedure LA-438-101 Rev. D-2. No analytical problems were noted.

The ^{129}I analysis was performed on the direct supernate sample using procedure LA-378-103 Rev. C-0. No analytical problems were noted.

The ^{237}Np analysis was performed on the direct supernate sample using procedure LA-933-141 Rev. H-1. No analytical problems were noted.

The TC analysis of the liquid portion of the sludge samples was performed by furnace oxidation, using procedure LA-344-105 Rev. C-0 for. The persulfate method, LA-342-100 Rev. C-0, was used to perform the TC analysis on the solid portion of the sludge samples. No preliminary digestion step was required prior to this analysis.

Reference

WHC-SD-WM-TSAP-037, Rev. 1, "Compatibility Grab Sampling and Analysis Plan", dated September 1, 1995, Westinghouse Hanford Company, Richland, WA 99352

Memorandum number 75764-PCS95-082, from J. F. O'Rourke, to E. Q. Le, dated September 27, 1995, "Viscosity Measurements of 106-AW Sample".

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SAMPLE DATA SUMMARY

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Table 1: Results for Compatibility and Evaporator Study
AW-106 GRAB

RISER: 16B
SEGMENT #: 6AW-95-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T002016			Total Carbon by Coulometry	ug/mL	92.33	6.000	2.71e+04	2.78e+04	2.74e+04	2.55	n/a	405.0	n/a
S95T002016			Tot. Organic Carbon by Coul.	ug/mL	97.33	<5.000	5.51e+03	5.08e+03	5.30e+03	8.12	n/a	55.00	n/a
S95T002016			Tot. Inorg. Carbon by Coul.	ug/mL	96.67	<5.000	8.22e+03	8.38e+03	8.30e+03	1.93	n/a	55.00	n/a
S95T002016			% Water by TGA using Mettler	%	99.72	n/a	68.88	n/a	n/a	n/a	n/a	n/a	n/a
S95T002016			Specific Gravity	Sp.G.	98.20	n/a	1.220	1.210	1.215	0.82	n/a	1.00e-02	n/a
S95T002016			pH Direct	pH	99.59	n/a	14.19	14.16	14.18	0.21	n/a	1.00e-02	n/a
S95T002016			OH- by Pot. Titration	ug/mL	94.58	<42.00	2.75e+04	2.79e+04	2.77e+04	1.44	n/a	2.50e+03	n/a
S95T002016			DSC Exotherm on Perkin Elmer	Joules/g	99.33	n/a	0.00e+00	n/a	n/a	n/a	n/a	n/a	n/a
S95T002016		D	Aluminium-ICP-Acid Dil.	ug/mL	98.20	-4.10e-03	4.60e+03	4.58e+03	4.59e+03	0.49	92.27	20.10	n/a
S95T002016		D	Iron-ICP-Acid Dil.	ug/mL	102.0	-1.00e-03	< 20.0500	<20.0500	n/a	n/a	101.2	20.10	n/a
S95T002016		D	Sodium-ICP-Acid Dil.	ug/mL	97.69	1.57e-02	1.03e+05	1.03e+05	1.03e+05	0.30	n/a	40.10	n/a
S95T002016			Sulfate by IC - Dionex 4000i	ug/mL	101.5	<6.78e-01	5.51e+03	n/a	n/a	n/a	n/a	1.44e+03	n/a
S95T002016			Phosphate by IC - Dionex 4000i	ug/mL	104.7	<5.96e-01	1.93e+03	n/a	n/a	n/a	n/a	1.26e+03	n/a
S95T002016			Nitrate by IC - Dionex 4000i	ug/mL	102.2	<6.99e-01	9.29e+04	n/a	n/a	n/a	n/a	1.48e+03	n/a
S95T002016			Nitrite by IC - Dionex 4000i	ug/mL	104.1	<5.47e-01	3.73e+04	n/a	n/a	n/a	n/a	1.16e+03	n/a
S95T002016			Fluoride by IC - Dionex 4000i	ug/mL	104.2	<6.20e-02	3.87e+03	n/a	n/a	n/a	n/a	132.0	n/a
S95T002016			Chloride by IC - Dionex 4000i	ug/mL	102.6	<8.30e-02	1.34e+03	n/a	n/a	n/a	n/a	176.0	n/a
S95T002017			Uranium by Phosphorescence	ug/mL	94.08	2.90e-03	71.10	n/a	n/a	n/a	n/a	4.48e-02	4.17E+00
S95T002017			Technetium-99 Liq. Scint.	uCi/mL	99.47	<4.06e-05	3.52e-02	n/a	n/a	n/a	n/a	4.59e-05	0.6
S95T002017			Strontium-89/90 High Level	uCi/mL	94.50	1.43e-02	3.39e-02	n/a	n/a	n/a	n/a	1.91e-02	5.25E+01
S95T002017			Selenium-79 by Liquid Scint.	uCi/mL	n/a	4.10e-06	1.22e-04	n/a	n/a	n/a	n/a	2.21e-06	1.75
S95T002017			Pu-239/240 by Ion Exchange	uCi/mL	92.19	<5.31e-05	1.38e-04	n/a	n/a	n/a	n/a	4.84e-05	5.7
S95T002017			Pu-238 by Ion Exchange	uCi/mL	n/a	<5.31e-05	< 4.84e-5	n/a	n/a	n/a	n/a	4.84e-05	14.1
S95T002017			Np237 by TTA Extraction	uCi/mL	86.23	<1.82e-05	<2.06E-05	n/a	n/a	n/a	n/a	4.32e-05	9.12E+01
S95T002017			Iodine-129 Waste Tank Samples	uCi/mL	87.83	<3.71e-06	5.76e-05	n/a	n/a	n/a	n/a	3.71e-06	3.77E+00
S95T002017			Tritium By Lachat	uCi/mL	104.0	<3.07e-06	1.13e-02	n/a	n/a	n/a	n/a	3.09e-06	2.60E-01
S95T002017			Ru/Rh-106 by GEA	uCi/mL	n/a	<4.24e-03	< 4.29e-1	n/a	n/a	n/a	n/a	4.00e-03	n/a
S95T002017			Radium-226 GEA Fraction	uCi/mL	n/a	<4.81e-03	< 6.46e-1	n/a	n/a	n/a	n/a	5.00e-03	n/a
S95T002017			Niobium-94 GEA Fraction	uCi/mL	n/a	<1.84e-04	< 1.32e-2	n/a	n/a	n/a	n/a	1.84e-04	n/a
S95T002017			Europium-155 by GEA	uCi/mL	n/a	<5.65e-04	< 6.76e-2	n/a	n/a	n/a	n/a	5.65e-04	n/a
S95T002017			Europium-154 by GEA	uCi/mL	n/a	<7.21e-04	< 2.26e-2	n/a	n/a	n/a	n/a	7.21e-04	n/a
S95T002017			Cesium-137 by GEA	uCi/mL	101.2	7.28e-04	112.0	n/a	n/a	n/a	n/a	7.28e-04	.13
S95T002017			Cesium-134 by GEA	uCi/mL	n/a	<2.11e-04	2.24e-01	n/a	n/a	n/a	n/a	2.11e-04	5.88
S95T002017			Cobalt-60 by GEA	uCi/mL	98.62	<2.43e-04	< 4.26e-3	n/a	n/a	n/a	n/a	2.43e-04	n/a
S95T002017			Ce/Pr-144 by GEA	uCi/mL	n/a	<2.11e-03	< 2.92e-1	n/a	n/a	n/a	n/a	2.00e-03	n/a
S95T002017			C-14 Small Volume	uCi/mL	91.07	<2.12e-06	1.35e-04	n/a	n/a	n/a	n/a	2.12e-06	1.59E+00
S95T002017			Cm-243/244 by Extraction	uCi/mL	n/a	<2.11e-03	<1.09E-03	n/a	n/a	n/a	n/a	1.09e-03	1.00E+02
S95T002017			Am-241 by Extraction	uCi/mL	85.67	<2.11e-03	<1.09E-03	n/a	n/a	n/a	n/a	1.09e-03	1.00E+02
S95T002017			Beta in Liquid Samples	uCi/mL	110.1	<2.63e-02	94.80	n/a	n/a	n/a	n/a	4.17e-02	3.86E-01
S95T002017			Alpha in Liquid Samples	uCi/mL	104.4	<7.33e-03	<1.34E-02	n/a	n/a	n/a	n/a	1.66e-02	5.00E+02

Table 1: Results for Compatibility and Evaporator Study
AW-106 GRAB

RISER: 16B
SEGMENT #: 6AW-95-2

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T002031			Total Carbon by Coulometry	ug/mL	92.33	6.000	2.32e+04	2.29e+04	2.30e+04	1.30	n/a	405.0	n/a
S95T002031			Tot. Inorg. Carbon by Coul.	ug/mL	96.67	<5.000	7.50e+03	7.55e+03	7.52e+03	0.66	n/a	55.00	n/a
S95T002031			Specific Gravity	Sp.G.	98.20	n/a	1.200	1.200	1.200	0.00	n/a	1.00e-02	n/a
S95T002031			Uranium by Phosphorescence	ug/mL	96.33	1.13e-01	50.40	55.90	53.15	10.3	139.5	4.07e-02	1.27E+00
S95T002031			Strontium-89/90 High Level	uCi/mL	94.50	1.43e-02	3.92e-01	3.80e-01	3.86e-01	3.11	n/a	1.91e-02	1.09E+01
S95T002031			Pu-239/240 by Ion Exchange	uCi/mL	98.44	<6.42e-05	1.49e-04	1.64e-04	1.57e-04	9.58	n/a	4.61e-05	5.3
S95T002031			Cesium-137 by GEA	uCi/mL	n/a	n/a	87.30	n/a	n/a	n/a	n/a	1.00e-03	.16
S95T002031			Cobalt-60 by GEA	uCi/mL	n/a	n/a	< 3.58e-3	n/a	n/a	n/a	n/a	2.93e-04	n/a
S95T002031			Am-241 by Extraction	uCi/mL	80.78	<3.09e-05	6.34e-04	6.09e-04	6.21e-04	4.02	n/a	7.15e-05	1.41E+00
S95T002031			Beta in Liquid Samples	uCi/mL	110.1	<2.63e-02	76.20	76.70	76.45	0.65	n/a	4.17e-02	4.32E-01
S95T002031			Alpha in Liquid Samples	uCi/mL	104.4	<7.33e-03	<1.12E-02	2.87e-02	n/a	n/a	n/a	1.66e-02	5.00E+02

Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T002018			Volume % Solids	%	n/a	n/a	71.10	n/a	n/a	n/a	n/a	n/a	n/a
S95T002020			Total Carbon by Persulfate	ug/g	96.67	4.200	4.29e+03	3.50e+03	3.90e+03	20.3	n/a	40.00	n/a
S95T002020			TIC by Acid/Coulometry	ug/g	99.00	4.600	2.05e+03	2.08e+03	2.06e+03	1.45	105.0	5.000	n/a
S95T002020			Specific Gravity-Solid/Sludges		101.8	n/a	2.100	1.840	1.970	13.2	n/a	4.90e-02	n/a
S95T002021	F		Alpha of Digested Solid	uCi/g	109.8	<3.87e-03	1.63e-01	1.44e-01	1.53e-01	12.4	n/a	9.45e-03	1.28E+01
S95T002021	F		Beta in Liquid Samples	uCi/g	108.4	4.30e-02	123.0	115.0	119.0	6.72	n/a	3.11e-02	3.16E-01
S95T002021	F		Am-241 by Extraction	uCi/g	88.27	<5.68e-02	1.16e-01	9.49e-02	1.05e-01	20.0	n/a	5.61e-02	2.96E+00
S95T002021	F		Cobalt-60 by GEA	uCi/g	98.16	<1.29e-02	< 0.01649	<0.0169	n/a	n/a	n/a	1.30e-02	n/a
S95T002021	F		Cesium-137 by GEA	uCi/g	99.92	4.31e-02	27.90	34.50	31.20	21.2	n/a	4.30e-02	0.86
S95T002021	F		Pu-239/240 by Ion Exchange	uCi/g	100.8	<1.66e-03	3.45e-02	3.24e-02	3.35e-02	6.28	n/a	3.44e-03	2.51E+00
S95T002021	F		Strontium-89/90 High Level	uCi/g	93.58	1.14e-02	41.10	36.10	38.60	13.0	n/a	8.92e-03	6.74E-01
S95T002021	F		Uranium by Phosphorescence	ug/g	96.80	1.480	1.04e+03	1.14e+03	1.09e+03	9.17	158.2	1.64e-02	3.09E+00

"Floating Scum" Layer

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T002285			DSC Exotherm using Mettler	Joules/g	107.6	n/a	86.20	n/a	n/a	n/a	n/a	n/a	n/a
S95T002285			TOC by Persulfate/Coulometry	ug/g	104.0	33.00	2.94e+03	3.36e+03	3.15e+03	13.3	104.0	40.00	n/a
S95T002285			TIC by Acid/Coulometry	ug/g	100.8	2.900	6.83e+03	6.63e+03	6.73e+03	2.97	94.00	5.000	n/a
S95T002287	A		Aluminium -ICP-Acid Digest	ug/g	100.4	2.16e-02	2.86e+03	2.86e+03	2.86e+03	0.06	n/a	46.80	n/a

Table 1: Results for Compatibility and Evaporator Study
AW-106 GRAB

RISER: 16B
SEGMENT #: 6AW-95-3

SEGMENT PORTION: Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T002039			Total Carbon by Coulometry	ug/mL	92.33	6.000	2.44e+04	2.53e+04	2.48e+04	3.62	n/a	405.0	n/a
S95T002039			Tot. Inorg. Carbon by Coul.	ug/mL	96.67	<5.000	8.04e+03	8.02e+03	8.03e+03	0.25	n/a	55.00	n/a
S95T002039			Specific Gravity	Sp.G.	98.20	n/a	1.210	1.200	1.205	0.83	n/a	1.00e-02	n/a
S95T002039			Uranium by Phosphorescence	ug/mL	94.08	2.90e-03	28.60	33.40	31.00	15.5	n/a	4.48e-02	1.30E+00
S95T002039			Strontium-89/90 High Level	uCi/mL	99.08	<2.24e-03	8.56e-01	8.62e-01	8.59e-01	0.70	n/a	4.66e-03	2.35E+00
S95T002039			Pu-239/240 by Ion Exchange	uCi/mL	98.44	<6.42e-05	2.30e-04	2.55e-04	2.43e-04	10.3	n/a	5.92e-05	5.2
S95T002039			Cesium-137 by GEA	uCi/mL	n/a	n/a	86.40	n/a	n/a	n/a	n/a	1.00e-03	.16
S95T002039			Cobalt-60 by GEA	uCi/mL	n/a	n/a	< 3.82e-3	n/a	n/a	n/a	n/a	2.93e-04	n/a
S95T002039			Am-241 by Extraction	uCi/mL	74.27	<2.56e-04	5.62e-04	5.84e-04	5.73e-04	3.84	n/a	6.75e-05	1.44E+00
S95T002039			Beta in Liquid Samples	uCi/mL	110.1	<2.63e-02	72.60	75.50	74.05	3.92	n/a	4.17e-02	4.43E-01
S95T002039			Alpha in Liquid Samples	uCi/mL	104.4	<7.33e-03	<7.33E-03	<7.33E-3	n/a	n/a	n/a	1.66e-02	5.00E+02

Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T002034			Volume % Solids	%	n/a	n/a	72.30	n/a	n/a	n/a	n/a	n/a	n/a
S95T002036			Total Carbon by Persulfate	ug/g	96.67	4.200	4.83e+03	4.75e+03	4.79e+03	1.67	100.0	40.00	n/a
S95T002036			TIC by Acid/Coulometry	ug/g	99.00	4.600	2.18e+03	2.41e+03	2.30e+03	10.0	n/a	5.000	n/a
S95T002036			Specific Gravity-Solid/Sludges		101.8	n/a	1.780	2.060	1.920	14.6	n/a	4.90e-02	n/a
S95T002037		F	Alpha of Digested Solid	uCi/g	109.8	<3.87e-03	2.84e-01	2.95e-01	2.89e-01	3.80	n/a	9.71e-03	9.72E+00
S95T002037		F	Beta in Liquid Samples	uCi/g	108.4	4.30e-02	187.0	189.0	188.0	1.06	n/a	3.20e-02	2.60E-01
S95T002037		F	Am-241 by Extraction	uCi/g	85.99	<1.17e-02	1.81e-01	2.10e-01	1.96e-01	14.8	n/a	6.53e-02	1.6
S95T002037		F	Cobalt-60 by GEA	uCi/g	98.16	<1.29e-02	< 0.01712	<0.0210	n/a	n/a	n/a	1.30e-02	n/a
S95T002037		F	Cesium-137 by GEA	uCi/g	99.92	4.31e-02	30.87	33.00	31.94	6.67	n/a	4.30e-02	0.83
S95T002037		F	Pu-239/240 by Ion Exchange	uCi/g	100.8	<1.66e-03	5.56e-02	5.56e-02	5.56e-02	0.00	n/a	4.25e-03	2.56E+00
S95T002037		F	Strontium-89/90 High Level	uCi/g	93.58	1.14e-02	68.90	69.00	68.95	0.15	n/a	9.13e-03	5.27E-01
S95T002037		F	Uranium by Phosphorescence	ug/g	96.80	1.480	1.70e+03	1.71e+03	1.70e+03	0.59	179.3	1.68e-02	3.17E+00

"Floating Scum" Layer

Sample#	R	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T002286			DSC Exotherm using Mettler	Joules/g	107.6	n/a	20.20	n/a	n/a	n/a	n/a	n/a	n/a
S95T002286			TOC by Persulfate/Coulometry	ug/g	104.0	33.00	3.76e+03	3.30e+03	3.53e+03	13.0	n/a	40.00	n/a
S95T002286			TIC by Acid/Coulometry	ug/g	100.8	2.900	5.72e+03	6.22e+03	5.97e+03	8.38	n/a	5.000	n/a
S95T002288		A	Aluminium -ICP-Acid Digest	ug/g	100.4	2.16e-02	2.89e+03	2.89e+03	2.89e+03	0.21	n/a	48.80	n/a

Table 2

Additional DSC Results for Tank 241-AW-106
Post Evaporator Campaign Analysis

Riser 16B
"Floating Scum Layer"

Sample ID		Exothermic Energy (Joules/g)	Temp (° C)	Endothermic Energy (Joules/g)	Temp (° C)	Net Energy (Joules/g)
S95T002285						
(AW-106-2)	Samp	86.20	259.6	1619.3	117.3	-1533.1
S95T002286						
(AW-106-3)	Samp	20.20	263.4	1246.5	107.3	-1226.3

Net Energy = Exothermic Energy - Endothermic Energy
Notification Limit: Net Energy > 0.0 Joules/g
or Exothermic Energy > 481 Joules/g

Table 3

ICP Serial Dilution Results for Tank 241-AW-106
Waste Compatibility Study

Riser 16B
Supernate

Sample ID	Analyte	Sample Result (µg/mL) Undiluted	Serial Dilution Result (µg/mL)	RPD
S95T002016				
(AW-106-1)	Al	4600	4620	0.4
	Fe	<20.05	<20.05	n/a
	Na	1.03E+05	1.06E+05	2.9

RPD (Relative Percent Difference) = (ABS(Sample - Serial Dilution))/[(Sample +Serial Dilution)/2] X 10

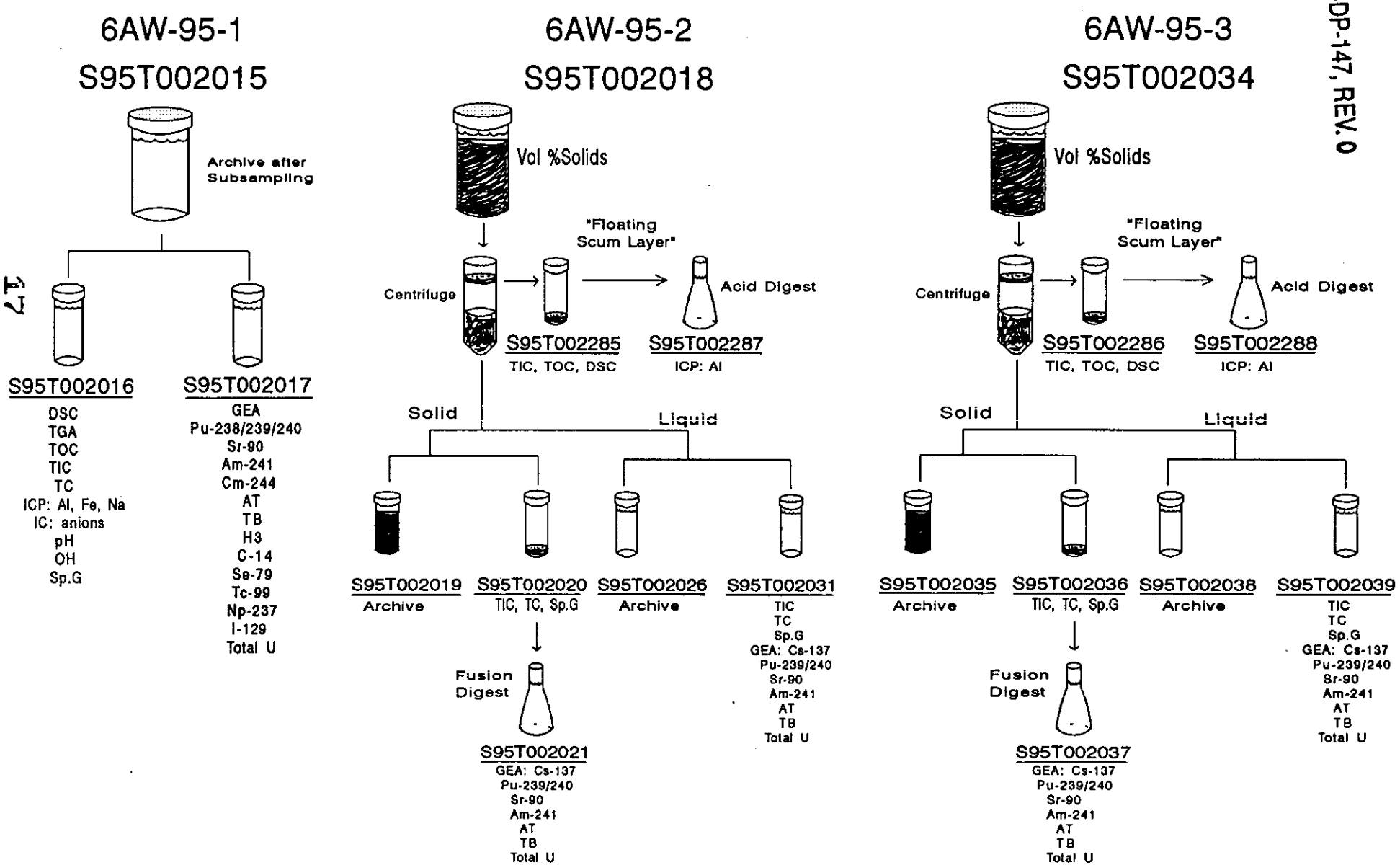
Table 4

(1 of 2)

Subsample LABCORE Numbers	Parent LABCORE Number	Customer Sample ID
S95T002015	S95T002015	6AW-95-1
S95T002016		
S95T002017		
S95T002018	S95T002018	6AW-95-2
S95T002019		
S95T002020		
S95T002021		
S95T002026		
S95T002031		
S95T002034	S95T002034	6AW-95-3
S95T002035		
S95T002036		
S95T002037		
S95T002038		
S95T002039		
S95T002285	S95T002018	6AW-95-2
S95T002286	S95T002034	6AW-95-3
S95T002287	S95T002018	6AW-95-2
S95T002288	S95T002034	6AW-95-3

Table 4 (2 of 2)

AW-106 GRAB SAMPLE BREAKDOWN



ATTACHMENT 1

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75764-PCS95-096

Attachment

TANK 106-AW VISCOSITY RESULTS

Consisting of 6 Pages including the cover page

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From: Process Chemistry and Statistics 75764-PCS95-096
Phone: 373-6322 T6-09
Date: October 24, 1995
Subject: RESULTS OF 106-AW VISCOSITY MEASUREMENTS

To: E. Q. Le R1-43

cc: R. A. Esch T6-06
M. D Guthrie R1-43
J. R. Jewett T6-09
R. J. Nicklas R1-43
M. C. Teats Jr. R1-43
B. H. Von Bargen R1-43
JFO File/LB

Reference: Internal Memo, J. F. O'Rourke to E. Q. Le, "Viscosity Measurements of 106-AW Sample", dated September 27, 1995.

This letter summarizes the viscosity measurements recently performed on sample 6AW-95-1 (S95T002015). The viscosity of the 106-AW sample was evaluated at two different temperatures, 25°C and 44°C. The viscosities were recorded with shear rates increasing from 0 s^{-1} to 300 s^{-1} and decreasing from 300 s^{-1} to 0 s^{-1}. Performance checks were made with 10 cP and 100 cP certified Newtonian standards prior to the sample runs. The performance checks were within the required 20% range.

The attachment contains viscosity curves (viscosity vs. shear rate) and raw data for both temperatures. At 25°C, the sample exhibited the non-Newtonian behavior of viscosity decreasing with shear rate. Above a 50 s^{-1} shear rate, the viscosity remained constant at approximately 4 cP. Crystal formation during the 44°C run caused the viscosity curve to be quite erratic. If required by the customer, the 44°C run can be repeated with better techniques for limiting evaporation of the sample. All data associated with this testing was recorded in the controlled laboratory notebook WHC-N-1272-1.

If you have any questions on this letter, feel free to call me at 373-6322.

J. F. O'Rourke, Advanced Engineer
Process Chemistry and Statistics

Attachment

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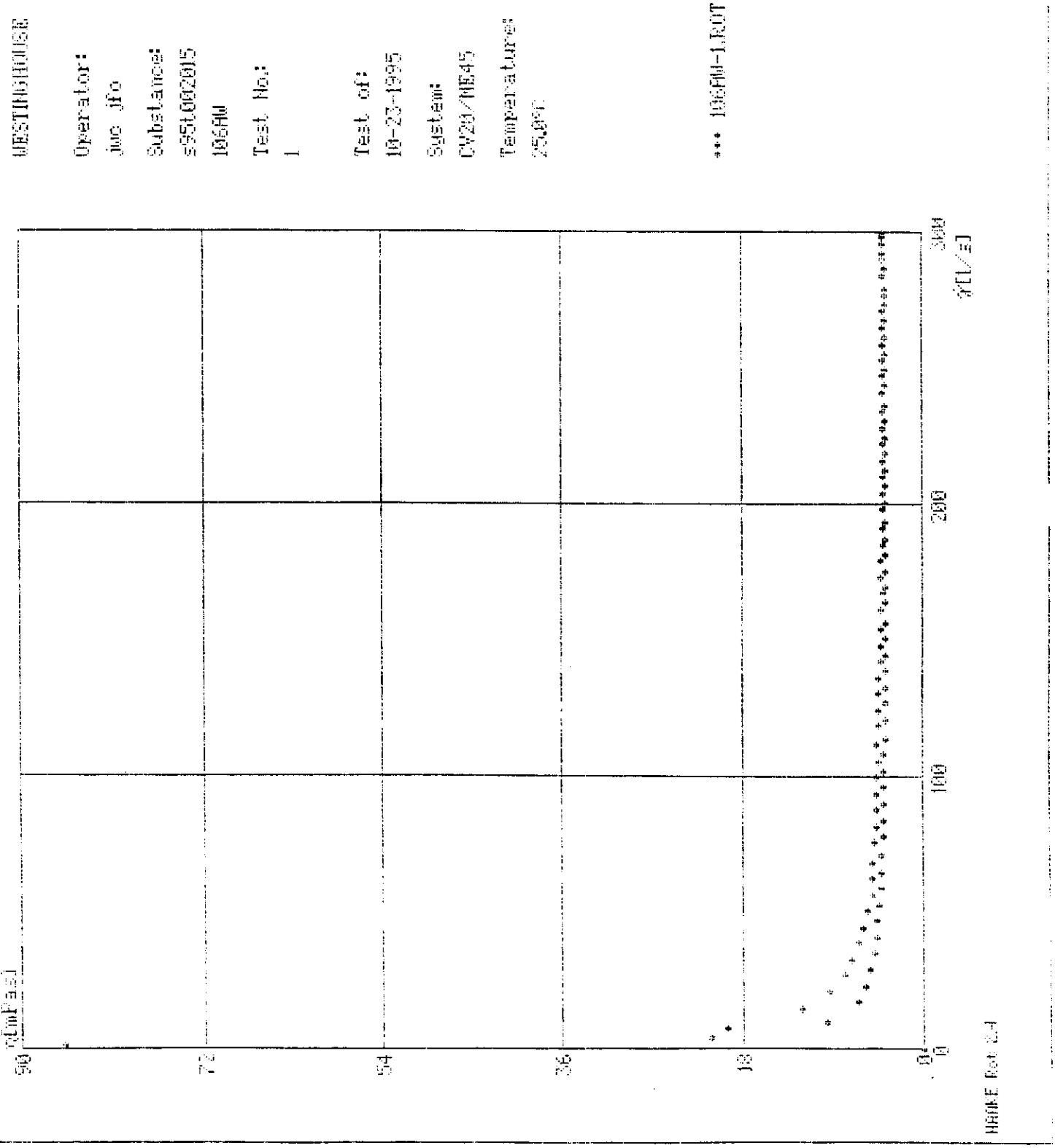

Apparent viscosity:
Eta(min)=0.000 Eta(max)=21.13 Eta=4.041 s(n-1)=2.000

Point	D[1/s]	Tau[Pa]	Eta[mPas]	t[min]	Temp[°C]
1	0.000	0.063	0.000	0.00	24.2
2	3.886	0.082	21.130	0.05	24.3
3	9.878	0.094	9.500	0.11	24.4
4	17.170	0.108	6.299	0.18	24.3
5	22.990	0.130	5.669	0.24	24.4
6	29.320	0.158	5.342	0.30	24.4
7	35.480	0.172	4.848	0.37	24.5
8	41.300	0.193	4.671	0.43	24.4
9	47.360	0.214	4.513	0.49	24.6
10	53.230	0.227	4.261	0.54	24.5
11	59.240	0.244	4.114	0.60	24.5
12	65.250	0.266	4.075	0.66	24.5
13	71.110	0.293	4.124	0.72	24.6
14	76.300	0.313	3.995	0.79	24.5
15	84.160	0.331	3.933	0.85	24.6
16	90.180	0.360	3.989	0.91	24.7
17	96.140	0.372	3.864	0.97	24.5
18	102.100	0.388	3.806	1.03	24.7
19	108.100	0.418	3.872	1.09	24.5
20	113.900	0.428	3.752	1.15	24.5
21	121.100	0.444	3.670	1.22	24.5
22	127.100	0.481	3.783	1.28	24.6
23	133.000	0.499	3.754	1.34	24.7
24	139.000	0.519	3.732	1.40	24.7
25	144.900	0.541	3.734	1.46	24.7
26	150.900	0.558	3.697	1.52	24.5
27	156.700	0.585	3.734	1.58	24.7
28	163.900	0.605	3.689	1.65	24.5
29	169.900	0.627	3.689	1.71	24.9
30	175.800	0.662	3.766	1.77	24.7
31	181.800	0.673	3.699	1.83	24.6
32	187.700	0.701	3.736	1.89	24.6
33	193.700	0.717	3.701	1.95	24.6
34	200.900	0.738	3.672	2.02	24.7
35	206.700	0.755	3.650	2.08	24.8
36	212.800	0.770	3.620	2.14	24.8
37	218.800	0.800	3.658	2.20	24.7
38	224.600	0.817	3.638	2.26	24.8
39	230.600	0.854	3.701	2.32	24.7
40	236.500	0.876	3.703	2.38	24.8
41	243.700	0.885	3.632	2.45	24.7
42	249.600	0.916	3.671	2.51	24.9
43	255.500	0.946	3.703	2.57	24.8
44	261.600	0.971	3.712	2.63	24.8
45	267.400	0.974	3.640	2.69	24.8
46	273.500	1.001	3.660	2.75	24.8
47	279.300	1.032	3.696	2.81	24.7
48	286.400	1.056	3.686	2.88	24.7
49	292.400	1.147	3.922	2.94	24.4
50	298.300	1.173	3.932	3.00	24.7

WESTINGHOUSE

Operator:
jwo jfo

Substance:
s95t002015
106AW AT 460C

Test No.:
1

Test of:
10-23-1995

System:
CV20/ME45

Temperature:
~~25.00C~~ 44°C
JFO
10/24/95

*** 106AW3.ROT

HAAKE RotoVisco 1

Apparent viscosity:
Eta(min)=0.000 Eta(max)=22.60 Eta=3.161 s(n-1)=3.275

Point	D[1/s]	Tau[Pa]	Eta[mPas]	t[min]	Temp[°C]
1	0.000	0.000	0.000	0.00	44.0
2	4.037	0.091	22.600	0.05	43.9
3	10.060	0.102	10.110	0.11	43.9
4	17.190	0.108	6.293	0.18	44.0
5	23.220	0.125	5.388	0.24	43.9
6	29.670	0.132	4.437	0.30	44.0
7	35.480	0.134	3.783	0.37	44.0
8	41.500	0.125	3.015	0.43	44.0
9	47.360	0.138	2.917	0.49	44.0
10	53.370	0.158	2.955	0.55	44.0
11	59.380	0.156	2.634	0.61	44.1
12	65.250	0.173	2.657	0.66	44.1
13	71.260	0.186	2.615	0.72	44.2
14	78.300	0.206	2.630	0.79	44.1
15	84.310	0.219	2.597	0.85	44.2
16	90.320	0.229	2.540	0.91	44.0
17	96.190	0.270	2.805	0.97	44.2
18	102.200	0.275	2.691	1.03	44.3
19	108.100	0.301	2.786	1.09	44.3
20	114.100	0.302	2.651	1.15	44.2
21	121.200	0.321	2.645	1.22	44.4
22	127.200	0.356	2.797	1.28	44.5
23	133.100	0.360	2.702	1.34	44.2
24	139.100	0.386	2.792	1.40	44.4
25	145.000	0.400	2.759	1.46	44.2
26	151.000	0.428	2.831	1.52	44.3
27	156.900	0.471	2.999	1.58	44.5
28	164.100	0.493	3.003	1.65	44.4
29	169.900	0.399	2.347	1.71	44.4
30	176.000	0.390	2.215	1.77	44.2
31	182.000	0.407	2.235	1.83	44.3
32	187.800	0.412	2.193	1.89	44.2
33	193.800	0.430	2.219	1.95	44.0
34	201.000	0.463	2.302	2.02	44.3
35	206.800	0.447	2.162	2.08	44.2
36	212.800	0.480	2.254	2.14	44.2
37	218.900	0.472	2.155	2.20	44.4
38	224.800	0.524	2.331	2.26	44.4
39	230.700	0.525	2.276	2.32	44.5
40	236.700	0.571	2.413	2.38	44.4
41	243.700	0.599	2.459	2.45	44.3
42	249.700	0.648	2.595	2.51	44.0
43	255.700	0.656	2.566	2.57	44.5
44	261.600	0.727	2.780	2.63	44.4
45	267.500	0.777	2.905	2.69	44.6
46	273.500	0.476	1.740	2.75	44.7
47	279.400	0.818	2.928	2.81	44.5
48	286.500	1.486	5.186	2.88	44.7
49	292.500	1.775	6.070	2.94	44.4
50	298.500	2.063	6.912	3.00	44.5

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RADIOCHEMISTRY SAMPLE SUMMARY REPORT

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

SDG 95000126
Contact R. A. Esch

REPORT GUIDE

Client TWRS
Tank AW106

METHOD SUMMARY

WHC-SD-WM-DP-147, REV. 0

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data' means no amount ADDED was specified. 'LOW' and 'HIGH'

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Version 1.0
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GUIDE, cont.

Client TWRS
Tank AW106

METHOD SUMMARY
WHC-SD-WM-DP-147, REV. 0

correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Preparation factors are underlined if greater than the nominal value specified for the QC batch.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

* Count times are underlined if less than the nominal value

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specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held (Analyzed - Collected) are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included.

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GUIDE, cont.

Client TWRS
Tank AW106

METHOD SUMMARY

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No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

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Contact R. A. Esch

REPORT GUIDE

Client TWRS
Tank AW106

DATA SHEET

WHC-SD-WM-DP-147, REV. 0

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity). If the MDA is blank, the ERROR is used as the limit.

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GUIDE, cont.

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Tank AW106

DATA SHEET
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J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA

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GUIDE, cont.

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Tank AW106

DATA SHEET
WHC-SD-WM-DP-147, REV. 0

may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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WHC 222-S LABORATORY
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SDG 95000126	Client TWRS
Contact R. A. Esch	Tank AW106

SUMMARY DATA SECTION

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Approved by

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

SAMPLE SUMMARY

WHC-SD-WM-DP-147, REV. 0

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	PRIORITY	COLLECTED	RECEIVED
AW106 S1 Radchem Tests	R: S: C:	LIQUID		S95T002017			08/24/95 13:00
AW106 S2 Decant Supernat	R: S: C:	LIQUID		S95T002031			08/24/95 13:00
AW106 S2 Decant Supernat	R: S: C:	LIQUID		S95T002031D			
AW106 S2 Decant Supernat	R: S: C:	LIQUID		S95T002031S			
AW106 S2 Solid Fusion	R: 16B S: 6AW-95-2 C: n/ FUSION	SOLID		S95T002021			08/24/95 13:00
AW106 S2 Solid Fusion-DU	R: 16B S: 6AW-95-2 C: n/ FUSION	SOLID		S95T002021D			
AW106 S2 Solid Fusion-SP	R: 16B S: 6AW-95-2 C: n/ FUSION	SOLID		S95T002021S			
AW106 S3 Decant Supernat	R: S: C:	LIQUID		S95T002039			08/24/95 12:35
AW106 S3 Decant Supernat	R: S: C:	LIQUID		S95T002039D			
AW106 S3 Decant Supernat	R: S: C:	LIQUID		S95T002039S			
AW106 S3 Solid Fusion	R: 16B S: 6AW-95-3 C: n/ FUSION	SOLID		S95T002037			08/24/95 12:35
AW106 S3 Solid Fusion-DU	R: 16B S: 6AW-95-3 C: n/ FUSION	SOLID		S95T002037D			
AW106 S3 Solid Fusion-SP	R: 16B S: 6AW-95-3 C: n/ FUSION	SOLID		S95T002037S			
DI Blank		LIQUID		B2287-2			
DI Blank		LIQUID		B2288-2			
DI Blank		LIQUID		B2289-2			
DI Blank		LIQUID		B2293-2			
DI Blank		LIQUID		B2298-2			
DI Blank		LIQUID		B2299-2			
DI Blank		LIQUID		B2304-2			
DI Blank		LIQUID		B2311-2			
DI Blank		LIQUID		B2312-2			
Method Blank		LIQUID		B2355-1			
DI Blank		LIQUID		B2357-2			
DI Blank		LIQUID		B2358-2			
DI Blank		LIQUID		B2691-2			
DI Blank		LIQUID		B2721-2			
DI Blank		LIQUID		B2728-2			
DI Blank		LIQUID		B2751-2			
Method Blank		LIQUID		B2913-2			
DI Blank		LIQUID		B2965-2			
Method Blank		SOLID		B2462-2			
Method Blank		SOLID		B2463-2			
Method Blank		SOLID		B2484-2			
Method Blank		SOLID		B2493-2			
Method Blank		SOLID		B2651-2			
Method Blank		SOLID		B2690-2			
Method Blank		SOLID		B2692-2			
Lab Control Sample		LIQUID		S2287-1			

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SDG 95000126
Contact R. A. Esch

SAMPLE SUMMARY, cont.

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	PRIORITY	COLLECTED	RECEIVED
Lab Control Sample		LIQUID		S2288-1			
Lab Control Sample		LIQUID		S2289-1			
Lab Control Sample		LIQUID		S2293-1			
Lab Control Sample		LIQUID		S2298-1			
Lab Control Sample		LIQUID		S2299-1			
Lab Control Sample		LIQUID		S2304-1			
Lab Control Sample		LIQUID		S2311-1			
Lab Control Sample		LIQUID		S2312-1			
Lab Control Sample		LIQUID		S2357-1			
Lab Control Sample		LIQUID		S2358-1			
Lab Control Sample		LIQUID		S2691-1			
Lab Control Sample		LIQUID		S2721-1			
Lab Control Sample		LIQUID		S2728-1			
Lab Control Sample		LIQUID		S2751-1			
Lab Control Sample		LIQUID		S2913-1			
Lab Control Sample		LIQUID		S2965-1			
Lab Control Sample		SOLID		S2462-1			
Lab Control Sample		SOLID		S2463-1			
Lab Control Sample		SOLID		S2484-1			
Lab Control Sample		SOLID		S2493-1			
Lab Control Sample		SOLID		S2651-1			
Lab Control Sample		SOLID		S2690-1			
Lab Control Sample		SOLID		S2692-1			

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

SDG 95000126
Contact R. A. Esch

WORK SUMMARY

Client TWRS
Tank AW106

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COUNTS OF TESTS BY SAMPLE TYPE

TEST	Priority	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AB		Alpha Analysis	222-S Lab Analytical Procedure	2			1	1	2		6
AB		Alpha Analysis	222-S Lab Analytical Procedure	3			1	1	2		7
AM		Americium-241	222-S Lab Analytical Procedure	2			2	2	2		8
AM		Americium-241	222-S Lab Analytical Procedure	3			3	3	2		11
C		Carbon 14	222-S Lab Analytical Procedure	1			1	1			3
GEA		Gamma Spectroscopy	222-S Lab Analytical Procedure	2			1	1	2		6
GEA		Gamma Spectroscopy	222-S Lab Analytical Procedure	3			2	2	2		9
H		Tritium	222-S Lab Analytical Procedure	1			1	1			3
I		Iodine-129	222-S Lab Analytical Procedure	1			1	1			3
NP		Neptunium-237	222-S Lab Analytical Procedure	1			1	1			3
PU		Plutonium-239	222-S Lab Analytical Procedure	2			1	1	2		6
PU		Plutonium-239	222-S Lab Analytical Procedure	3			2	2	2		9
SE		Selenium 79	222-S Lab Analytical Procedure	1			1				2
SR		Strontium-89/90	222-S Lab Analytical Procedure	2			1	1	2		6
SR		Strontium-89/90	222-S Lab Analytical Procedure	3			2	2	2		9
TC		Technetium	222-S Lab Analytical Procedure	1			1	1			3
U		Uranium	222-S Lab Analytical Procedure	2			1	1	2	2	8
U		Uranium	222-S Lab Analytical Procedure	3			2	2	2	2	11
TOTALS				36			25	24	24	4	113

Final DVD Report

Lab id 222-S
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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

S95T002017

AW106 S1 Radchem Tests

DATA SHEET

WHC-SD-WM-DP-147, REV. 0

SDG 95000126 Client TWRS
Contact R. A. Esch Tank AW106

Lab sample id S95T002017 Client sample id AW106 S1 Radchem Tests
Dept sample id Location/Matrix R: S: C: LIQUID
Received 08/24/95 Collected
Chain of custody id n/a

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	<1.7E-02		1.7E-02		U	AB
Total Beta	12587-47-2	9.48E 01	15	4.2E-02			AB
Total Uranium		7.11E 01	15	4.5E-02			U
Tritium	10028-17-8	1.13E-02	15	3.1E-06			H
Carbon 14	14762-75-5	1.35E-04	15	2.1E-06			C
Technetium 99	14133-76-7	3.52E-02	15	4.6E-05			TC
Selenium 79	15758-45-9	1.22E-04	15	2.2E-06		BX	SE
Strontium 89/90		3.39E-02	56	1.9E-02			SR
Neptunium 237	13994-20-2	<4.3E-05		4.3E-05		U	NP
Iodine 129	15056-84-1	5.76E-05	15	3.7E-06			I
Americium 241	14596-10-2	<1.1E-03		1.1E-03		U	AM
Plutonium 239/240		1.38E-04	16	4.8E-05			PU
Plutonium 238	13981-16-3	<4.8E-05		4.8E-05		U	PU
GEA Analytes							
Cobalt 60	10198-40-0	<2.4E-04		2.4E-04		U	GEA
Niobium 94	14681-63-1	<1.8E-04		1.8E-04		U	GEA
Ruthenium 106	13967-48-1	<4.2E-03		4.2E-03		U	GEA
Cesium 134	13967-70-9	2.24E-01	16	2.1E-04			GEA
Cesium 137	10045-97-3	1.18E 02	15	7.3E-04			GEA
Cerium 144	14762-78-8	<2.1E-03		2.1E-03		U	GEA
Europium 154	15585-10-1	<7.2E-04		7.2E-04		U	GEA
Europium 155	14391-16-3	<5.6E-04		5.6E-04		U	GEA
Radium 226	13982-63-3	<4.8E-03		4.8E-03		U	GEA

Supernatant liquid

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WHC 222-S LABORATORY

S95T002017

TANK AW106, GROUP 95000126

DATA SHEET, cont

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AW106 S1 Radchem Tests

SDG 95000126 Client/Tank TWRS AW106
Contact R. A. Esch Contract AW106

Lab sample id S95T002017 Client sample id AW106 S1 Radchem Tests
Dept sample id Location/Matrix R: S: C: LIQUID
Received 08/24/95 Collected
Chain of custody id n/a

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
S95T002017	AB	2299-4		1.00 ml	09/20/95		SLF
S95T002017	U	2721-3		1.00 ml	10/06/95		JLS
S95T002017	H	2304-3		1.00 ml	10/12/95		JLS
S95T002017	C	2357-3		1.00 ml	09/25/95		SAC
S95T002017	TC	2293-5		0.250 ml	09/15/95		JLS
S95T002017	SE	2357-3		1.00 ml	10/12/95		JLS
S95T002017	SR	2298-4		1.00 ml	09/29/95		SLF
S95T002017	NP	2289-3		0.250 ml	09/27/95		LLF
S95T002017	I	2358-3		1.00 ml	10/04/95		SAC
S95T002017	AM	2728-3		0.100 ml	09/20/95		LLF
S95T002017	PU	2288-3		0.100 ml	09/13/95		LLF
S95T002017	GEA	2312-3		0.100 ml	09/27/95		PPB

Loc: Riser: 16B Seg: 6AW-95-1 Core: n/a

WHC 222-S LABORATORY

S95T002031

TANK AW106, GROUP 95000126

DATA SHEET

AW106 S2 Decant Supernat

WHC-SD-WM-DP-147, REV. 0

SDG 95000126 Client TWRS
Contact R. A. Esch Tank AW106

Lab sample id S95T002031 Client sample id AW106 S2 Decant Supernat
Dept sample id _____ Location/Matrix R: S: C: LIQUID
Received 08/24/95 Collected _____
Chain of custody id n/a

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	<1.7E-02		1.7E-02		U	AB
Total Beta	12587-47-2	7.62E 01	14	4.2E-02			AB
Total Uranium		5.04E 01	15	4.1E-02		B	U
Strontium 89/90		3.92E-01	19	1.9E-02			SR
Americium 241	14596-10-2	6.34E-04	15	7.2E-05			AM
Plutonium 239/240		1.49E-04	16	4.6E-05			PU
GEA Analytes							
Cobalt 60	10198-40-0	<2.9E-04		2.9E-04		U	GEA
Cesium 137	10045-97-3	8.73E 01	15	6.7E-04			GEA

Supernatant liquid

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
S95T002031	AB	2299-5		1.00 ml	09/20/95		SLF
S95T002031	U	2965-3		1.00 ml	10/18/95		JLS
S95T002031	SR	2298-5		1.00 ml	09/29/95		SLF
S95T002031	AM	2691-3		0.500 ml	10/04/95		LLF
S95T002031	PU	2287-3		0.100 ml	09/15/95		LLF
S95T002031	GEA	2311-3		0.100 ml	09/27/95		PPB

Samp: AW106 S2 Decant Supernate
Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

S95T002021

AW106 S2 Solid Fusion

DATA SHEET

WHC-SD-WM-DP-147, REV. 0

SDG 95000126 Client TWRS
Contact R. A. Esch Tank AW106

Lab sample id S95T002021 Client sample id AW106 S2 Solid Fusion FUSION
Dept sample id Location/Matrix R: 16B S: 6AW-95-2 C: n/ SOLID
Received 08/24/95 Collected
Chain of custody id

ANALYTE	CAS NO	RESULT uCi/g	2σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST
Total Alpha	12587-46-1	1.63E-01	20	9.4E-03		H	AB
Total Beta	12587-47-2	1.23E 02	15	3.1E-02		B	AB
Total Uranium		1.04E 03	15	1.6E-02		B	U
Strontium 89/90		4.11E 01	15	8.9E-03		B	SR
Americium 241	14596-10-2	1.16E-01	16	5.6E-02			AM
Plutonium 239/240		3.45E-02	15	3.4E-03			PU
GEA Analytes							
Cobalt 60	10198-40-0	<1.3E-02		1.3E-02		U	GEA
Cesium 137	10045-97-3	2.79E 01	15	4.3E-02		B	GEA

Sludge

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED BY
S95T002021	AB	2651-4	01	0.0500 ml	10/02/95	SLF
S95T002021	U	2484-3		1.00 ml	10/10/95	JLS
S95T002021	SR	2493-4		0.100 ml	10/03/95	SLF
S95T002021	AM	2692-3	02	1.00 ml	10/03/95	LLF
S95T002021	PU	2462-3		1.00 ml	09/27/95	LLF
S95T002021	GEA	2690-3	01	1.00 ml	10/02/95	PPB

Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

S95T002039

AW106 S3 Decant Supernat

DATA SHEET

WHC-SD-WM-DP-147, REV. 0

SDG 95000126 Client TWRS
Contact R. A. Esch Tank AW106

Lab sample id S95T002039 Client sample id AW106 S3 Decant Supernat
Dept sample id Location/Matrix R: S: C: LIQUID
Received 08/24/95 Collected
Chain of custody id n/a

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST
Total Alpha	12587-46-1	<1.7E-02		1.7E-02		U	AB
Total Beta	12587-47-2	7.26E 01	15	4.2E-02			AB
Total Uranium		2.86E 01	15	4.5E-02			U
Strontium 89/90		8.56E-01	15	4.7E-03			SR
Americium 241	14596-10-2	5.62E-04	15	6.8E-05		L	AM
Plutonium 239/240		2.30E-04	16	5.9E-05			PU
GEA Analytes							
Cobalt 60	10198-40-0	<2.9E-04		2.9E-04		U	GEA
Cesium 137	10045-97-3	8.64E 01	15	6.7E-04			GEA

Supernatant liquid

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED BY
S95T002039	AB	2299-7		1.00 ml	09/20/95	SLF
S95T002039	U	2721-7		1.00 ml	10/06/95	JLS
S95T002039	SR	2913-4		0.100 ml	10/16/95	SLF
S95T002039	AM	2751-3		0.500 ml	10/07/95	LLF
S95T002039	PU	2287-5		0.100 ml	09/15/95	LLF
S95T002039	GEA	2311-5		0.100 ml	09/27/95	PPB

Samp: AW106 S3 Decant Supernate
Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

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TANK AW106, GROUP 95000126

S95T002037

AW106 S3 Solid Fusion

DATA SHEET

WHC-SD-WM-DP-147, REV. 0

SDG 95000126 Client TWRS
Contact R. A. Esch Tank AW106

Lab sample id S95T002037 Client sample id AW106 S3 Solid Fusion FUSION
Dept sample id _____ Location/Matrix R: 16B S: 6AW-95-3 C: n/ SOLID
Received 08/24/95 Collected _____
Chain of custody id _____

ANALYTE	CAS NO	RESULT uCi/g	2σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST
Total Alpha	12587-46-1	2.84E-01	18	9.7E-03		H	AB
Total Beta	12587-47-2	1.87E 02	15	3.2E-02		B	AB
Total Uranium		1.70E 03	15	1.7E-02		B	U
Strontium 89/90		6.89E 01	15	9.1E-03		B	SR
Americium 241	14596-10-2	1.81E-01	15	6.5E-02			AM
Plutonium 239/240		5.56E-02	15	4.2E-03			PU
GEA Analytes							
Cobalt 60	10198-40-0	<1.3E-02		1.3E-02		U	GEA
Cesium 137	10045-97-3	3.09E 01	15	4.3E-02		B	GEA

Sludge

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
S95T002037	AB	2651-6	01	0.0500 ml	10/02/95		SLF
S95T002037	U	2484-6		1.00 ml	10/10/95		JLS
S95T002037	SR	2493-6		0.100 ml	10/03/95		SLF
S95T002037	AM	2463-5		1.00 ml	09/25/95		LLF
S95T002037	PU	2462-5		1.00 ml	09/27/95		LLF
S95T002037	GEA	2690-5	01	1.00 ml	10/02/95		PPB

Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

BLANKS

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id B2287-2
Dept sample id

Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Plutonium 239/240		<6.4E-05		6.4E-05		U	PU	95002401

Lab sample id B2288-2
Dept sample id

Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Plutonium 239/240		<5.3E-05		5.3E-05		U	PU	95002402
Plutonium 238	13981-16-3	<5.3E-05		5.3E-05		U	PU	95002402

Lab sample id B2289-2
Dept sample id

Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Neptunium 237	13994-20-2	<3.4E-05		3.4E-05		U	NP	95002403

Lab sample id B2293-2
Dept sample id

Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Technetium 99	14133-76-7	<4.1E-05		4.1E-05		U	TC	95002407

Supernatant liquid

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

BLANKS

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id B2298-2
Dept sample id

Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Strontium 89/90		1.43E-02	100	1.9E-02		U	SR	95002431

Lab sample id B2299-2
Dept sample id

Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Total Alpha	12587-46-1	<1.7E-02		1.7E-02		U	AB	95002433
Total Beta	12587-47-2	<4.2E-02		4.2E-02		U	AB	95002433

Lab sample id B2304-2
Dept sample id

Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Tritium	10028-17-8	<3.1E-06		3.1E-06		U	H	95002447

Supernatant liquid

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TANK AW106, GROUP 95000126

SDG 95000126
Contact R. A. Esch

BLANKS

Client TWRS
Tank AW106

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Lab sample id B2311-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
GEA Analytes								
Cobalt 60	10198-40-0	<2.9E-04		2.9E-04		U	GEA	95002454
Cesium 137	10045-97-3	<6.7E-04		6.7E-04		U	GEA	95002454

Lab sample id B2312-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
GEA Analytes								
Cobalt 60	10198-40-0	<2.4E-04		2.4E-04		U	GEA	95002455
Niobium 94	14681-63-1	<1.8E-04		1.8E-04		U	GEA	95002455
Ruthenium 106	13967-48-1	<4.2E-03		4.2E-03		U	GEA	95002455
Cesium 134	13967-70-9	<2.1E-04		2.1E-04		U	GEA	95002455
Cesium 137	10045-97-3	7.28E-04					GEA	95002455
Cerium 144	14762-78-8	<2.1E-03		2.1E-03		U	GEA	95002455
Europium 154	15585-10-1	<7.2E-04		7.2E-04		U	GEA	95002455
Europium 155	14391-16-3	<5.6E-04		5.6E-04		U	GEA	95002455
Radium 226	13982-63-3	<4.8E-03		4.8E-03		U	GEA	95002455

Lab sample id B2355-1
Dept sample id
Client sample id Method Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Selenium 79	15758-45-9	4.10E-06	16	2.4E-06		X	SE	95002511

Supernatant liquid

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

SDG 95000126
Contact R. A. Esch

BLANKS

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id B2357-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALIFIERS	TEST	PREP BATCH
Carbon 14	14762-75-5	<2.1E-06		2.1E-06		U	C	95002523

Lab sample id B2358-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALIFIERS	TEST	PREP BATCH
Iodine 129	15056-84-1	<3.7E-06		3.7E-06		U	I	95002522

Lab sample id B2462-2
Dept sample id
Client sample id Method Blank
Material/Matrix SOLID

ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALIFIERS	TEST	PREP BATCH
Plutonium 239/240		<1.7E-03		1.7E-03		U	PU	95002603

Lab sample id B2463-2
Dept sample id
Client sample id Method Blank
Material/Matrix SOLID

ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALIFIERS	TEST	PREP BATCH
Americium 241	14596-10-2	<1.2E-02		1.2E-02		U	AM	95002604

Sludge

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

BLANKS

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id B2484-2
Dept sample id

Client sample id Method Blank
Material/Matrix SOLID

ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALIFIERS	TEST	PREP BATCH
Total Uranium		1.48E 00	15	1.6E-02			U	95002631

Lab sample id B2493-2
Dept sample id

Client sample id Method Blank
Material/Matrix SOLID

ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALIFIERS	TEST	PREP BATCH
Strontium 89/90		1.14E-02	70	9.1E-03			SR	95002638

Lab sample id B2651-2
Dept sample id

Client sample id Method Blank
Material/Matrix SOLID

ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALIFIERS	TEST	PREP BATCH
Total Alpha	12587-46-1	<9.4E-03		9.4E-03		UH	AB	95002845
Total Beta	12587-47-2	4.30E-02	49	3.1E-02			AB	95002845

Sludge

WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

BLANKS

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id B2690-2
Dept sample id

Client sample id Method Blank
Material/Matrix SOLID

ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	PREP BATCH
GEA Analytes								
Cobalt 60	10198-40-0	<1.3E-02		1.3E-02		U	GEA	95002881
Cesium 137	10045-97-3	4.31E-02					GEA	95002881

Lab sample id B2691-2
Dept sample id

Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Americium 241	14596-10-2	<3.1E-05		3.1E-05		U	AM	95002882

Lab sample id B2692-2
Dept sample id

Client sample id Method Blank
Material/Matrix SOLID

ANALYTE	CAS NO	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	PREP BATCH
Americium 241	14596-10-2	<5.7E-02		5.7E-02		U	AM	95002883

Supernatant liquid

WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

SDG 95000126
Contact R. A. Esch

BLANKS

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id B2721-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Total Uranium		2.90E-03	15	3.7E-05			U	95002926

Lab sample id B2728-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Americium 241	14596-10-2	<2.1E-03		2.1E-03		U	AM	95002933

Lab sample id B2751-2
Dept sample id
Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Americium 241	14596-10-2	<2.6E-04		2.6E-04		UL	AM	95002968

Lab sample id B2913-2
Dept sample id
Client sample id Method Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Strontium 89/90		<4.6E-03		4.6E-03		U	SR	95003175

Supernatant liquid

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

SDG 95000126
Contact R. A. Esch

BLANKS

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id B2965-2
Dept sample id

Client sample id DI Blank
Material/Matrix LIQUID

ANALYTE	CAS NO	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	PREP BATCH
Total Uranium		1.13E-01	15	3.7E-03			U	95003248

Supernatant liquid

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

LAB CONTROL SAMPLES

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id S2287-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	2σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Plutonium 239/240	1.26E-01	16	2.6E-02			PU	1.28E-1	5.0	98	76-124	80-120	95002401

Lab sample id S2288-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Plutonium 239/240	1.18E-01	15	8.0E-03			PU	1.28E-1	5.0	92	78-122	80-120	95002402

Lab sample id S2289-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Neptunium 237	3.32E-02	15	4.3E-05			NP	3.85E-2	5.0	86	79-121	80-120	95002403

Lab sample id S2293-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Technetium 99	3.78E-03	15	4.0E-05			TC	3.80E-3	5.0	99	76-124	80-120	95002407

Supernatant liquid

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

LAB CONTROL SAMPLES

WHC-SD-WM-DP-147, REV. 0

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

Lab sample id S2298-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Strontium 89/90	1.03E-03	16	1.9E-06			SR	1.09E-3	5.0	94	77-123	80-120	95002431

Lab sample id S2299-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	3.09E-05	15	1.6E-07			AB	2.96E-5	5.0	104	75-125	80-120	95002433
Total Beta	1.31E-04	15	4.1E-07			AB	1.19E-4	5.0	110	74-126	80-120	95002433

Lab sample id S2304-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Tritium	4.18E-04	15	3.2E-06			H	4.02E-4	5.0	104	75-125	80-120	95002447

Supernatant liquid

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

LAB CONTROL SAMPLES

WHC-SD-WM-DP-147, REV. C

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

Lab sample id S2311-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALIFIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
GEA Analytes												
Cobalt 60	2.07E-02	15				GEA	2.17E-2	5.0	95	77-123	80-120	95002454
Cesium 137	2.45E-02	15				GEA	2.55E-2	5.0	96	77-123	80-120	95002454

Lab sample id S2312-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALIFIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
GEA Analytes												
Cobalt 60	2.14E-02	15				GEA	2.17E-2	5.0	99	76-124	80-120	95002455
Cesium 137	2.58E-02	15			B	GEA	2.55E-2	5.0	101	76-124	80-120	95002455

Lab sample id S2357-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALIFIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Carbon 14	1.53E-03	15	2.1E-06			C	1.68E-3	5.0	91	78-122	80-120	95002523

Supernatant liquid

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

LAB CONTROL SAMPLES

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id S2358-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Iodine 129	4.69E-04	15				I	5.34E-4	5.0	88	78-122	80-120	95002522

Lab sample id S2462-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix SOLID

ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Plutonium 239/240	5.70E 01	15	3.8E 00			PU	5.66E01	5.0	101	76-124	80-120	95002603

Lab sample id S2463-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix SOLID

ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	1.17E 01	15	1.9E 00			AM	1.36E01	5.0	86	79-121	80-120	95002604

Lab sample id S2484-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix SOLID

ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Uranium	3.61E 01	15	1.6E-02		B	U	3.73E01	5.0	97	76-124		95002631

Sludge

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

LAB CONTROL SAMPLES

WHC-SD-WM-DP-147, REV. 0

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

Lab sample id S2493-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix SOLID

ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Strontium 89/90	4.51E-01	15	9.4E-04		B	SR	4.82E-1	5.0	94	77-123	80-120	95002638

Lab sample id S2651-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix SOLID

ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Alpha	9.33E-03	15	4.7E-05			AB	7.47E-3	5.0	125	70-130	80-120	95002845
Total Beta	1.32E-01	15	1.6E-04		B	AB	1.22E-1	5.0	108	74-126	80-120	95002845

Lab sample id S2690-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix SOLID

ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
GEA Analytes												
Cobalt 60	9.41E 00	15				GEA	9.59E00	5.0	98	77-123	80-120	95002881
Cesium 137	1.13E 01	15				GEA	1.13E01	5.0	100	76-124	80-120	95002881

Supernatant liquid

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

LAB CONTROL SAMPLES

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id S2691-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	2.48E-02	15	4.5E-03			AM	3.07E-2	5.0	81	80-120	80-120	95002882

Lab sample id S2692-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix SOLID

ANALYTE	RESULT uCi/g	σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	1.20E 01	17	1.1E-01			AM	1.36E01	5.0	88	77-123	80-120	95002883

Lab sample id S2721-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Uranium	7.94E-02	15	3.7E-05		B	U	8.44E-2	5.0	94	77-123		95002926

Lab sample id S2728-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	2.63E-02	15	4.8E-03			AM	3.07E-2	5.0	86	79-121	80-120	95002933

Supernatant liquid

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

LAB CONTROL SAMPLES

SDG 95000126
Contact R. A. Esch

Client TWRS
Tank AW106

WHC-SD-WM-DP-147, REV. 0

Lab sample id S2751-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Americium 241	2.28E-02	16	1.2E-02			AM	3.07E-2	5.0	74	80-120	80-120	95002968

Lab sample id S2913-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Strontium 89/90	1.08E-03	15	4.5E-06			SR	1.09E-3	5.0	99	76-124	80-120	95003175

Lab sample id S2965-1
Dept sample id

Client sample id Lab Control Sample
Material/Matrix LIQUID

ANALYTE	RESULT uCi/mL	σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	σ ERR %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS	PREP BATCH
Total Uranium	8.13E-02	15	3.7E-05		B	U	8.44E-2	5.0	96	77-123		95003248

Supernatant liquid

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S95T002021D

WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

DUPLICATE

WHC-SD-WM-DP-147, REV. 0

AW106 S2 Solid Fusion

SDG 95000126
Contact R. A. Esch
Client TWRS
Tank AW106

DUPLICATE	ORIGINAL	
Lab sample id S95T002021D	Lab sample id S95T002021	Client sample id AW106 S2 Solid Fusion FUSION
Dept sample id	Dept sample id	Location/Matrix R: 16B S: 6AW-95-2 C: n/ SOLID
	Received 08/24/95	Collected
		Chain of custody id

ANALYTE	DUPLICATE uCi/g	2σ TPU %	MDA uCi/g	RDL uCi/g	QUALIFIERS	TEST	ORIGINAL uCi/g	2σ TPU %	MDA uCi/g	QUALIFIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	1.44E-01	20	9.4E-03		H	AB	1.63E-01	20	9.4E-03	H	12	42	20
Total Beta	1.15E 02	15	3.1E-02		B	AB	1.23E 02	15	3.1E-02	B	7	32	20
Total Uranium	1.14E 03	15	1.6E-02		B	U	1.04E 03	15	1.6E-02	B	9	33	
Strontium 89/90	3.61E 01	15	8.8E-03		B	SR	4.11E 01	15	8.9E-03	B	13	32	20
Americium 241	9.49E-02	15	2.9E-02			AM	1.16E-01	16	5.6E-02		20	32	81
Plutonium 239/240	3.24E-02	15	3.5E-03			PU	3.45E-02	15	3.4E-03		6	32	21
GEA Analytes													
Cobalt 60	<1.3E-02		1.3E-02		U	GEA	<1.3E-02		1.3E-02	U	-		
Cesium 137	3.45E 01	15	4.3E-02		B	GEA	2.79E 01	15	4.3E-02	B	21	32	20

Sludge

TEST	DUPLICATE PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY	ORIGINAL PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY
AB	2651-5	01	0.0500	10/02/95	SLF	2651-4	01	0.0500 ml	10/02/95	SLF
U	2484-4		1.00	10/10/95	JLS	2484-3		1.00 ml	10/10/95	JLS
SR	2493-5		0.100	10/03/95	SLF	2493-4		0.100 ml	10/03/95	SLF
AM	2692-4	02	1.00	10/03/95	LLF	2692-3	02	1.00 ml	10/03/95	LLF
PU	2462-4		1.00	09/27/95	LLF	2462-3		1.00 ml	09/27/95	LLF
GEA	2690-4		1.00	10/02/95	PPB	2690-3	01	1.00 ml	10/02/95	PPB

Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

S95T002031D

AW106 S2 Decant Supernat

DUPLICATE

WHC-SD-WM-DP-147, REV. 0

SDG 95000126
Contact R. A. Esch
DUPLICATE
Lab sample id S95T002031D
Dept sample id

ORIGINAL
Lab sample id S95T002031
Dept sample id
Received 08/24/95

Client TWRS
Tank AW106
Client sample id AW106 S2 Decant Supernat
Location/Matrix R: S: C: LIQUID
Collected
Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALIFIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALIFIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	2.87E-02	52	1.7E-02			AB	<1.7E-02		1.7E-02	U	51	148	149
Total Beta	7.67E 01	16	4.2E-02			AB	7.62E 01	14	4.2E-02		1	32	20
Total Uranium	5.59E 01	15	4.1E-02		B	U	5.04E 01	15	4.1E-02	B	10	32	
Strontium 89/90	3.80E-01	19	1.9E-02			SR	3.92E-01	19	1.9E-02		3	39	20
Americium 241	6.09E-04	15	1.6E-04			AM	6.34E-04	15	7.2E-05		4	32	37
Plutonium 239/240	1.64E-04	16	4.6E-05			PU	1.49E-04	16	4.6E-05		10	34	59
GEA Analytes													
Cobalt 60	<2.9E-04		2.9E-04		U	GEA	<2.9E-04		2.9E-04	U	-		
Cesium 137	8.75E 01	15	6.7E-04			GEA	8.73E 01	15	6.7E-04		0	32	2[illegible]

Supernatant liquid

TEST	DUPLICATE PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY	ORIGINAL PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY
AB	2299-6		1.00	09/20/95	SLF	2299-5		1.00 ml	09/20/95	SLF
U	2965-4		1.00	10/18/95	JLS	2965-3		1.00 ml	10/18/95	JLS
SR	2298-6		1.00	09/29/95	SLF	2298-5		1.00 ml	09/29/95	SLF
AM	2691-4		0.500	10/04/95	LLF	2691-3		0.500 ml	10/04/95	LLF
PU	2287-4		0.100	09/15/95	LLF	2287-3		0.100 ml	09/15/95	LLF
GEA	2311-4		0.100	09/27/95	PPB	2311-3		0.100 ml	09/27/95	PPB

Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

Samp: AW106 S2 Decant Supernate
Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

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WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

S95T002037D

DUPLICATE

AW106 S3 Solid Fusion

WHC-SD-WM-DP-147, REV. 0

SDG 95000126
Contact R. A. Esch

DUPLICATE
Lab sample id S95T002037D
Dept sample id

ORIGINAL
Lab sample id S95T002037
Dept sample id
Received 08/24/95

Client TWRS
Tank AW106

Client sample id AW106 S3 Solid Fusion FUSION
Location/Matrix R: 16B S: 6AW-95-3 C: n/ SOLID
Collected
Chain of custody id

ANALYTE	DUPLICATE uCi/g	2σ TPU %	MDA uCi/g	RDL uCi/g	QUALIFIERS	TEST	ORIGINAL uCi/g	2σ TPU %	MDA uCi/g	QUALIFIERS	RPD %	3σ TOT	PROT LIMIT
Total Alpha	2.95E-01	18	9.6E-03		H	AB	2.84E-01	18	9.7E-03	H	4	38	20
Total Beta	1.89E 02	15	3.2E-02		B	AB	1.87E 02	15	3.2E-02	B	1	32	20
Total Uranium	1.71E 03	15	1.7E-02		B	U	1.70E 03	15	1.7E-02	B	1	33	
Strontium 89/90	6.90E 01	14	9.3E-03		B	SR	6.89E 01	15	9.1E-03	B	0	32	20
Americium 241	2.10E-01	15	2.2E-02			AM	1.81E-01	15	6.5E-02		15	32	44
Plutonium 239/240	5.56E-02	15	5.3E-03			PU	5.56E-02	15	4.2E-03		0	32	20
GEA Analytes													
Cobalt 60	<1.3E-02		1.3E-02		U	GEA	<1.3E-02		1.3E-02	U	-		
Cesium 137	3.30E 01	15	4.3E-02		B	GEA	3.09E 01	15	4.3E-02	B	7	32	20

Sludge

TEST	DUPLICATE PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY	ORIGINAL PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY
AB	2651-7	01	0.0500	10/02/95	SLF	2651-6	01	0.0500 ml	10/02/95	SLF
U	2484-7		1.00	10/10/95	JLS	2484-6		1.00 ml	10/10/95	JLS
SR	2493-7		0.100	10/03/95	SLF	2493-6		0.100 ml	10/03/95	SLF
AM	2463-6		1.00	09/25/95	LLF	2463-5		1.00 ml	09/25/95	LLF
PU	2462-6		1.00	09/27/95	LLF	2462-5		1.00 ml	09/27/95	LLF
GEA	2690-6		1.00	10/02/95	PPB	2690-5	01	1.00 ml	10/02/95	PPB

Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

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Version 3.08
Report date 10/25/95

WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

S95T002039D

AW106 S3 Decant Supernat

DUPLICATE

WHC-SD-WM-DP-147, REV. 0

SDG 95000126
Contact R. A. Esch
Client TWRS
Tank AW106

	DUPLICATE	ORIGINAL
Lab sample id	S95T002039D	S95T002039
Dept sample id		
Received		08/24/95

Client sample id AW106 S3 Decant Supernat
Location/Matrix R: S: C: LIQUID
Collected
Chain of custody id n/a

ANALYTE	DUPLICATE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALIFIERS	TEST	ORIGINAL uCi/mL	2σ TPU %	MDA uCi/mL	QUALIFIERS	RPD %	3σ PROT TOT	3σ PROT LIMIT
Total Alpha	<1.7E-02		1.7E-02		U	AB	<1.7E-02		1.7E-02	U	-		
Total Beta	7.55E 01	15	4.2E-02			AB	7.26E 01	15	4.2E-02		4	32	20
Total Uranium	3.34E 01	15	9.0E-02			U	2.86E 01	15	4.5E-02		15	32	
Strontium 89/90	8.62E-01	15	4.6E-03			SR	8.56E-01	15	4.7E-03		1	32	20
Americium 241	5.84E-04	15	9.6E-05		L	AM	5.62E-04	15	6.8E-05	L	4	32	29
Plutonium 239/240	2.55E-04	16	7.0E-05			PU	2.30E-04	16	5.9E-05		10	34	53
GEA Analytes													
Cobalt 60	<2.9E-04		2.9E-04		U	GEA	<2.9E-04		2.9E-04	U	-		
Cesium 137	8.60E 01	15	6.7E-04			GEA	8.64E 01	15	6.7E-04		0	32	20

Supernatant liquid

TEST	DUPLICATE PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY	ORIGINAL PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY
AB	2299-8		1.00	09/20/95	SLF	2299-7		1.00 ml	09/20/95	SLF
U	2721-8		1.00	10/06/95	JLS	2721-7		1.00 ml	10/06/95	JLS
SR	2913-5		0.100	10/16/95	SLF	2913-4		0.100 ml	10/16/95	SLF
AM	2751-4		0.500	10/07/95	LLF	2751-3		0.500 ml	10/07/95	LLF
PU	2287-6		0.100	09/15/95	LLF	2287-5		0.100 ml	09/15/95	LLF
GEA	2311-6		0.100	09/27/95	PPB	2311-5		0.100 ml	09/27/95	PPB

Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

Samp: AW106 S3 Decant Supernate
Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

Final DVD Report

DUPLICATES
Page 4
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-DUP
Version 3.08
Report date 10/25/95

S95T002021S

WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

MATRIX SPIKE

AW106 S2 Solid Fusion

WHC-SD-WM-DP-147, REV. 0

SDG 95000126
Contact R. A. Esch
Client TWRS
Tank AW106

MATRIX SPIKE		ORIGINAL			
Lab sample id	S95T002021S	Lab sample id	S95T002021	Client sample id	AW106 S2 Solid Fusion FUSION
Dept sample id		Dept sample id		Location/Matrix	R: 16B S: 6AW-95-2 C: n/ SOLID
		Received	08/24/95	Collected	
				Chain of custody id	

ANALYTE	SPIKE uCi/g	2σ TPU %	MDA uCi/g	RDL uCi/g	QUALIFIERS	TEST	ADDED uCi/g	2σ ERR %	ORIGINAL uCi/g	2σ TPU %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium	4.08E 04				B	U	2.51E04	5.0	1.04E 03	15	158	63-137	

Sludge

TEST	SPIKE PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY	ORIGINAL PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY
U	2484-5		10.0 ml	10/10/95	JLS	2484-3		1.00	10/10/95	JLS

Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

Final DVD Report

MATRIX SPIKES
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SUMMARY DATA SECTION
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-MS
Version 3.08
Report date 10/25/95

WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

S95T002031S

AW106 S2 Decant Supernat

MATRIX SPIKE

WHC-SD-WM-DP-147, REV. 0

SDG 95000126
Contact R. A. Esch
MATRIX SPIKE
Lab sample id S95T002031S
Dept sample id

ORIGINAL
Lab sample id S95T002031
Dept sample id
Received 08/24/95

Client TWRS
Tank AW106
Client sample id AW106 S2 Decant Supernat
Location/Matrix R: S: C: LIQUID
Collected
Chain of custody id n/a

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALI-FIERS	TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium	1.30E 02				B	U	5.69E01	5.0	5.04E 01	15	140	44-156	

Supernatant liquid

TEST	SPIKE PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY	ORIGINAL PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY
U	2965-5		0.100 ml	10/18/95	JLS	2965-3		1.00	10/18/95	JLS

Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

Samp: AW106 S2 Decant Supernate
Loc: Riser: 16B Seg: 6AW-95-2 Core: n/a

Final DVD Report

MATRIX SPIKES
Page 2
SUMMARY DATA SECTION
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Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-MS
Version 3.08
Report date 10/25/95

WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

S95T002037S

AW106 S3 Solid Fusion

MATRIX SPIKE

WHC-SD-WM-DP-147, REV. 0

SDG 95000126
Contact R. A. Esch
Client TWRS
Tank AW106

MATRIX SPIKE		ORIGINAL			
Lab sample id	S95T002037S	Lab sample id	S95T002037	Client sample id	AW106 S3 Solid Fusion FUSION
Dept sample id		Dept sample id		Location/Matrix	R: 16B S: 6AW-95-3 C: n/ SOLID
		Received	08/24/95	Collected	
				Chain of custody id	

ANALYTE	SPIKE uCi/g	2σ TPU %	MDA uCi/g	RDL uCi/g	QUALI-FIERS	TEST	ADDED uCi/g	2σ ERR %	ORIGINAL uCi/g	2σ TPU %	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium	4.80E 04				B	U	2.58E04	5.0	1.70E 03	15	180	57-143	

Sludge

TEST	SPIKE PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY	ORIGINAL PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY
U	2484-8		10.0 ml	10/10/95	JLS	2484-6		1.00	10/10/95	JLS

Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

Final DVD Report

MATRIX SPIKES
Page 3
SUMMARY DATA SECTION
Page 31

Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-MS
Version 3.08
Report date 10/25/95

WHC 222-S LABORATORY

TANK AW106, GROUP 95000126

S95T002039S

MATRIX SPIKE

AW106 S3 Decant Supernat

WHC-SD-WM-DP-147, REV. 0

SDG 95000126 Client TWRS
Contact R. A. Esch Tank AW106

MATRIX SPIKE	ORIGINAL	
Lab sample id S95T002039S	Lab sample id S95T002039	Client sample id AW106 S3 Decant Supernat
Dept sample id	Dept sample id	Location/Matrix R: S: C: LIQUID
	Received 08/24/95	Collected
		Chain of custody id n/a

ANALYTE	SPIKE uCi/mL	2σ TPU %	MDA uCi/mL	RDL uCi/mL	QUALIFIERS	TEST	ADDED uCi/mL	2σ ERR %	ORIGINAL uCi/mL	2σ TPU %	REC 3σ LMTS % (TOTAL)	PROTOCOL LIMITS
Total Uranium	2.86E 01				B	U			2.86E 01	15		

Supernatant liquid

TEST	SPIKE PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY	ORIGINAL PLANCHET	SUF-FIX	ALIQUOT	ANALYZED	REVIEWED BY
U	2721-9		ml	10/06/95	JLS	2721-7		1.00	10/06/95	JLS

Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

Samp: AW106 S3 Decant Supernate
Loc: Riser: 16B Seg: 6AW-95-3 Core: n/a

Final DVD Report

MATRIX SPIKES
Page 4
SUMMARY DATA SECTION
Page 32

Lab id 222-S
Protocol GRAB
Version 1.0
Form DVD-MS
Version 3.08
Report date 10/25/95

CHAIN OF CUSTODY FORMS

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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COPY

Page 1 of 1

Turnaround: ☐ Priority ☒ Normal

Collector: JAMES SICKELS	Company Contact: JOE JONES	Telephone No.: 373-3578
Project Designation: N/A	Sampling Location: AW/106 RISER #16B	SAF No.: N/A
Ice Chest No.: N/A	Field Logbook No.: N/A	Method of Shipment: WHC TRANSPORTATION
Shipped To: 2225 LABS	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks: RADIOACTIVE	Preservative: N/A	
	Type of Container: GLASS	
	No. of Container(s): 2	
Special Handling and/or Storage: N/A	Volume: 125ML (EA)	

SAMPLE ANALYSIS

#1 Seal 2506 #2 Seal 2507

Sample No.	Matrix*	Date Sampled	Time Sampled	
6AW-95-1	L	8-24-95	0927 AM	DOSE RATE ON CONTACT 300 mR/hr
6AW-95-2	SL	8-24-95	0938 AM	" " " 300 mR/hr

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: J. Sickels	Date/Time: 8-24-95 11:20	Received By: C Ed Byrd	Date/Time: 8-24-95 11:20
Relinquished By: C Ed Byrd	Date/Time: 8-24-95 13:00	Received By: T Tagura	Date/Time: 1300 8-24-95
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

WHC-SD-WM-DP-147, REV. 0

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COPY

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: JAMES SICKELS	Company Contact: JOE JONES	Telephone No.: 373-3578
Project Designation: N/A	Sampling Location: AW 106 RISER # 16 B	SAF No.: N/A
Ice Chest No.: N/A	Field Logbook No.: N/A	Method of Shipment: WHC TRANSPORTATION
Shipped To: 222S LABS	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks: RADIOACTIVE	Preservative: N/A	
	Type of Container: GLASS	
	No. of Container(s): 1	
Special Handling and/or Storage: NONE	Volume: 125 mL	

SAMPLE ANALYSIS

SEAL # J508

Sample No.	Matrix*	Date Sampled	Time Sampled	
6AW-95-3	SL	8-24-95	0945	DOSE RATES ON CONTACT 350 mR/HR

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
JAMES SICKELS	8-24-95 1120	[signature]	8-24-95 1121
[signature]	8-24-95 1235	[signature]	8-24-95 1235

SPECIAL INSTRUCTIONS

Matrix*
- S = Soil
- SE = Sediment
- SO = Solid
- SL = Sludge
- W = Water
- O = Oil
- A = Air
- DS = Drum Solids
- DL = Drum Liquids
- T = Tissue
- WI = Wipe
- L = Liquid
- V = Vegetation
- X = Other

LABORATORY SECTION — Received By / Title / Date/Time

FINAL SAMPLE DISPOSITION — Disposal Method / Disposed By / Date/Time

DISTRIBUTION: White - Sample Yellow - Sampler

BC-6000 238 (12/92)

WHC-SD-WM-DP-147, REV. 0

HOT CELL LOG BOOK

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NOTEBOOK UNCLASSIFIED COVERSHEET

SECTION I

JUN 09 1995
RECEIVED WHC HCSR
DOCUMENT CONTROL

Notebook No. WHC-N-1191 1

Date of Issue 6-9-95 Copy 1

Title 241-AW-106

Author R K Fuller

If continued from another notebook give the notebook number

This is a Controlled Notebook. The assigned custodian is responsible for this book. When the book is completed, contact your Records Management Specialist for a Retention Schedule. Complete Section II of this form and return the Notebook to Unclassified Document Control, A4-18.

Responsible Custodian	Payroll No.	MSIN	Date Assigned
R K Fuller		T6-31	JUN 09 1995

SECTION II Complete this section prior to returning notebook to Unclassified Document Control, A4-18

Abstract: (Give brief description of notebook contents)

Period Covered: (Inclusive dates - Month/Day/Year)

Certification Statement: This notebook does ☐ does not ☐ contain any Quality Assurance Record Material (as described in Section 9.0 of WHC-CM-3-5) and has been verified to be a complete and legible record.

Custodian's Signature and Date

Retention Schedule:	Specialist Concurrence Name	Custodian's Manager's Name

BD-6001-256 (10/93)

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Pages 2 through 5 of Hot Cell Log Book number WHC-N-1191 Copy 1 were intentionally left blank.

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RAE Cert 10/13/95

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COPY

Page 1 of 1

Westinghouse Hanford Company

Turnaround: ☐ Priority ☒ Normal

Collector: JAMES SICKELS	Company Contact: JOE JONES	Telephone No.: 373-3578
Project Designation: N/A	Sampling Location: AW-106 RISER #16B	SAF No.: N/A
Ice Chest No.: N/A	Field Logbook No.: N/A	Method of Shipment: WHC TRANSPORTATION
Shipped To: 222S LABS	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks: RADIOACTIVE	Preservative: N/A	
	Type of Container: GLASS	
	No. of Container(s): 2	
Special Handling and/or Storage: N/A	Volume: 125ML (EA)	

SAMPLE ANALYSIS

#1 Seal 2506 #2 Seal 2507

Sample No.	Matrix*	Date Sampled	Time Sampled																
6AW-95-1	L	8-24-95	0927AM		DOSE RATE @ CONTACT						300 mR/hr								
6AW-95-2	SL	8-24-95	0938AM		"		"		"		300 mR/hr								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: J. Sickels James Sickels	Date/Time: 8-24-95 11:20	Received By: C Ed Byrd	Date/Time: 8-24-95 11:20
Relinquished By: C Ed Byrd	Date/Time: 8-24-95 13:00	Received By: N Ferguson	Date/Time: 1300 8-24-95
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

Matrix*

S	= Soil
SE	= Sediment
SO	= Solid
SL	= Sludge
W	= Water
O	= Oil
A	= Air
DS	= Drum Solids
DL	= Drum Liquids
T	= Tissue
WI	= Wipe
L	= Liquid
V	= Vegetation
X	= Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original - Sample Yellow - Sampler

BC-6000-828 (12/92)

6

AW-106 Grab Samples Risers 16B

LAB CORE GROUP # 25000126

Ruth Clark 10/13/95

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST COPY

Page 1 of 1

Data Turnaround: ☐ Priority ☒ Normal

Collector: JAMES Sickels	Company Contact: JOE JONES	Telephone No.: 373-5578
Project Designation: N/A	Sampling Location: AW 106 RISER # 16B	SAF No.: N/A
Ice Chest No.: N/A	Field Logbook No.: N/A	Method of Shipment: WHC TRANSPORTATION
Shipped To: 222S Labs	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks: RADIOACTIVE	Preservative: N/A	
	Type of Container: GLASS	
	No. of Container(s): 1	
Special Handling and/or Storage: NONE	Volume: 125 mL	

SAMPLE ANALYSIS

Seal # 2508

Sample No.	Matrix*	Date Sampled	Time Sampled															
6AW-95-3	SL	8-24-95	0945		DOSE RATES ON CONTACT							350	mR/hR					

CHAIN OF POSSESSION	Sign/Print Names			
Relinquished By	Date/Time	Received By	Date/Time	
James Sickels	8-24-95 1120	Thomas L. Clark	8-24-95	1121
Relinquished By	Date/Time	Received By	Date/Time	
Thomas L. Clark	8-24-95 1235	N Lagwin	8-24-95	1235
Relinquished By	Date/Time	Received By	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	

SPECIAL INSTRUCTIONS

Matrix*

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
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A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original - Sample Yellow - Sampler

BC-6000-828 (12/92)

AW-106 GRAB SAMPLES RISER 16B LABCORE GROUP 95-0012

WHC-SD-WM-DP-147, REV. 0

7

AW-106 GRAB SAMPLES Riser 16B 9/7/95

6AW-95-1 sampling depth 500" Run No P16TF9
S95T002015

Appearance - Sample contained only a trace of solids. Liquid was clear yellow.

Dose w/o 3.0 rad/hr w/c 2.5 R/hr. by J. Evans

Subsampled approximately 15 - 20 ml each for Inorganic tests and Radchem tests

S95T002016 Inorganic tests SAMPLAMT 20mL
Dose 750 mrad/hr by J. Evans

~~S95T002015~~ Rad chem tests SAMPLAMT 20mL
S95T002017 Dose 750 mrad/hr by J. Evans.

Remainder of S95T002015 will be archived for possible future analysis.

9/7/95

AW-106 GRAB SAMPLES RISER 16B 9/7/95
6AW-95-2 sampling depth 610" Run No. Pig B-10
S95T002018

Appearance - Sample contained ~ 80% settled brown solids. Liquids were clear and yellow.

Dose w/o 1.5 rad/hr w/c 1.1 R/hr by J. Evans

measured vol % settled solids = $\frac{\text{height solids}}{\text{height total samp}} = \frac{72 \text{ mm}}{86 \text{ mm}} \times 100 = 83.7\%$

Centrifuge samples to separate solids & liquids (centrifuge 1 hour) 12:25 9/7/95

Final wt cone 1 + solids 74.82 g	Final wt cone 2 + solids 74.97 g	Final wt cone 3 + sol. 76.02 g
Tare wt cone 1 13.46 g	Tare wt cone 2 14.23 g	Tare wt cone 3 13.96 g
net wt solids 61.36 g	net wt solids 60.74 g	net wt solids 62.06 g
Tot vol. 42.5 mL vol. solids 30 mL	Tot vol. 42.5 mL vol solids 30 mL	Tot. vol. 43 mL vol. solids 31 mL
12.5 mL liq (~1 mL frothy layer on top)	12.5 mL liq (~1 mL frothy layer on top)	12.0 mL liq (~1 mL frothy layer on top)

Total vol. solids 91 mL Total wt solids 184.16 g Bulk density solids only $\frac{184.16 \text{ g}}{91 \text{ mL}} = 2.02 \frac{\text{g}}{\text{mL}}$
Total vol. liquids 37 mL Total wt liquids 42.61 g
Total vol samp 128 mL total wt samp 226.77 g Bulk density whole samp $\frac{226.77 \text{ g}}{128 \text{ mL}} = 1.$

S95T002019 (parent solid portion)
Final wt J7856 + solids 183.51 g
Tare wt J7856 73.02 g
wt solids 110.49 g
Dose 1.0 rad/hr 700 mR/hr by J Evans

g/mL solids/total samp vol. = $\frac{184.16 \text{ g}}{128 \text{ mL}} = 1.44 \frac{\text{g}}{\text{mL}}$

S95T002020 solid subsample for analysis
Final wt 22mL vial + solids 66.58 g
Tare wt 22mL vial 19.00 g
wt. solids 47.58 g
Dose 1.0 rad/hr 500 mR/hr by J Evans

S95T002026 (decant liquids) for archive
Final wt V7857 + liquids 29.80 g
Tare wt V7857 20.49 g
wt liquids 9.31 g
Dose 500 mrad/hr 300 mR/hr by J. Evans

S95T002031 (decant liquids) for analysis
Final wt 22mL vial + liquids 38.55 g
Tare wt 22mL vial 19.10 g
wt liquids 19.45 g
Dose 500 mrad/hr 300 mR/hr by J. Evans

After samples were centrifuged for 30 min sample separated into 3 layers. ~ 30mL solids (27.5 mL light brown, 2.5 mL dark brown on top), ~ 12 mL liquids of which ~ 1 mL was frothy light brown remainder of liquids were clear yellow.
See page 13 for further handling of liquids. 76

AW-106 GRAB SAMPLES RISER 16B 9/6/95 PJ
6AW-95-3 640" sampling depth Run No. RegB 23
S95T002034 rdc 9/7/95

Appearance - Sample contained about 80% settled brown solids.
Liquids were clear green/yellow.
Dose w/o 4.0 rad/hr w/c 2.5 R/hr 1.5 rad/hr beta by S. Landerback

measured Vol% settled solids.

height solids 72 mm
height total samp. 86 mm

Vol% settled solids = $\frac{22\text{ mm}}{86\text{ mm}} \times 100$
= 83.7%

Will centrifuge sample to separate solids and liquids
1 hour centrifuge

Final wt. cone 1 + solids 72.76 g (rdc 9/6/95)
Tare wt cone 1 13.37 g
wt solids 59.39 g
vol. solids 29 mL (8 mL sup, 2 mL froth)

Final wt cone 2 + solids 73.37 g
Tare wt cone 2 13.55 g
wt solids 59.82 g
vol. solids 30 mL (8 mL sup, 1.5 mL froth)

volume of solids 29 + 30 + 31 mL
Total vol. solids 90 29 mL (rdc 9/6/95)
volume decanted liquid
11 mL + 11.5 mL + 12 mL = 34.5 mL

Final wt cone 3 + solids 77.99 g
Tare wt cone 3 13.40 g
wt solids 62.59 g
vol solids 31 mL (18.5 mL sup, 5 mL froth, 1.5 mL froth) rdc

Final wt. J7858 (70 mL jar) + solids 162.81 g
Tare wt J7858 75.99 g S95T002035
wt solids 86.82 g Dose 1250 mrad/hr
by S. Landerback

Subsample solids for analysis
Final wt V7859 (40 mL vial) + solids 61.92 g S95T002036
Tare wt V7859 (rdc 9/6/95) 20.39 g ~~S95T002038~~
wt solids 41.53 g Dose 1.5 rad/hr
by S. Landerback

~~Subsample solids for analysis~~ (rdc 9/6/95) ~~S95T002036~~ (rdc 9/6/95)
~~Final wt vial + solids~~ (rdc 9/6/95) ~~S95T002039~~
~~Tare wt vial~~ 18.89 g
~~wt solids~~

~~Subsample liquids into 22mL vial + liquids~~ (rdc 9/6/95) ~~S95T002039~~
~~Tare wt 22mL vial~~
~~+ liquids~~
~~Dose~~ (rdc 9/6/95)

Page 9/6/95 (Pg 12) see next page. 55 liquids

AW-106 GRAB SAMPLES RISER 16B 9/6/95

6AW-95-3

When sample 6AW-95-3 was centrifuged, sample separated into 3 layers - lower solid layer
middle clear yellow supernate
orange/brown frothy upper layer - contains pieces of solids

removed top layer off into a 15 mL centrifuge cone

Then decanted clear supernate into grad cylinder

→ It was difficult to remove only the top layer, so transfered all of liquid layers into 15 mL centrifuge cones for further centrifugeing. Continue centrifuging liquids overnight to check for organic layer.

Total wt. solids	59.39 g	cone 1
	59.82 g	cone 2
	62.59 g	cone 3
	181.80 g	

Total vol. solids 90 mL

Bulk density of solids w/liq. removed = 181.8 g / 90 mL = 2.02 g/mL

Vol. liquids before separating top layer = 34.5 mL

vol. total sample - 90 mL solids + 34.5 mL liquids = 124.5 mL

wt 15mL Cone 1 + liquids	20.80 g	
tare wt cone	7.50 g	
total wt. liquids	13.30 g	

wt 15mL Cone 2 + liq	21.46 g	
tare wt cone	7.50 g	
wt liquids	13.96 g	

wt 15mL Cone 3 + liq	21.95 g	
tare wt cone	7.50 g	
wt liquids	14.45 g	

total wt liquids for sample 6AW-95-3 = 13.30 g + 13.96 g + 14.45 g = 41.71 g
WHC-N-384-2 gives data support tare weight of this particular brand and size of cone after numerous experiments. Average tare wt of 15 mL centrifuge cone was 7.5 g

wt. total sample = 181.80 g solids + 41.71 g liquids = 223.51 g

Bulk density of solids + liquids mixed = 223.51 g / 124.5 mL = 1.79 g/mL
g/mL of solids per total sample vol = 181.80 g / 124.5 mL = 1.46 g/mL

12

AW-106 Grab Samples 6AW-95-3 9/7/95

After continuing to centrifuge liquids for approximately 16 hrs, more solid was collected.

However, there is still an upper dark brown layer that will be collected and saved for possible future analysis.

Subsample liquids for Analysis and archive remaining liq.

S95T002038 Decanted liquid for Archive

wt V7933 + liquids	42.98 g
Tare wt V7933	25.57g
wt liquids	17.41 g

Dose 1000 mrad/hr 700 mR/hr

S95T002039 Subsample of S95T002038 to be analyzed

wt 22ml vial + liquids	30.60g + label
Tare wt 22ml vial	18.63g
wt liquids + label	11.97 g
wt label	0.28 g
wt liquids	11.69 g

Dose 700 mrad/hr 500 mR/hr by S. Lauderback

S95T002286 Top (possible organic) layer for storage

wt vial + sample	29.73 g
Tare wt vial	19.01 g
wt sample	10.72 g

Dose 1100 mrad/hr 400 mR/hr by S. Lauderback

9/7/95

AW-106 GRAB SAMPLES 6-AW-95-2 9/7/95

After initial centrifugeing of solids and liquids, liquids were transferred to 15 mL centrifuge cones for further, better separation of aqueous and frothy top layer.

Final wt cone AS + liq 21.82 g	Final wt cone BS + liq 21.43 g	Final wt cone CS + liq 21.99 g
Tare wt cone AS 7.57 g	Tare wt cone BS 7.50 g	Tare wt cone CS 7.56 g
wt liquids 14.25 g	wt liquids 13.93 g	wt liquids 14.43 g

Total wt liquids 42.61 g

Separate top frothy layer. - after 20 min centrifuge this layer is much firmer material than in 6AW-95-3

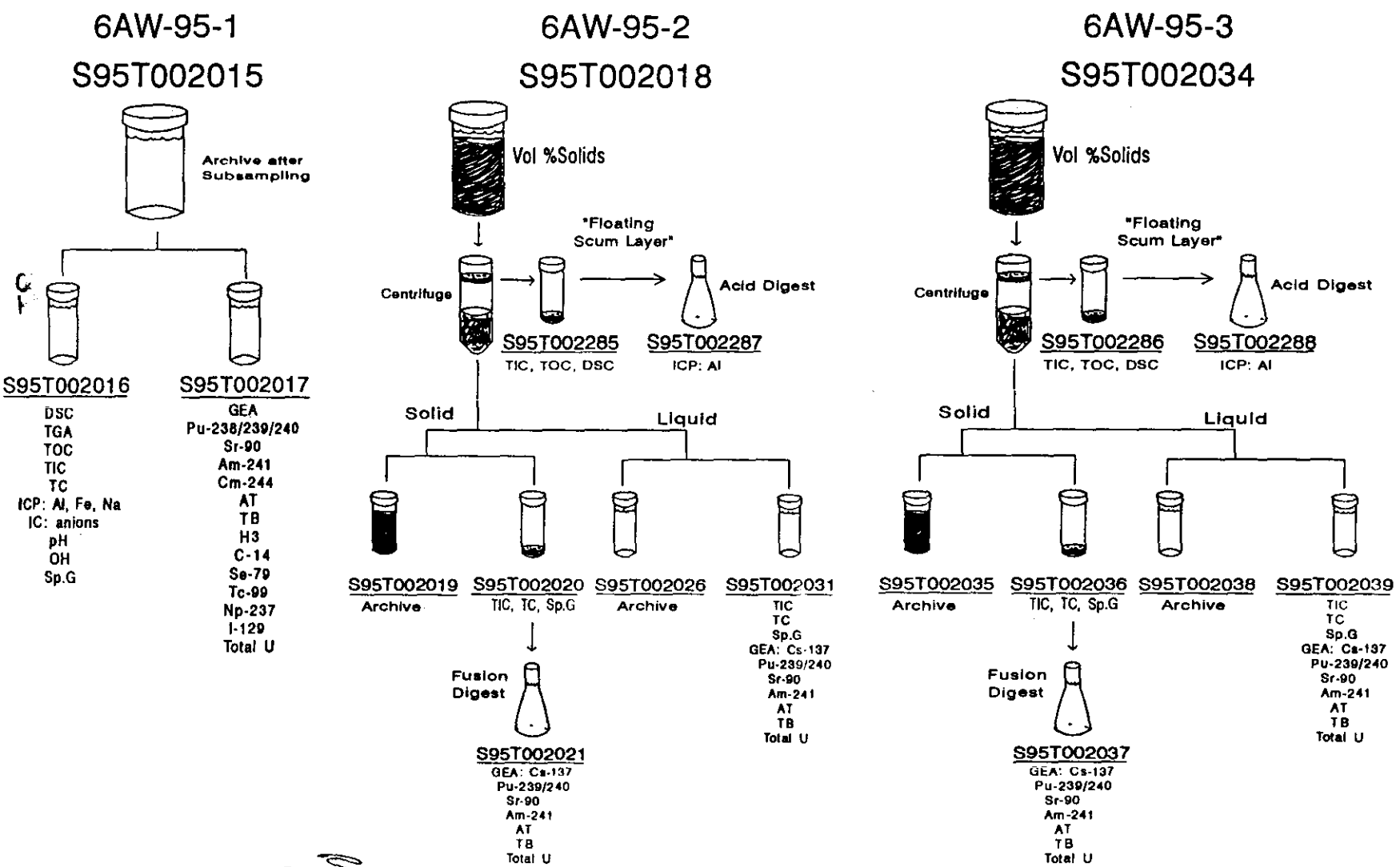
S95T002285

Final wt 22mL vial + sample	31.78 g
Tare wt 22mL vial	19.38 g
wt sample	12.40 g

Dose 500 mRAD/hr
300 mR/hr
by J. Evans

RL Evans 9/7/95

AW-106 GRAB SAMPLE BREAKDOWN



10/13/95

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PHOTOGRAPHS

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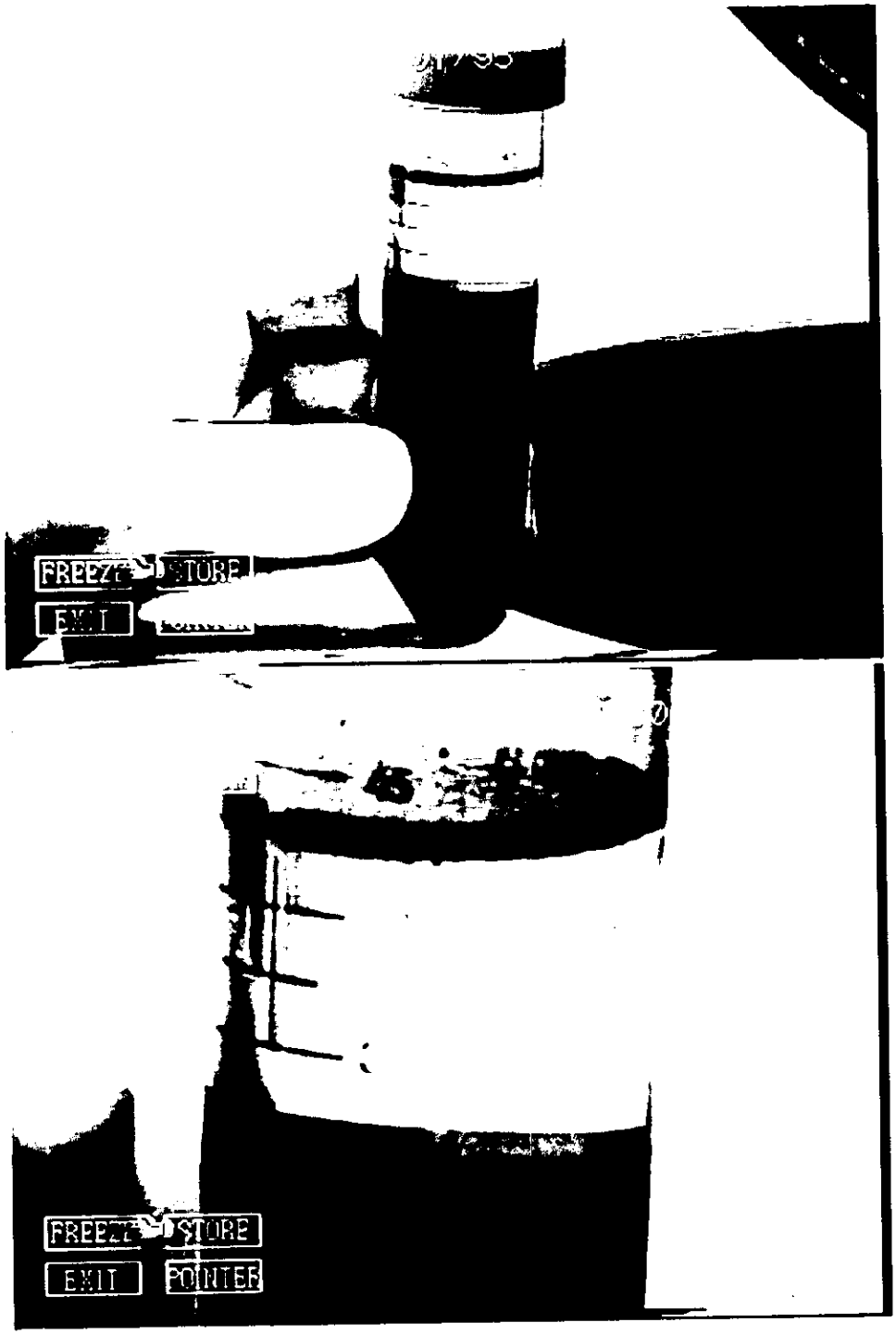
6A100-93-22
1/3 Whole sample after centrifuging
#1



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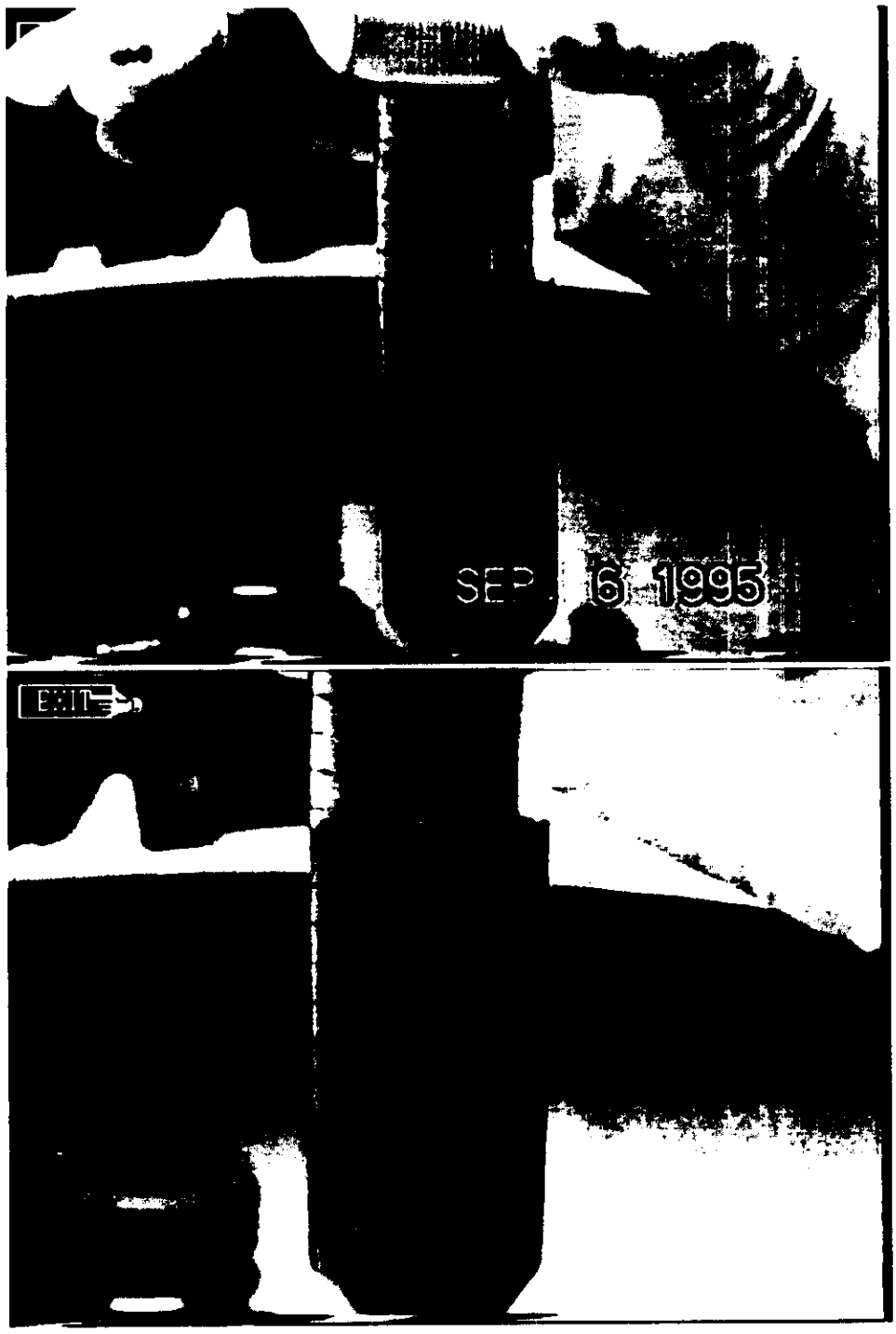
After centrifuge of entire sample (1/3 of sample shown)

#2



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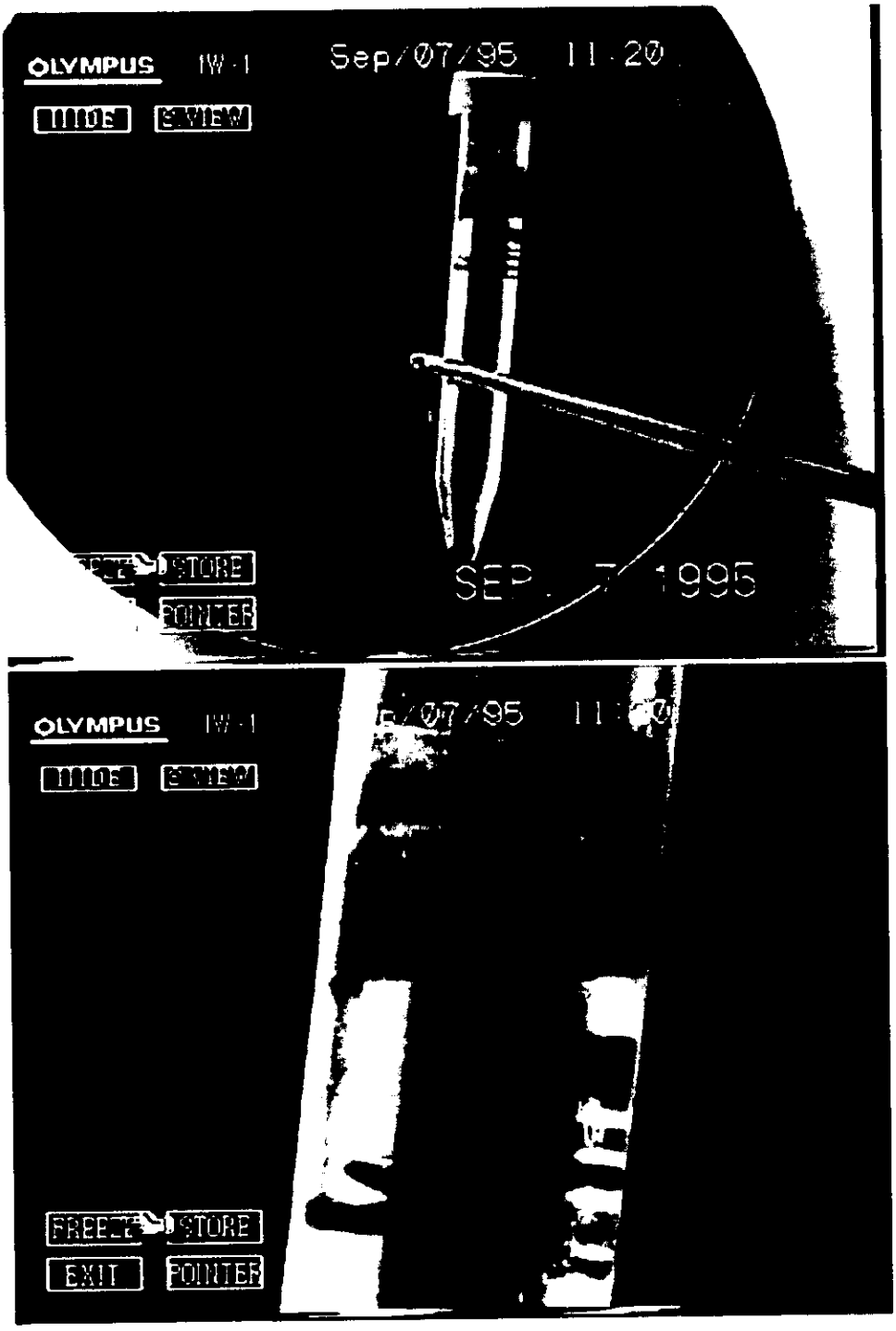
uAW-95-3
Recentrifuge of liquid portion collected after first centrifuging.

#3



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CORRESPONDENCE

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Author: Mike D Guthrie at ~WHC338
Date: 9/11/95 9:46 AM
Priority: Normal
TO: Joseph M Jones
TO: Todd M Blaak at ~WHC139
CC: Elvis Q Le
CC: Brian H Von Bargen
CC: Ruth A Esch at ~WHC32
CC: George L Miller at ~WHC168
Subject: Suggested additional analysis on 106-AW Sludge

---------- Message Contents ----------

Elvis and I talked to the tank characterization folks (Dan Reynolds, Dave Hopkins, and Blaine Barton) about the floating scum layer on the centrifuged 106-AW sludge samples. They would be interested to have the scum layer analyzed for the following (if there is sufficient sample): TIC, TOC, Al, and DSC on 106AW-95-2 & (-3)

Feel free to call Elvis or myself if you have any questions.

Thanks,

Evaporator Engineering

Author: Ruth A Esch at ~WHC32
Date: 9/12/95 11:57 AM
Priority: Normal
TO: John F O'Rourke at ~WHC343
CC: Andrew D Rice at ~WHC168
CC: George L Miller at ~WHC168
CC: Mike D Guthrie at ~WHC338
Subject: Viscosity analysis of AW-106 Supernate

---------- Message Contents ----------

---------- Forward Header ----------
Subject: Viscosity Measurement for 106-AW Supernate Sample
Author: Mike D Guthrie at ~WHC338
Date: 9/7/95 3:29 PM

Elvis and I have been using some viscosity correlations to determine the Reynolds number for the upcoming 106-AW to 106-AN transfer. The preliminary estimations indicate that the Reynolds number for the transfer will be below the minimum limit of 20000. We are therefore recommending that the labs run viscosity on sample # 106AW-95-1.

This analysis should be given higher priority than any other analysis for the same sample.

Feel free to call either myself or Elvis if you have any questions concerning this matter.

Thanks

Evaporator Engineering

Author: Ruth A Esch at ~WHC32
Date: 9/12/95 11:57 AM
Priority: Normal
TO: John F O'Rourke at ~WHC343
CC: Andrew D Rice at ~WHC168
CC: George L Miller at ~WHC168
CC: Mike D Guthrie at ~WHC338
Subject: Viscosity analysis of AW-106 Supernate
---------- Message Contents ----------

John,

As per our telephone conversation, I would like you to measure the viscosity for the AW-106 Supernate sample. As indicated in the attached cc:MAIL message from Mike Guthrie, this analysis has high priority and, therefore, we would like the result back as soon as possible.

The sample is located in room 2B, cell 20. It is identified as 6AW-106-1, S95T002015, and possibly has a note on the can indicating that this is the sample for archive. Feel free to use as much sample as you need to get an accurate reading (10 mL as you suggested over the phone). Let me know how much you take so that I can record the difference in volume.

The charge code for your time is MDR21.

Will you be sending the result in an internal letter? I will need some sort of formal report, possibly with a brief description of the work, to include in my report.

Thanks
Ruth Esch (373-4314)

From: Process Chemistry and Statistics 75764-PCS95-082
Phone: 373-6322 T6-09
Date: September 27, 1995
Subject: VISCOSITY MEASUREMENTS OF 106-AW SAMPLE

To: E. Q. Le R1-43

cc: J. W. Chenault T6-09
R. A. Esch T6-06
M. D Guthrie R1-43
J. R. Jewett T6-09
R. J. Nicklas R1-43
M. C. Teats Jr. R1-43
B. H. Von Bargen R1-43
JFO File/LB

This letter summarizes the viscosity measurements to be performed on sample 6AW-95-1 (S95T002015). The 106-AW sample will be evaluated at two different temperatures, ambient (~20°C) and 46°C. Viscosities will be recorded with shear rates increasing from 0 s^{-1} to 300 s^{-1} and decreasing from 300 s^{-1} to 0 s^{-1}. Performance checks will be made before and after each run with 10 cP and 60 cP certified Newtonian standards. Performance checks will be required to have an accuracy of ±20%. Laboratory procedure LT-519-115, *Rheology Measurements for the Haake CV20*, will be followed for all viscosity measurements.

Process Chemistry and Statistics shall issue a letter by October 27, 1995 with flow curves (shear stress vs. shear rate) and viscosity curves (viscosity vs. shear rate) for the two temperatures of interest. All data associated with this testing will be recorded in the controlled laboratory notebook WHC-N-1272-1.

If you have any questions on this letter, feel free to call me at 373-6322.

J. F. O'Rourke, Advanced Engineer
Process Chemistry and Statistics

CONCURRENCE

E. Q. Le, Advanced Engineer
Evaporator Project Engineering