

Final Report for Analysis of 204-AR-TK-1 Catch Tank Samples Collected in April 2012

Author Name:
C.S.Menjivar
WRPS
Richland, WA 99352
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FINAL REPORT FOR ANALYSIS OF 204-AR-TK-1 CATCH TANK SAMPLES COLLECTED IN APRIL 2012

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Carolina E. Menjivar

Advanced Technologies and Laboratories International, Inc.

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Prepared for:



John R. Prilucik
Washington River Protection Solutions, Inc.
P.O. Box 850
Richland, WA 99352
509-373-3830

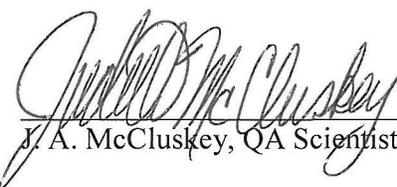
Prepared by:



ATL International, Inc.
P.O. Box 250
Richland, WA 99352-0250
509-373-3328

 06-12-2014

C. E. Menjivar, ATL Project Coordinator

 6-12-2014

J. A. McCluskey, QA Scientist

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222-S LABORATORY

FINAL REPORT FOR ANALYSIS OF 204-AR-TK-1 CATCH TANK SAMPLES COLLECTED IN APRIL 2012

1.0 INTRODUCTION

This report has been revised to include new analytical results from the reanalysis performed to improve the detection limits for bismuth and selenium, as described in Section 3.2.6.

This document presents the final results for the liquid grab samples taken from tank 204-AR-TK-1 on April 23, 2012. The samples were analyzed in accordance with RPP-PLAN-43865, *Sampling and Analysis Plan for Liquid and Solids in the 204-AR-TK-1 Catch Tank* (TSAP); ATL-MP-1011, *ATL Quality Assurance Project Plan for 222-S Laboratory*; SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*; and the additional guidance given in verbal and electronic communications.

Due to the hazardous and complex nature of Hanford tank waste samples, most SW-846 test methods performed at the 222-S Laboratory contain deviations that are listed in an appendix in the analytical procedures. All other known deviations or variances from SW-846 are documented in this narrative.

The following attachments are included in this report.

- Attachment 1 Data Summary Report
- Attachment 2 Opportunistic Analytes
- Attachment 3 Sample Breakdown Diagrams
- Attachment 4 Holding Time Report
- Attachment 5 Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recoveries
- Attachment 6 Surrogate Recoveries
- Attachment 7 Correspondence
- Attachment 8 Sample Photographs
- Attachment 9 Receipt Paperwork
- Attachment 10 Raw Data for Thermogravimetric Analysis (TGA)

On December 5, 2011, characterization change notice (CCN) 11-CCN-10 was received. This CCN changed the required 204AR-11-02 sample for duplicate analyses to samples 204AR-11-03 and 204AR-11-03DUP to ensure sufficient amount of sample for quality control (QC) analyses.

On January 9, 2012, 12-CCN-01 was received. This CCN updated the sample number format to correspond to the correct year of the sample event.

On April 24, 2012, 12-CCN-08 was received. This CCN updated the sample types and amounts to be delivered. It concluded that solids were not obtained and, therefore, samples 204-AR-12-04 and 204-AR-12-04DUP were no longer part of the sampling plan and analyses

were no longer required for these samples. Due to the low detection limits required, additional sample volume was needed for the liquid analyses, therefore, samples 204AR-12-02 and 204AR-12-03DUP were composited with duplicate analyses performed on this composite sample as well. Sample 204AR-12-03 was archived.

2.0 SAMPLE RECEIPT AND APPEARANCE INFORMATION

Sampling dates, receipt dates, and a description of the samples are presented in Table 1.

As stated in the TSAP, refrigeration and preservation is not appropriate for Hanford waste tank samples. Therefore, the subsamples were not refrigerated prior to analysis and no preservatives were added to the samples.

Table 1. Sample Receipt

Sample Identification	Date Sampled	Date Received	Sample Weight (g)	Liquid Volume (mL)	Sample Description
204AR-12-01FB	4/23/2012 13:34	4/24/2012 13:30	231	250	Colorless, clear liquid; no organic or solid layers were visible
204AR-12-01	4/23/2012 13:44	4/24/2012 14:30	241	250	Colorless, clear liquid; no organic or solid layers were visible
204AR-12-02	4/23/2012 13:49	4/24/2012 10:30	241	250	Colorless, clear liquid; no organic or solid layers were visible
204AR-12-03	4/23/2012 13:58	4/24/2012 13:30	241	250	Colorless, clear liquid; no organic or solid layers were visible
204AR-12-03DUP	4/23/2012 14:06	4/24/2012 10:30	241	250	Colorless, clear liquid; no organic or solid layers were visible
204AR-12-COMP (204AR-12-02 & 204AR-12-03DUP)	Created: 4/24/2012	N/A	487	500	Colorless, clear liquid; no organic or solid layers were visible

Sample 204AR-12-03 was archived as requested in 12-CCN-08.

Pictures of the samples upon receipt are included in Attachment 8.

3.0 ANALYTICAL RESULTS SUMMARY

The Data Summary Report (Attachment 1) presents the final analytical results for all analytes requested in the TSAP. Non-requested analytes were reported for inductively coupled plasma-atomic emission spectroscopy (ICP/AES), ion chromatography (IC), and gamma energy analysis (GEA) in accordance with the TSAP. There were no customer-defined QC parameters for the non-requested analytes, and the results are not discussed in this narrative.

The “Det Limit” column in Attachments 1 and 2 contains the method detection limit (MDL) for inorganic and organic methods, and minimum detectable activity (MDA) for radiochemistry methods.

In Attachments 1 and 2, the column labeled “A#” indicates the aliquot class or the method used for sample preparation before analysis. The aliquot classes are defined as follows:

- “O” indicates samples that were extracted for organic analysis.
- “S” indicates samples that were prepared by a distillation.

Samples without a letter identifier in the “A#” column were analyzed directly, with no separate preparation procedure, or with sample preparation performed as part of the analytical procedure.

The “Qual Flags” column in Attachments 1 and 2 contains data qualifier flags that are defined as follows:

- “B” is used to indicate that the analyte was detected in the method or preparation blank and in the sample, and the result for the blank is greater than 5% of the reported sample result.
- “J” indicates that the reported result should be considered an estimate because of increased uncertainty near the detection limit. The “J” flag is applied to sample concentrations that are greater than the MDL but less than the estimated quantitation limit. For radiochemical measurements, the “J” flag is applied to results with a counting uncertainty greater than 30%.
- “I” indicates results were determined via indirect calibration.
- “Q” indicates that the reported result is qualitative only.
- “U” indicates that the reported result is less than the calculated detection limit.
- “Y” indicates results may be inaccurate because of interferences, sampling problems, or instrumentation limitation and require verbal descriptions or qualifying comments.
- “b” indicates that the recovery for the MS is outside of the customer required limits.

Manual calculations using rounded results from the Data Summary Report or result calculation forms may differ slightly from the actual results derived from the raw data.

3.1 HOLDING TIMES

The TSAP indicates that the laboratory is expected to meet the holding times specified in SW-846. The analyses were performed as soon as possible, during normal working hours, after the samples were broken down outside of the hot cell. All analyses were within the holding time requirements, except the reanalysis for bismuth and selenium, which was requested by the customer after the holding time had expired.

For the pH analysis, the holding time in SW-846 is indicated as “immediate,” which is not a laboratory holding time. The analysis was performed within approximately 10.5 hours of sample receipt.

The actual analysis dates and times are presented in the Holding Time Report (Attachment 4).

3.2 INORGANIC ANALYSES

3.2.1 Ammonium

The IC analysis for ammonium was performed, as requested, on the field blank and the composite sample. Ammonium was detected in the preparation blank at greater than the estimated quantitation limit for the composite sample; therefore, a reanalysis was not required. No ammonium was detected in the field blank. A “B” flag was applied to the result for the composite sample because the preparation blank concentration was greater than 5% of the composite result. The relative percent difference (RPD) for the composite sample and duplicate was high at 67%. However, since the result is less than the quantitation limit, a “c” flag was not applied and a rerun was not required. The laboratory control sample (LCS) and MS recoveries met the criteria listed in the TSAP. The required detection limit (RDL) of 1.0E+01 µg/mL was met.

3.2.2 Carbon Analyses

The carbon analysis was performed by furnace oxidation for total organic carbon (TOC) and total carbon (TC), and silver catalyzed persulfate oxidation for total inorganic carbon /total organic carbon (TIC/TOC). These methods were performed, as requested, on the field blank and the composite sample. The RPD, LCS, and MS recoveries all met the criteria listed in the TSAP. No detection limit was requested for the carbon analyses. Note that TOC was detected in the field blank at the same level as in the composite. A low level of TC was also detected in the field blank at approximately 5% of the concentration detected in the composite.

3.2.3 Conductivity

The conductivity was measured on the composite sample. The LCS and RPD recoveries met the criteria in ATL-MP-1011.

3.2.4 Energetics

The energetics was measured on the composite sample by differential scanning calorimetry. The LCS and RPD recoveries met the criteria in the TSAP.

3.2.5 Hydroxide

Since the pH of the composite sample was well below 11, the hydroxide analysis was cancelled and the customer was notified.

3.2.6 Inductively Coupled Plasma/Atomic Emission Spectroscopy

The ICP/AES analysis was performed on the field blank and composite sample. The RPD, LCS, and MS recoveries all met the criteria listed in the TSAP and ATL-MP-1011 with the exceptions noted below. All detection limits met the requirements in the TSAP.

Batch 35257: The interference check standard-A (ICSA) contained low levels of cadmium, potassium, tungsten, and uranium. The detection of these analytes in the ICSA is an indication of potential high bias due to unmitigated inter-element interference. However, since these analytes were not detected in the composite sample, there was no adverse affect on the data and a reanalysis was not requested. Low levels of sodium and silicon were detected in the field blank.

Batch 46940: Results from the reanalysis of samples 204AR-12-01FB (S12T009529) and 204AR-12-COMP (S12T009551) were reported from this batch. The customer requested this reanalysis to improve the detection limits for bismuth and selenium (see correspondence in Attachment 7). Sample S12T009529 was analyzed at a 2X dilution and obtained detection limits of 0.012µg/mL for bismuth and 0.008µg/mL for selenium. Sample S12T009551 was analyzed at 20X dilution and obtained detection limits of 0.12µg/mL for bismuth and 0.08µg/mL for selenium.

3.2.7 Inductively Coupled Plasma/Mass Spectroscopy

The ^{237}Np analysis was performed on the composite sample by inductively coupled plasma/mass spectroscopy (ICP/MS). The LCS and MS recoveries and RPD met the requirements. Because of the high concentration of other analytes in the sample a smaller dilution could not be analyzed and the ^{237}Np MDA did not meet the RDL of 3.0E-04 µg/mL.

The ^{99}Tc analysis was performed on the composite sample by ICP/MS. The LCS and MS recoveries and RPD met the criteria listed in the TSAP. The detection limit of 1.1E-01 µg/mL was met for this analysis.

The uranium isotopic (^{233}U , ^{234}U , ^{235}U , and ^{238}U) analysis was performed on the composite sample by ICP/MS. The LCS and MS recoveries met the criteria listed in the TSAP. Uranium was not detected in the method blank. The RPD for ^{235}U was greater than 20%. However, since the result was below the quantitation limit, a “c” flag was not applied and a reanalysis was not required.

An “I” flag was applied to sample results for ^{234}U , indicating results were determined via indirect calibration. Indirect calibration is a standard approach used when a specific element or isotope is not commercially available, requiring the use of an isotope thought to behave in a similar fashion.

The MDLs for ^{233}U and ^{235}U met the RDL of 1E-01 µg/mL. No required detection limit was given for ^{238}U . The TSAP indicates an RDL of 2.1E-08 µCi/mL (6.4E-02 µg/mL) for U (gross; as ^{234}U); however, the laboratory believes this to be an error. Typically ^{238}U is considered a close approximation of gross U. The MDL for ^{238}U met this RDL.

3.2.8 Ion Chromatography

The IC analysis for anions was performed on the field blank and composite sample. Phosphate was detected in the method blank, but not in the samples. Therefore, a “B” flag was needed and a reanalysis was not required. The RPD, LCS, and MS recoveries all met the criteria listed in the TSAP. Chloride was detected in the field blank at approximately 37% of the levels detected in the composite.

The required detection limit was met for all anions except bromide. Due to nitrate interference, the lowest detection limit the 222-S Laboratory could meet for bromide was 11.6 µg/mL. The customer was notified, and a reanalysis was not deemed necessary.

3.2.9 Mercury

The mercury analysis was performed on the composite sample. The LCS and MS recoveries and RPD met the criteria in the TSAP. No required detection limit was provided in the TSAP.

3.2.10 Percent Water

The percent weight loss was measured using TGA on the composite sample. The result was reported as % water in Attachment 1 with the assumption that all weight loss below 250°C was due to water loss. However, this assumption might be incorrect because there could be other gaseous reaction products that contribute to weight loss below 250°C that are not easily differentiated using the current method at the 222-S Laboratory. The LCS recovery and RPD met the criteria in the TSAP. The raw data for this analysis are included in Attachment 10.

3.2.11 pH

The pH was measured on the field blank and composite sample. The LCS measurement met the criteria listed in the TSAP and ATL-MP-1011.

3.2.12 Specific Gravity

The specific gravity was measured on samples 204AR-12-01 and the composite sample. The LCS and RPD recoveries met the criteria in the TSAP.

3.2.13 Total Suspended Solids

The total suspended solids were measured on the composite sample. The LCS and RPD recoveries met the criteria in ATL-MP-1011.

3.2.14 Total Dissolved Solids

The total dissolved solids were measured on the composite sample. The LCS and RPD recoveries met the criteria in ATL-MP-1011.

3.3 ORGANIC ANALYSES

3.3.1 Polychlorinated Biphenyls Analysis

The polychlorinated biphenyls analysis was performed on the field blank and composite sample. No Aroclors were detected in any of the samples, the field blank, or the preparation blank. The LCS, MS, and MSD recoveries and the spike RPD were within the limits listed in the TSAP. All Aroclors met the required detection limit of 6.5 µg/mL except Aroclors 1016 and 1260. The customer was informed verbally, and the results were deemed acceptable.

Surrogate recoveries are included in Attachment 6. All of the recoveries for decachlorobiphenyl were within the laboratory statistical process control (SPC) limits.

3.3.2 Semi-volatile Organic Analysis

SVOA (SVOC) analyses were not performed because it was not directed by the Tank Coordinator and an organic phase was not observed in the liquid samples as directed by the TSAP.

3.3.3 Volatile Organic Analysis

The volatile organic analysis was performed on the field blank and composite sample. The LCS recoveries and the spike RPDs were within the limits listed in the TSAP. Hexone and methylene chloride were detected in the field blank. All required detection limits were met.

Acetone, benzene, and hexone (methyl isobutyl ketone) were detected in the preparation blank. A “B” flag was only applied to samples where the blank result was greater than 5% of the sample result and could indicate a potential high bias. However, since all results were below the RDLs, there is minimal affect on the usability of the data.

Recoveries for the MS met the criteria specified in the TSAP except for 1-butanol and acetone in the composite sample; a “b” flag was added to the results. For the MSD, the recoveries for 2-butanone, acetone, and 1-butanol were greater than the upper acceptance limit of 130% requested in the TSAP. The results were not flagged because the qualifier flag is only applicable to the MS recoveries. The RPDs between the MS and MSD were all within the customer acceptance limits. The MSD was run outside of the holding time because of a computer error that stopped the sequence from completing. But because results were comparable with the MS that was run within the holding time, a reanalysis was not requested. The recoveries for the ketone and butanol, which are polar compounds, were high. Since the recoveries of the MSD were consistent, this is indicative of a matrix interference that causes a high bias for polar compounds. A reanalysis was not expected to give improved results.

Surrogate recoveries are presented in Attachment 6. All recoveries were within the laboratory SPC limits.

3.4 RADIOCHEMICAL ANALYSES

3.4.1 Americium-241, Curium-243/244

The ^{241}Am and $^{243/244}\text{Cm}$ analysis was performed on the field blank and composite sample by separation/AEA. The LCS and RPD recoveries met the criteria listed in the TSAP. A “B” flag was applied to the ^{241}Am composite result because the blank result was greater than 5% of the sample result and could indicate a potential high bias. However, since the sample result was below the RDL of $1.4\text{E}-07 \mu\text{Ci/mL}$ (^{241}Am), it is the laboratory’s opinion that there is minimal affect on the usability of the data.

3.4.2 Carbon-14

The ^{14}C analysis was performed on the composite sample by separation/liquid scintillation counting (LSC). The LCS and MS recoveries and RPD met the laboratory criteria. The MDA was below the requested detection limit of $1.6\text{E-}04 \mu\text{Ci/mL}$.

3.4.3 Gamma Energy Analysis

Gamma energy analysis was performed on the field blank and composite sample. The LCS recoveries and RPDs met the criteria listed in the TSAP. All MDAs were below the required detection limits except for ^{226}Ra , which was above the RDL of $6.4\text{E-}06 \mu\text{Ci/mL}$ at $1.99\text{E-}05 \mu\text{Ci/mL}$. The RDL was not met because of the ^{137}Cs activity, and a reanalysis was not requested.

3.4.4 Gross Alpha/Beta

Gross alpha/beta analysis was performed on the field blank and composite sample by gas proportional counting. The LCS recovery met the criteria listed in the TSAP. The RPD for gross alpha was greater than 20%. However, since the counting uncertainty was greater than 15%, a “c” flag was not applied. There was no required detection limit for this analysis.

3.4.5 Iodine-129

The ^{129}I analysis was performed on the field blank and composite sample by GEA. The LCS recovery and RPD met the TSAP and laboratory requirements. The MDA met the RDL of $1.8\text{E-}04 \mu\text{Ci/mL}$.

3.4.6 Nickel-63

The ^{63}Ni analysis was performed on the composite sample by separation/ LSC. The LCS recovery and RPD met the laboratory criteria. A minimum detection limit was not requested for this analyte.

3.4.7 Plutonium-238 and Plutonium-239/240

Plutonium isotopic (^{238}Pu and $^{239/240}\text{Pu}$) analysis was performed on the field blank and composite sample by AEA. The LCS contains only $^{239/240}\text{Pu}$ activity. The LCS recovery met the criteria listed in the TSAP. The RPD of $^{239/240}\text{Pu}$ was greater than 20%. However, since the counting uncertainty was greater than 15%, a “c” flag was not applied. All MDA’s met the RDLs of $2.8\text{E-}07 \mu\text{Ci/mL}$ (^{238}Pu) and $1.8\text{E-}06 \mu\text{Ci/mL}$ ($^{239/240}\text{Pu}$).

3.4.8 Selenium-79

The ^{79}Se analysis was performed on the composite sample by anion-cation exchange/LSC. The RPD met the criteria listed in ATL-MP-1011. The ^{14}C LSC curve is used to determine the ^{79}Se results since their energies are similar. The preparation blank demonstrated a positive result below the quantitation limit with a large counting error, as did the sample and duplicate. The sample has been flagged with a “B”. These very low positive results were caused by an elevated

quench, resulting in insufficient background subtraction. These results should be considered false positives and have been flagged with a “Y”. Since all results were below the quantitation limit, reanalysis was not requested.

3.4.9 Strontium-90

The ⁹⁰Sr analysis was performed on the field blank and composite sample by separation/beta counting. The LCS recovery and RPD met the criteria listed in the TSAP. The RDL of 4.2E-03 µCi/mL was met for this analysis.

3.4.10 Tritium

The tritium analysis was performed on the composite sample by separation/LSC. The LCS recovery met the laboratory criteria. The RPD was greater than 20%. However, since the counting uncertainty was greater than 15%, a “c” flag was not applied. The MDA met the RDL of 2.4E-02 µCi/mL.

4.0 PROCEDURES

Table 2 lists the analytical procedures used for analysis of the 204-AR-TK-1 Catch Tank samples collected in April 2012.

Table 2. Analytical Procedures

Analysis	Reference	Preparation Method	Analysis Procedure
Inorganic Analyses			
Ammonia	EPA 300.7	LA-544-112, Rev. F-0	LA-533-157, Rev. A-0
Appearance	N/A	Direct	LA-519-151, Rev. L-0
Carbon (TIC/TOC) – persulfate oxidation	SM5310C	Direct	LA-342-100, Rev. K-0
Conductivity	SW846, 9050A	Direct	LA-512-107, Rev. G-0
Energetics - DSC	N/A	Direct	LA-514-115, Rev. G-0
ICP/AES	SW846, 6010C	Direct	LA-505-161, Rev. K-0
ICP/MS – Actinides	SW846, 6020A	Direct	LA-506-102, Rev. F-1
ICP/MS – ⁹⁹ Tc	6020A	Direct	LA-506-103, Rev. B-0
IC-anions/small acids	SW846, 9056A	Direct	LA-533-166, Rev. A-0
Mercury	SW846, 7470A	LA-325-110, Rev. A-0	LA-325-110, Rev. A-0
Percent Water - TGA	N/A	Direct	LA-514-115, Rev. G-0
pH	SW846, 9040C	Direct	LA-212-106, Rev. I-0
SpG	N/A	Direct	LA-510-112, Rev. J-0
Total Carbon and Total Organic Carbon (TC/TOC)	SM5310B	Direct	LA-344-105, Rev. K-0

Table 2. Analytical Procedures

Analysis	Reference	Preparation Method	Analysis Procedure
TDS	SM2540C	Direct	LA-510-115, Rev. G-0
TSS	SM2540D	Direct	LA-512-106, Rev. F-0
Organic Analyses			
PCB	SW846; 8082A, 3520C	LA-523-115, Rev. I-1	LA-523-140, Rev. H-0
VOA	SW846, 8260C	Direct	LA-523-118, Rev. H-0-A
Radiochemical Analyses			
GEA – ⁶⁰ Co, ⁹⁴ Nb, ¹⁰⁶ Ru, ¹³⁴ Cs, ¹³⁷ Cs, ¹⁵⁴ Eu, ¹⁵⁵ Eu, ²²⁶ Ra	N/A	LA-548-121, Rev. J-0	LA-508-167, Rev. A-0
GEA – ¹²⁹ I	N/A	LA-378-103, Rev. N-0	LA-508-167, Rev. A-0
LSC – ¹⁴ C	N/A	LA-348-104, Rev. J-0	LA-508-121, Rev. G-0
LSC – ³ H	N/A	LA-218-114, Rev. H-0	LA-508-121, Rev. G-0
LSC – ⁶³ Ni	N/A	LA-285-102, Rev. F-0	LA-508-121, Rev. G-0
LSC – ⁷⁹ Se	N/A	LA-365-132, Rev. J-0	LA-508-121, Rev. G-0
Gross Alpha/Beta	N/A	LA-508-101, Rev. O-0	LA-508-114, Rev. G-0
Separation/AEA – ²⁴¹ Am, ^{243/244} Cm	N/A	LA-953-104, Rev. J-0	LA-508-168, Rev. A-0
Separation/AEA – ²³⁸ Pu, ^{239/240} Pu	N/A	LA-953-104, Rev. J-0	LA-508-168, Rev. A-0
Separation/beta counting - ⁹⁰ Sr	N/A	LA-220-101, Rev. J-0	LA-508-114, Rev. G-0

5.0 REFERENCES

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- RPP-PLAN-43865, 2011, *Sampling and Analysis Plan for Liquid and Solids in the 204-AR-TK-1 Catch Tank (TSAP)*, Revision 0, Washington River Protection Solutions, LLC, Richland, Washington.
- SW-846, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

Attachment 1

DATA SUMMARY REPORT

**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-01FB

Segment Portion: Grab Sample (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Alpha and Beta															
S12T009529			12587-46-1	Gross alpha	uCi/mL	99.4	<2.79E-07	<2.80E-07	n/a	n/a	n/a	n/a	2.80E-07	n/a	U
S12T009529			12587-47-2	Gross beta	uCi/mL	108	<1.13E-06	<1.44E-06	n/a	n/a	n/a	n/a	1.44E-06	n/a	U
Am241,Cm243 by TRU-Spec Resin															
S12T009529			CM-243/244	Curium-243/244	uCi/mL	n/a	<6.14E-08	<6.21E-08	n/a	n/a	n/a	n/a	6.21E-08	n/a	U
S12T009529			14596-10-2	Americium-241	uCi/mL	94.2	8.55E-07	<6.44E-08	n/a	n/a	n/a	n/a	6.44E-08	n/a	U
Ammonium by IC															
S12T009526	S		14798-03-9	Ammonium	ug/mL	102	0.110	<0.0168	n/a	n/a	n/a	n/a	0.0168	n/a	U
Anions and Small Organic Acids															
S12T009525			16984-48-8	Fluoride	ug/mL	102	<1.53E-03	<1.53E-03	n/a	n/a	n/a	n/a	1.53E-03	n/a	U
S12T009525			666-14-8	Glycolate	ug/mL	101	<2.83E-03	<2.83E-03	n/a	n/a	n/a	n/a	2.83E-03	n/a	U
S12T009525			71-50-1	Acetate	ug/mL	97.2	<4.75E-03	<4.75E-03	n/a	n/a	n/a	n/a	4.75E-03	n/a	U
S12T009525			12311-97-6	Formate	ug/mL	100	<8.39E-03	<8.39E-03	n/a	n/a	n/a	n/a	8.39E-03	n/a	U
S12T009525			16887-00-6	Chloride	ug/mL	106	<0.0103	0.0290	n/a	n/a	n/a	n/a	0.0103	n/a	J
S12T009525			14797-65-0	Nitrite	ug/mL	98.3	<3.94E-03	<3.94E-03	n/a	n/a	n/a	n/a	3.94E-03	n/a	U
S12T009525			14808-79-8	Sulfate	ug/mL	103	<0.0201	<0.0201	n/a	n/a	n/a	n/a	0.0201	n/a	U
S12T009525			338-70-5	Oxalate	ug/mL	100	<9.83E-03	<9.83E-03	n/a	n/a	n/a	n/a	9.83E-03	n/a	U
S12T009525			24959-67-9	Bromide	ug/mL	102	<4.33E-03	<4.33E-03	n/a	n/a	n/a	n/a	4.33E-03	n/a	U
S12T009525			14797-55-8	Nitrate	ug/mL	101	<0.0157	<0.0157	n/a	n/a	n/a	n/a	0.0157	n/a	U
S12T009525			14265-44-2	Phosphate	ug/mL	104	0.0440	<7.69E-03	n/a	n/a	n/a	n/a	7.69E-03	n/a	U
GEA															
S12T009529			10198-40-0	Cobalt-60	uCi/mL	96.7	<2.96E-07	<2.27E-07	n/a	n/a	n/a	n/a	2.27E-07	n/a	U
S12T009529			14681-63-1	Niobium-94	uCi/mL	n/a	<3.02E-07	<2.13E-07	n/a	n/a	n/a	n/a	2.13E-07	n/a	U
S12T009529			RU/RH-106	Ruthenium/Rhodium-106	uCi/mL	n/a	<2.70E-06	<2.08E-06	n/a	n/a	n/a	n/a	2.08E-06	n/a	U
S12T009529			13967-70-9	Cesium-134	uCi/mL	n/a	<1.71E-06	<1.07E-06	n/a	n/a	n/a	n/a	1.07E-06	n/a	U
S12T009529			10045-97-3	Cesium-137	uCi/mL	96.8	<4.33E-07	<2.62E-07	n/a	n/a	n/a	n/a	2.62E-07	n/a	U
S12T009529			15585-10-1	Europium-154	uCi/mL	n/a	<9.62E-07	<6.98E-07	n/a	n/a	n/a	n/a	6.98E-07	n/a	U
S12T009529			14391-16-3	Europium-155	uCi/mL	n/a	<5.57E-07	<5.14E-07	n/a	n/a	n/a	n/a	5.14E-07	n/a	U
S12T009529			13982-63-3	Radium-226	uCi/mL	n/a	<4.77E-06	<3.69E-06	n/a	n/a	n/a	n/a	3.69E-06	n/a	U

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b - MS/MSD Outside Range
 J - Estimated

I - Indirect Calibration
 B - Blank Contamination

Y - Comment

**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-01FB

Segment Portion: Grab Sample (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Hot Cell Breakdown															
S12T009525			ORGVOL	Organic Volume Present	mL	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009525			MASS	Mass	g	n/a	n/a	231	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009525			VOL%SETS	Volume percent settled solids	%	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009525				Volume of Sample	mL	n/a	n/a	250	n/a	n/a	n/a	n/a	n/a	n/a	Q
ICP-AES															
S12T009525			7440-22-4	Silver	ug/mL	92.8	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
S12T009525			7429-90-5	Aluminum	ug/mL	91.8	<0.0300	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S12T009525			7440-38-2	Arsenic	ug/mL	92.7	<0.0500	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	U
S12T009525			7440-39-3	Barium	ug/mL	96.6	<3.00E-03	<0.0150	n/a	n/a	n/a	n/a	0.0150	n/a	U
S12T009525			7440-41-7	Beryllium	ug/mL	91.1	<1.00E-03	<5.00E-03	n/a	n/a	n/a	n/a	5.00E-03	n/a	U
S12T009525			7440-70-2	Calcium	ug/mL	104	<0.0500	0.287	n/a	n/a	n/a	n/a	0.250	n/a	J
S12T009525			7440-43-9	Cadmium	ug/mL	94.2	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
S12T009525			7440-48-4	Cobalt	ug/mL	94.8	<0.0100	<0.0500	n/a	n/a	n/a	n/a	0.0500	n/a	U
S12T009525			7440-47-3	Chromium	ug/mL	93.3	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
S12T009525			7440-50-8	Copper	ug/mL	100	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
S12T009525			7439-89-6	Iron	ug/mL	93.8	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
S12T009525			7440-09-7	Potassium	ug/mL	98.4	<0.500	<2.50	n/a	n/a	n/a	n/a	2.50	n/a	U
S12T009525			7439-91-0	Lanthanum	ug/mL	97.9	<3.00E-03	<0.0150	n/a	n/a	n/a	n/a	0.0150	n/a	U
S12T009525			7439-95-4	Magnesium	ug/mL	105	<0.0500	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	U
S12T009525			7439-96-5	Manganese	ug/mL	92.9	<3.00E-03	<0.0150	n/a	n/a	n/a	n/a	0.0150	n/a	U
S12T009525			7439-98-7	Molybdenum	ug/mL	96.8	<0.0200	<0.100	n/a	n/a	n/a	n/a	0.100	n/a	U
S12T009525			7440-23-5	Sodium	ug/mL	101	<0.100	0.815	n/a	n/a	n/a	n/a	0.500	n/a	J
S12T009525			7440-02-0	Nickel	ug/mL	95.2	<0.0200	<0.100	n/a	n/a	n/a	n/a	0.100	n/a	U
S12T009525			7723-14-0	Phosphorus	ug/mL	96.6	<0.0500	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	U
S12T009525			7439-92-1	Lead	ug/mL	99.5	<0.0500	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	U
S12T009525			7440-16-6	Rhodium	ug/mL	104	<0.0500	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	U
S12T009525			7704-34-9	Sulfur	ug/mL	97.0	<0.100	<0.500	n/a	n/a	n/a	n/a	0.500	n/a	U

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Y - Comment

**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-01FB

Segment Portion: Grab Sample (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
ICP-AES															
S12T009525			7440-36-0	Antimony	ug/mL	97.7	<0.0500	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	U
S12T009525			7440-21-3	Silicon	ug/mL	97.8	<0.0300	1.69	n/a	n/a	n/a	n/a	0.150	n/a	
S12T009525			7440-24-6	Strontium	ug/mL	97.4	<3.00E-03	<0.0150	n/a	n/a	n/a	n/a	0.0150	n/a	U
S12T009525			7440-61-1	Uranium	ug/mL	95.2	<0.100	<0.500	n/a	n/a	n/a	n/a	0.500	n/a	U
S12T009525			7440-62-2	Vanadium	ug/mL	93.9	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
S12T009525			7440-33-7	Tungsten	ug/mL	101	<0.200	<1.00	n/a	n/a	n/a	n/a	1.00	n/a	U
S12T009525			7440-66-6	Zinc	ug/mL	93.0	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
S12T009525			7440-67-7	Zirconium	ug/mL	97.0	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
ICP-RCRA Metals															
S12T009529			7440-69-9	Bismuth	ug/mL	99.6	<6.00E-03	<0.0120	n/a	n/a	n/a	n/a	0.0120	n/a	U
S12T009529			7782-49-2	Selenium	ug/mL	99.1	<4.00E-03	<8.00E-03	n/a	n/a	n/a	n/a	8.00E-03	n/a	U
Iodine-129															
S12T009529			15046-84-1	Iodine-129	uCi/mL	103	<1.06E-05	<1.11E-05	n/a	n/a	n/a	n/a	1.11E-05	n/a	U
PCB (EPA 8082) from Liquid-Liquid Extraction															
S12T009531	O		12674-11-2	Aroclor 1016	ug/L	n/a	<5.40	<9.45	n/a	n/a	n/a	n/a	9.45	n/a	U
S12T009531	O		11104-28-2	Aroclor 1221	ug/L	n/a	<1.01	<1.78	n/a	n/a	n/a	n/a	1.78	n/a	U
S12T009531	O		11141-16-5	Aroclor 1232	ug/L	n/a	<1.17	<2.05	n/a	n/a	n/a	n/a	2.05	n/a	U
S12T009531	O		53469-21-9	Aroclor 1242	ug/L	n/a	<1.80	<3.15	n/a	n/a	n/a	n/a	3.15	n/a	U
S12T009531	O		12672-29-6	Aroclor 1248	ug/L	n/a	<1.01	<1.78	n/a	n/a	n/a	n/a	1.78	n/a	U
S12T009531	O		11097-69-1	Aroclor 1254	ug/L	82.0	<0.371	<0.650	n/a	n/a	n/a	n/a	0.650	n/a	U
S12T009531	O		11096-82-5	Aroclor 1260	ug/L	n/a	<4.09	<7.15	n/a	n/a	n/a	n/a	7.15	n/a	U
Pu238,239 by TRU-SPEC Resin															
S12T009529			PU-239/240	Plutonium-239/240	uCi/mL	108	<1.58E-07	<1.11E-07	n/a	n/a	n/a	n/a	1.11E-07	n/a	U
S12T009529			13981-16-3	Plutonium-238	uCi/mL	n/a	<9.11E-08	<1.33E-07	n/a	n/a	n/a	n/a	1.33E-07	n/a	U
TIC/TOC by Acid Persulfate															
S12T009525			TIC	Total inorganic carbon	ug/mL	100	<7.00	<7.00	n/a	n/a	n/a	n/a	7.00	n/a	U
S12T009525			TOC	Total organic carbon	ug/mL	103	<20.0	<20.0	n/a	n/a	n/a	n/a	20.0	n/a	U
Total Carbon by Furnace															

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Y - Comment

**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-01FB

Segment Portion: Grab Sample (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Total Carbon by Furnace															
S12T009525			TC	Total carbon	ug/mL	99.3	<5.00	10.0	n/a	n/a	n/a	n/a	5.00	n/a	J
Total Organic Carbon by Furnace															
S12T009525			TOC	Total organic carbon	ug/mL	101	<5.00	28.1	n/a	n/a	n/a	n/a	5.50	n/a	J
VOA Liquid Samples from Non-Tank Samples															
S12T009527			71-55-6	1,1,1-Trichloroethane	ug/L	n/a	<0.0433	<0.0866	n/a	n/a	n/a	n/a	0.0866	n/a	U
S12T009527			78-93-3	2-Butanone	ug/L	104	<0.458	<0.916	n/a	n/a	n/a	n/a	0.916	n/a	U
S12T009527			67-64-1	Acetone	ug/L	110	0.994	<1.15	n/a	n/a	n/a	n/a	1.15	n/a	Ub
S12T009527			71-43-2	Benzene	ug/L	104	0.0262	<0.0326	n/a	n/a	n/a	n/a	0.0326	n/a	U
S12T009527			75-15-0	Carbon disulfide	ug/L	n/a	<0.0211	<0.0422	n/a	n/a	n/a	n/a	0.0422	n/a	U
S12T009527			56-23-5	Carbon tetrachloride	ug/L	n/a	<0.0479	<0.0958	n/a	n/a	n/a	n/a	0.0958	n/a	U
S12T009527			67-66-3	Chloroform	ug/L	n/a	<0.0414	<0.0828	n/a	n/a	n/a	n/a	0.0828	n/a	U
S12T009527			108-10-1	Hexone	ug/L	99.0	0.877	2.96	n/a	n/a	n/a	n/a	0.906	n/a	BJ
S12T009527			75-09-2	Methylenechloride	ug/L	n/a	<0.0396	37.8	n/a	n/a	n/a	n/a	0.0792	n/a	
S12T009527			71-36-3	1-Butanol	ug/L	102	<1.15	<2.30	n/a	n/a	n/a	n/a	2.30	n/a	Ub
S12T009527			127-18-4	Tetrachloroethene	ug/L	n/a	<0.0583	<0.117	n/a	n/a	n/a	n/a	0.117	n/a	U
S12T009527			109-99-9	Tetrahydrofuran	ug/L	n/a	<0.275	<0.551	n/a	n/a	n/a	n/a	0.551	n/a	U
pH of Liquids															
S12T009525			PH	pH	unitless	n/a	n/a	6.34	6.31	6.32	0.474	n/a	0.0100	n/a	

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**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-01

Segment Portion: Grab Sample (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Hot Cell Breakdown															
S12T009532			ORGVOL	Organic Volume Present	mL	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009532			MASS	Mass	g	n/a	n/a	241	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009532			VOL%SETS	Volume percent settled solids	%	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009532				Volume of Sample	mL	n/a	n/a	250	n/a	n/a	n/a	n/a	n/a	n/a	Q
Specific Gravity															
S12T009532			SPECGRAVI	Specific gravity	unitless	100.6	n/a	1.007	1.007	1.007	0.0	n/a	1.000E-03	n/a	

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 U - Less Than Detection Limit

b - MS/MSD Outside Range
 J - Estimated

I - Indirect Calibration
 B - Blank Contamination

Y - Comment

**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-02

Segment Portion: Grab Sample (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Hot Cell Breakdown															
S12T009533			ORGVOL	Organic Volume Present	mL	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009533			MASS	Mass	g	n/a	n/a	241	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009533			VOL%SETS	Volume percent settled solids	%	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009533				Volume of Sample	mL	n/a	n/a	250	n/a	n/a	n/a	n/a	n/a	n/a	Q

NA = Not Analyzed, ND = Not Detected

Q - Qualitative
 U - Less Than Detection Limit

b - MS/MSD Outside Range
 J - Estimated

I - Indirect Calibration
 B - Blank Contamination

Y - Comment

**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-03

Segment Portion: Grab Sample (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Hot Cell Breakdown															
S12T009540			ORGVOL	Organic Volume Present	mL	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009540			MASS	Mass	g	n/a	n/a	241	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009540			VOL%SETS	Volume percent settled solids	%	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009540				Volume of Sample	mL	n/a	n/a	250	n/a	n/a	n/a	n/a	n/a	n/a	Q

NA = Not Analyzed, ND = Not Detected

Q - Qualitative
 U - Less Than Detection Limit

b - MS/MSD Outside Range
 J - Estimated

I - Indirect Calibration
 B - Blank Contamination

Y - Comment

**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-03DUP

Segment Portion: Grab Sample (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Hot Cell Breakdown															
S12T009625			ORGVOL	Organic Volume Present	mL	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009625			MASS	Mass	g	n/a	n/a	241	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009625			VOL%SETS	Volume percent settled solids	%	n/a	n/a	0.0	n/a	n/a	n/a	n/a	n/a	n/a	Q
S12T009625				Volume of Sample	mL	n/a	n/a	250	n/a	n/a	n/a	n/a	n/a	n/a	Q

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Q - Qualitative
 U - Less Than Detection Limit

b - MS/MSD Outside Range
 J - Estimated

I - Indirect Calibration
 B - Blank Contamination

Y - Comment

**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-COMP

Segment Portion: Composite (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
% Water by TGA															
S12T009547			%WATER	Percent water	%	98.5	n/a	98.7	99.7	99.2	0.958	n/a	0.0100	n/a	
Alpha and Beta															
S12T009551			12587-46-1	Gross alpha	uCi/mL	99.4	<2.79E-07	1.03E-06	8.42E-07	9.38E-07	20.6	94.0	2.98E-07	60.695	J
S12T009551			12587-47-2	Gross beta	uCi/mL	108	<1.13E-06	1.46E-03	1.44E-03	1.45E-03	0.960	120	9.78E-07	0.935	
Am241,Cm243 by TRU-Spec Resin															
S12T009551			CM-243/244	Curium-243/244	uCi/mL	n/a	<6.14E-08	<6.00E-08	<6.37E-08	n/a	n/a	n/a	6.00E-08	n/a	U
S12T009551			14596-10-2	Americium-241	uCi/mL	94.2	8.55E-07	1.12E-07	<6.84E-08	n/a	n/a	n/a	7.41E-08	31.94	BJ
Ammonium by IC															
S12T009548	S		14798-03-9	Ammonium	ug/mL	102	0.110	0.0600	0.0300	0.0450	66.7	101	0.0168	n/a	BJ
Anions and Small Organic Acids															
S12T009547			16984-48-8	Fluoride	ug/mL	102	<1.53E-03	<0.306	<0.306	n/a	n/a	104	0.306	n/a	U
S12T009547			666-14-8	Glycolate	ug/mL	101	<2.83E-03	<0.566	<0.566	n/a	n/a	104	0.566	n/a	U
S12T009547			71-50-1	Acetate	ug/mL	97.2	<4.75E-03	<0.950	<0.950	n/a	n/a	104	0.950	n/a	U
S12T009547			12311-97-6	Formate	ug/mL	100	<8.39E-03	<1.68	<1.68	n/a	n/a	104	1.68	n/a	U
S12T009547			16887-00-6	Chloride	ug/mL	106	<0.0103	15.6	14.9	15.2	4.62	106	2.06	n/a	
S12T009547			14797-65-0	Nitrite	ug/mL	98.3	<3.94E-03	<0.788	<0.788	n/a	n/a	102	0.788	n/a	U
S12T009547			14808-79-8	Sulfate	ug/mL	103	<0.0201	35.1	33.5	34.3	4.62	102	4.02	n/a	J
S12T009547			338-70-5	Oxalate	ug/mL	100	<9.83E-03	<1.97	<1.97	n/a	n/a	102	1.97	n/a	U
S12T009547			24959-67-9	Bromide	ug/mL	102	<4.33E-03	<0.866	<0.866	n/a	n/a	102	0.866	n/a	U
S12T009547			14797-55-8	Nitrate	ug/mL	101	<0.0157	3.31E+03	3.31E+03	3.31E+03	0.133	103	3.14	n/a	
S12T009547			14265-44-2	Phosphate	ug/mL	104	0.0440	<1.54	<1.54	n/a	n/a	103	1.54	n/a	BJ
Carbon 14 by LSC															
S12T009551			14762-75-5	Carbon-14	uCi/mL	85.6	<1.31E-06	<1.30E-06	<1.30E-06	n/a	n/a	95.0	1.30E-06	n/a	U
Conductivity															
S12T009547			CONDUCT	Conductivity	uMHO/cm	107	<1.00	7.23E+03	7.25E+03	7.24E+03	0.276	n/a	1.00	n/a	
DSC Exotherm by TA															
S12T009547			DSC-01	DSC Exotherm	J/g	99.3	n/a	0.0	0.0	0.0	0.0	n/a	n/a	n/a	
GEA															

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I - Indirect Calibration
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Y - Comment

**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-COMP

Segment Portion: Composite (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
GEA															
S12T009551			10198-40-0	Cobalt-60	uCi/mL	96.7	<2.96E-07	<5.09E-07	4.04E-07	n/a	n/a	n/a	5.09E-07	n/a	U
S12T009551			14681-63-1	Niobium-94	uCi/mL	n/a	<3.02E-07	<4.67E-07	<1.36E-07	n/a	n/a	n/a	4.67E-07	n/a	U
S12T009551			RU/RH-106	Ruthenium/Rhodium-106	uCi/mL	n/a	<2.70E-06	<6.82E-06	<2.03E-06	n/a	n/a	n/a	6.82E-06	n/a	U
S12T009551			13967-70-9	Cesium-134	uCi/mL	n/a	<1.71E-06	<3.81E-06	<1.34E-06	n/a	n/a	n/a	3.81E-06	n/a	U
S12T009551			10045-97-3	Cesium-137	uCi/mL	96.8	<4.33E-07	1.06E-03	1.10E-03	1.08E-03	3.53	n/a	8.97E-07	0.16	
S12T009551			15585-10-1	Europium-154	uCi/mL	n/a	<9.62E-07	<1.37E-06	5.23E-07	n/a	n/a	n/a	1.37E-06	n/a	U
S12T009551			14391-16-3	Europium-155	uCi/mL	n/a	<5.57E-07	<2.21E-06	<7.00E-07	n/a	n/a	n/a	2.21E-06	n/a	U
S12T009551			13982-63-3	Radium-226	uCi/mL	n/a	<4.77E-06	<1.99E-05	1.56E-05	n/a	n/a	n/a	1.99E-05	n/a	U
ICP-AES															
S12T009551			7440-22-4	Silver	ug/mL	92.8	<5.00E-03	<0.100	<0.100	n/a	n/a	101	0.100	n/a	U
S12T009551			7429-90-5	Aluminum	ug/mL	91.8	<0.0300	<0.600	<0.600	n/a	n/a	94.5	0.600	n/a	U
S12T009551			7440-38-2	Arsenic	ug/mL	92.7	<0.0500	<1.00	<1.00	n/a	n/a	97.0	1.00	n/a	U
S12T009551			7440-39-3	Barium	ug/mL	96.6	<3.00E-03	<0.0600	<0.0600	n/a	n/a	96.4	0.0600	n/a	U
S12T009551			7440-41-7	Beryllium	ug/mL	91.1	<1.00E-03	<0.0200	<0.0200	n/a	n/a	93.1	0.0200	n/a	U
S12T009551			7440-70-2	Calcium	ug/mL	104	<0.0500	4.19	4.11	4.15	1.95	96.2	1.00	n/a	J
S12T009551			7440-43-9	Cadmium	ug/mL	94.2	<5.00E-03	<0.100	<0.100	n/a	n/a	96.1	0.100	n/a	U
S12T009551			7440-48-4	Cobalt	ug/mL	94.8	<0.0100	<0.200	<0.200	n/a	n/a	97.9	0.200	n/a	U
S12T009551			7440-47-3	Chromium	ug/mL	93.3	<5.00E-03	<0.100	<0.100	n/a	n/a	97.3	0.100	n/a	U
S12T009551			7440-50-8	Copper	ug/mL	100	<5.00E-03	<0.100	<0.100	n/a	n/a	98.6	0.100	n/a	U
S12T009551			7439-89-6	Iron	ug/mL	93.8	<5.00E-03	<0.100	<0.100	n/a	n/a	95.4	0.100	n/a	U
S12T009551			7440-09-7	Potassium	ug/mL	96.1	<0.500	<5.00	<5.00	n/a	n/a	96.5	5.00	n/a	U
S12T009551			7439-91-0	Lanthanum	ug/mL	97.9	<3.00E-03	<0.0600	<0.0600	n/a	n/a	96.7	0.0600	n/a	U
S12T009551			7439-95-4	Magnesium	ug/mL	105	<0.0500	2.14	2.03	2.08	4.90	101	1.00	n/a	J
S12T009551			7439-96-5	Manganese	ug/mL	92.9	<3.00E-03	<0.0600	<0.0600	n/a	n/a	96.8	0.0600	n/a	U
S12T009551			7439-98-7	Molybdenum	ug/mL	96.8	<0.0200	<0.400	<0.400	n/a	n/a	99.3	0.400	n/a	U
S12T009551			7440-23-5	Sodium	ug/mL	97.5	<0.100	1.51E+03	1.56E+03	1.53E+03	2.95	99.9	5.00	n/a	
S12T009551			7440-02-0	Nickel	ug/mL	95.2	<0.0200	<0.400	<0.400	n/a	n/a	97.1	0.400	n/a	U

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**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-COMP

Segment Portion: Composite (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
ICP-AES															
S12T009551			7723-14-0	Phosphorus	ug/mL	96.6	<0.0500	<1.00	<1.00	n/a	n/a	99.5	1.00	n/a	U
S12T009551			7439-92-1	Lead	ug/mL	99.5	<0.0500	<1.00	<1.00	n/a	n/a	102	1.00	n/a	U
S12T009551			7440-16-6	Rhodium	ug/mL	104	<0.0500	<1.00	<1.00	n/a	n/a	101	1.00	n/a	U
S12T009551			7704-34-9	Sulfur	ug/mL	97.0	<0.100	9.83	9.63	9.73	2.03	97.9	2.00	n/a	J
S12T009551			7440-36-0	Antimony	ug/mL	97.7	<0.0500	<1.00	<1.00	n/a	n/a	99.1	1.00	n/a	U
S12T009551			7440-21-3	Silicon	ug/mL	97.8	<0.0300	2.96	3.13	3.04	5.74	99.9	0.600	n/a	J
S12T009551			7440-24-6	Strontium	ug/mL	97.4	<3.00E-03	0.0705	0.0730	0.0718	3.43	96.8	0.0600	n/a	J
S12T009551			7440-61-1	Uranium	ug/mL	95.2	<0.100	<2.00	<2.00	n/a	n/a	93.2	2.00	n/a	U
S12T009551			7440-62-2	Vanadium	ug/mL	93.9	<5.00E-03	<0.100	<0.100	n/a	n/a	96.7	0.100	n/a	U
S12T009551			7440-33-7	Tungsten	ug/mL	101	<0.200	<4.00	<4.00	n/a	n/a	101	4.00	n/a	U
S12T009551			7440-66-6	Zinc	ug/mL	93.0	<5.00E-03	<0.100	<0.100	n/a	n/a	95.8	0.100	n/a	U
S12T009551			7440-67-7	Zirconium	ug/mL	97.0	<5.00E-03	<0.100	<0.100	n/a	n/a	96.8	0.100	n/a	U
ICP-RCRA Metals															
S12T009551			7440-69-9	Bismuth	ug/mL	99.6	<6.00E-03	<0.120	<0.120	n/a	n/a	97.4	0.120	n/a	U
S12T009551			7782-49-2	Selenium	ug/mL	99.1	<4.00E-03	<0.0800	<0.0800	n/a	n/a	97.4	0.0800	n/a	U
ICP/MS															
S12T009547			13968-55-3	Uranium-233	ug/mL	100	<2.00E-07	<2.00E-03	<2.00E-03	n/a	n/a	101	2.00E-03	n/a	U
S12T009547			13966-29-5	Uranium-234	ug/mL	n/a	<5.00E-09	<5.00E-05	<5.00E-05	n/a	n/a	n/a	5.00E-05	n/a	IU
S12T009547			15117-96-1	Uranium-235	ug/mL	103	<1.00E-08	5.71E-04	3.42E-04	4.56E-04	50.3	111	1.00E-04	n/a	J
S12T009547			13994-20-2	Neptunium-237	ug/mL	104	<1.00E-07	<1.00E-03	<1.00E-03	n/a	n/a	101	1.00E-03	n/a	U
S12T009547			U-238	Uranium-238	ug/mL	101	<5.00E-07	0.0643	0.0636	0.0640	1.11	99.6	5.00E-03	n/a	
S12T009547			14133-76-7	Technetium-99	ug/mL	99.8	<6.00E-07	<6.00E-03	<6.00E-03	n/a	n/a	99.4	6.00E-03	n/a	U
Iodine-129															
S12T009551			15046-84-1	Iodine-129	uCi/mL	103	<1.06E-05	<1.11E-05	<3.14E-05	n/a	n/a	n/a	1.11E-05	n/a	U
Mercury by CVAA															
S12T009547			7439-97-6	Mercury	ug/mL	97.2	<1.10E-05	5.60E-04	5.40E-04	5.50E-04	3.64	90.3	2.20E-04	n/a	J
Nickel-63															
S12T009551			13981-37-8	Nickel-63	uCi/mL	98.6	<6.95E-06	<6.22E-06	<6.43E-06	n/a	n/a	n/a	6.22E-06	n/a	U

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**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-COMP

Segment Portion: Composite (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
PCB (EPA 8082) from Liquid-Liquid Extraction															
S12T009553		O	12674-11-2	Aroclor 1016	ug/L	n/a	<5.40	<9.45	n/a	n/a	n/a	n/a	9.45	n/a	U
S12T009553		O	11104-28-2	Aroclor 1221	ug/L	n/a	<1.01	<1.78	n/a	n/a	n/a	n/a	1.78	n/a	U
S12T009553		O	11141-16-5	Aroclor 1232	ug/L	n/a	<1.17	<2.05	n/a	n/a	n/a	n/a	2.05	n/a	U
S12T009553		O	53469-21-9	Aroclor 1242	ug/L	n/a	<1.80	<3.15	n/a	n/a	n/a	n/a	3.15	n/a	U
S12T009553		O	12672-29-6	Aroclor 1248	ug/L	n/a	<1.01	<1.78	n/a	n/a	n/a	n/a	1.78	n/a	U
S12T009553		O	11097-69-1	Aroclor 1254	ug/L	82.0	<0.371	<0.650	n/a	n/a	n/a	71.3	0.650	n/a	U
S12T009553		O	11096-82-5	Aroclor 1260	ug/L	n/a	<4.09	<7.15	n/a	n/a	n/a	n/a	7.15	n/a	U
Pu238,239 by TRU-SPEC Resin															
S12T009551			PU-239/240	Plutonium-239/240	uCi/mL	108	<1.58E-07	1.97E-07	1.40E-07	1.68E-07	33.8	n/a	1.32E-07	32.87	J
S12T009551			13981-16-3	Plutonium-238	uCi/mL	n/a	<9.11E-08	<9.77E-08	<1.57E-07	n/a	n/a	n/a	9.77E-08	n/a	U
Selenium-79 by LSC															
S12T009551			15758-45-9	Selenium-79	uCi/mL	n/a	2.36E-06	2.04E-06	2.46E-06	2.25E-06	18.7	n/a	1.14E-06	6264.339	BJY
Specific Gravity															
S12T009547			SPECGRAVI	Specific gravity	unitless	100.6	n/a	1.014	n/a	n/a	n/a	n/a	1.000E-03	n/a	
Sr-89/90 by GPC															
S12T009551			SR-89/90	Strontium-89/90	uCi/mL	92.1	<4.53E-06	4.36E-04	4.29E-04	4.32E-04	1.53	n/a	8.91E-07	1	
Suspended Solids															
S12T009547			SUSPSLD	Suspended Solids in Liquid	mg/L	n/a	<0.100	<1.00E+03	<1.00E+03	n/a	n/a	n/a	1000	n/a	U
TIC/TOC by Acid Persulfate															
S12T009547			TIC	Total inorganic carbon	ug/mL	100	<7.00	166	165	166	0.604	100	7.00	n/a	
S12T009547			TOC	Total organic carbon	ug/mL	103	<20.0	<20.0	26.9	n/a	n/a	101	20.0	n/a	U
Total Carbon by Furnace															
S12T009547			TC	Total carbon	ug/mL	99.3	<5.00	181	161	171	11.7	96.5	5.50	n/a	
Total Dissolved Solids															
S12T009547			TDS	Total dissolved solids	ug/mL	103	n/a	4.42E+03	4.42E+03	4.42E+03	0.0	n/a	250	n/a	
Total Organic Carbon by Furnace															
S12T009547			TOC	Total organic carbon	ug/mL	101	<5.00	32.5	27.0	29.8	18.5	104	5.50	n/a	J
Tritium (H3) by LSC															

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**204AR Catch Tank
 Data Summary Report**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-COMP

Segment Portion: Composite (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Tritium (H3) by LSC															
S12T009551			10028-17-8	Tritium	uCi/mL	95.0	<1.76E-06	5.38E-06	7.82E-06	6.60E-06	37.0	94.6	1.75E-06	40.655	J
VOA Liquid Samples from Non-Tank Samples															
S12T009549			71-55-6	1,1,1-Trichloroethane	ug/L	n/a	<0.0433	<0.0866	n/a	n/a	n/a	n/a	0.0866	n/a	U
S12T009549			78-93-3	2-Butanone	ug/L	104	<0.458	<0.916	n/a	n/a	n/a	127	0.916	n/a	U
S12T009549			67-64-1	Acetone	ug/L	110	0.994	<1.15	n/a	n/a	n/a	137	1.15	n/a	Ub
S12T009549			71-43-2	Benzene	ug/L	104	0.0262	0.0646	n/a	n/a	n/a	103	0.0326	n/a	BJ
S12T009549			75-15-0	Carbon disulfide	ug/L	n/a	<0.0211	<0.0422	n/a	n/a	n/a	n/a	0.0422	n/a	U
S12T009549			56-23-5	Carbon tetrachloride	ug/L	n/a	<0.0479	<0.0958	n/a	n/a	n/a	n/a	0.0958	n/a	U
S12T009549			67-66-3	Chloroform	ug/L	n/a	<0.0414	<0.0828	n/a	n/a	n/a	n/a	0.0828	n/a	U
S12T009549			108-10-1	Hexone	ug/L	99.0	0.877	<0.906	n/a	n/a	n/a	120	0.906	n/a	U
S12T009549			75-09-2	Methylenechloride	ug/L	n/a	<0.0396	0.201	n/a	n/a	n/a	n/a	0.0792	n/a	J
S12T009549			71-36-3	1-Butanol	ug/L	102	<1.15	<2.30	n/a	n/a	n/a	147	2.30	n/a	Ub
S12T009549			127-18-4	Tetrachloroethene	ug/L	n/a	<0.0583	<0.117	n/a	n/a	n/a	n/a	0.117	n/a	U
S12T009549			109-99-9	Tetrahydrofuran	ug/L	n/a	<0.275	<0.551	n/a	n/a	n/a	n/a	0.551	n/a	U
pH of Liquids															
S12T009547			PH	pH	unitless	n/a	n/a	8.90	8.92	8.91	0.224	n/a	0.0100	n/a	

NA = Not Analyzed, ND = Not Detected

Q - Qualitative
 U - Less Than Detection Limit

b - MS/MSD Outside Range
 J - Estimated

I - Indirect Calibration
 B - Blank Contamination

Y - Comment

Attachment 2

NON-REQUESTED ANALYTES

**204AR Catch Tank
 Opportunistic Analyte Results**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-01FB

Segment Portion: Grab Sample (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S12T009525			7440-42-8	Boron	ug/mL	101	<0.0300	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S12T009525			7440-45-1	Cerium	ug/mL	96.9	<0.0300	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S12T009525			7440-53-1	Europium	ug/mL	95.5	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
S12T009525			7440-00-8	Neodymium	ug/mL	92.6	<0.0100	<0.0500	n/a	n/a	n/a	n/a	0.0500	n/a	U
S12T009525			7440-30-1	Niobium	ug/mL	100	<0.0300	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S12T009525			7440-05-3	Palladium	ug/mL	99.0	<0.100	<0.500	n/a	n/a	n/a	n/a	0.500	n/a	U
S12T009525			7440-10-0	Praseodymium	ug/mL	96.3	<0.0100	<0.0500	n/a	n/a	n/a	n/a	0.0500	n/a	U
S12T009525			7440-18-8	Ruthenium	ug/mL	100	<0.0300	<0.150	n/a	n/a	n/a	n/a	0.150	n/a	U
S12T009525			7440-19-9	Samarium	ug/mL	96.1	<0.0200	<0.100	n/a	n/a	n/a	n/a	0.100	n/a	U
S12T009525			7440-25-7	Tantalum	ug/mL	98.1	<0.0500	<0.250	n/a	n/a	n/a	n/a	0.250	n/a	U
S12T009525			13494-80-9	Tellurium	ug/mL	101	<0.100	<0.500	n/a	n/a	n/a	n/a	0.500	n/a	U
S12T009525			7440-32-6	Titanium	ug/mL	98.4	<5.00E-03	<0.0250	n/a	n/a	n/a	n/a	0.0250	n/a	U
S12T009525			7440-28-0	Thallium	ug/mL	98.7	<0.100	<0.500	n/a	n/a	n/a	n/a	0.500	n/a	U
S12T009525			7440-65-5	Yttrium	ug/mL	96.6	<2.00E-03	<0.0100	n/a	n/a	n/a	n/a	0.0100	n/a	U
S12T009529			13966-00-2	Potassium-40	uCi/mL	n/a	<1.08E-05	8.22E-06	n/a	n/a	n/a	n/a	7.92E-06	23.43	
S12T009529			14762-78-8	Cerium-144	uCi/mL	n/a	<8.68E-07	<1.15E-06	n/a	n/a	n/a	n/a	1.15E-06	n/a	U
S12T009529			14913-50-9	Thallium-208	uCi/mL	n/a	<3.39E-07	2.19E-06	n/a	n/a	n/a	n/a	2.38E-07	5.01	
S12T009529			14733-03-0	Bismuth-214	uCi/mL	n/a	1.48E-06	6.74E-07	n/a	n/a	n/a	n/a	5.73E-07	21.89	B
S12T009529			15067-28-4	Lead-214	uCi/mL	n/a	1.35E-06	4.70E-06	n/a	n/a	n/a	n/a	4.12E-07	3.09	B

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination

U - Less Than Detection Limit

**204AR Catch Tank
 Opportunistic Analyte Results**

Sample Group: 20120627

Riser: n/a

Segment Number: 204AR-12-COMP

Segment Portion: Composite (Total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S12T009551			13966-00-2	Potassium-40	uCi/mL	n/a	<1.08E-05	<1.42E-05	7.48E-06	n/a	n/a	n/a	1.42E-05	n/a	U
S12T009551			14762-78-8	Cerium-144	uCi/mL	n/a	<8.68E-07	<4.75E-06	<1.47E-06	n/a	n/a	n/a	4.75E-06	n/a	U
S12T009551			14913-50-9	Thallium-208	uCi/mL	n/a	<3.39E-07	<7.75E-07	2.15E-06	n/a	n/a	n/a	7.75E-07	n/a	U
S12T009551			15067-28-4	Lead-214	uCi/mL	n/a	1.35E-06	3.94E-06	3.56E-06	3.75E-06	10.3	n/a	2.34E-06	18.19	B
S12T009551			14596-10-2	Americium-241	uCi/mL	n/a	<3.14E-07	<1.06E-06	1.36E-06	n/a	n/a	n/a	1.06E-06	n/a	U
S12T009551			7440-42-8	Boron	ug/mL	101	<0.0300	<0.600	<0.600	n/a	n/a	99.7	0.600	n/a	U
S12T009551			7440-45-1	Cerium	ug/mL	96.9	<0.0300	<0.600	<0.600	n/a	n/a	94.5	0.600	n/a	U
S12T009551			7440-53-1	Europium	ug/mL	95.5	<5.00E-03	<0.100	<0.100	n/a	n/a	95.8	0.100	n/a	U
S12T009551			7440-00-8	Neodymium	ug/mL	92.6	<0.0100	<0.200	<0.200	n/a	n/a	90.1	0.200	n/a	U
S12T009551			7440-30-1	Niobium	ug/mL	100	<0.0300	<0.600	<0.600	n/a	n/a	98.3	0.600	n/a	U
S12T009551			7440-05-3	Palladium	ug/mL	99.0	<0.100	<2.00	<2.00	n/a	n/a	102	2.00	n/a	U
S12T009551			7440-10-0	Praseodymium	ug/mL	96.3	<0.0100	<0.200	<0.200	n/a	n/a	95.0	0.200	n/a	U
S12T009551			7440-18-8	Ruthenium	ug/mL	100	<0.0300	<0.600	<0.600	n/a	n/a	98.8	0.600	n/a	U
S12T009551			7440-19-9	Samarium	ug/mL	96.1	<0.0200	<0.400	<0.400	n/a	n/a	94.6	0.400	n/a	U
S12T009551			7440-25-7	Tantalum	ug/mL	98.1	<0.0500	<1.00	<1.00	n/a	n/a	99.1	1.00	n/a	U
S12T009551			13494-80-9	Tellurium	ug/mL	101	<0.100	<2.00	<2.00	n/a	n/a	99.5	2.00	n/a	U
S12T009551			7440-32-6	Titanium	ug/mL	98.4	<5.00E-03	<0.100	<0.100	n/a	n/a	97.8	0.100	n/a	U
S12T009551			7440-28-0	Thallium	ug/mL	98.7	<0.100	<2.00	<2.00	n/a	n/a	98.0	2.00	n/a	U
S12T009551			7440-65-5	Yttrium	ug/mL	96.6	<2.00E-03	<0.0400	<0.0400	n/a	n/a	94.6	0.0400	n/a	U

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination

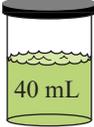
U - Less Than Detection Limit

Attachment 3

SAMPLE BREAKDOWN DIAGRAMS

204-AR Catch Tank
Riser N/A
Group 20120627

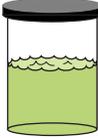

S12T009527
VOA


S12T09528

PCB
Ext


S12T09531
PCB

204AR-12-01FB
Grab Sample (Total)


S12T009525
Breakdown
TIC/TOC
TOC
TC
ICP-Metals
IC - Anions/Org
pH

NH₄
Dist


S12T009526
IC-Ammonia


S12T009529
I-129
Alpha/Beta
GEA
Plutonium
Americium
ICP-Metals
(Bi & Se only)

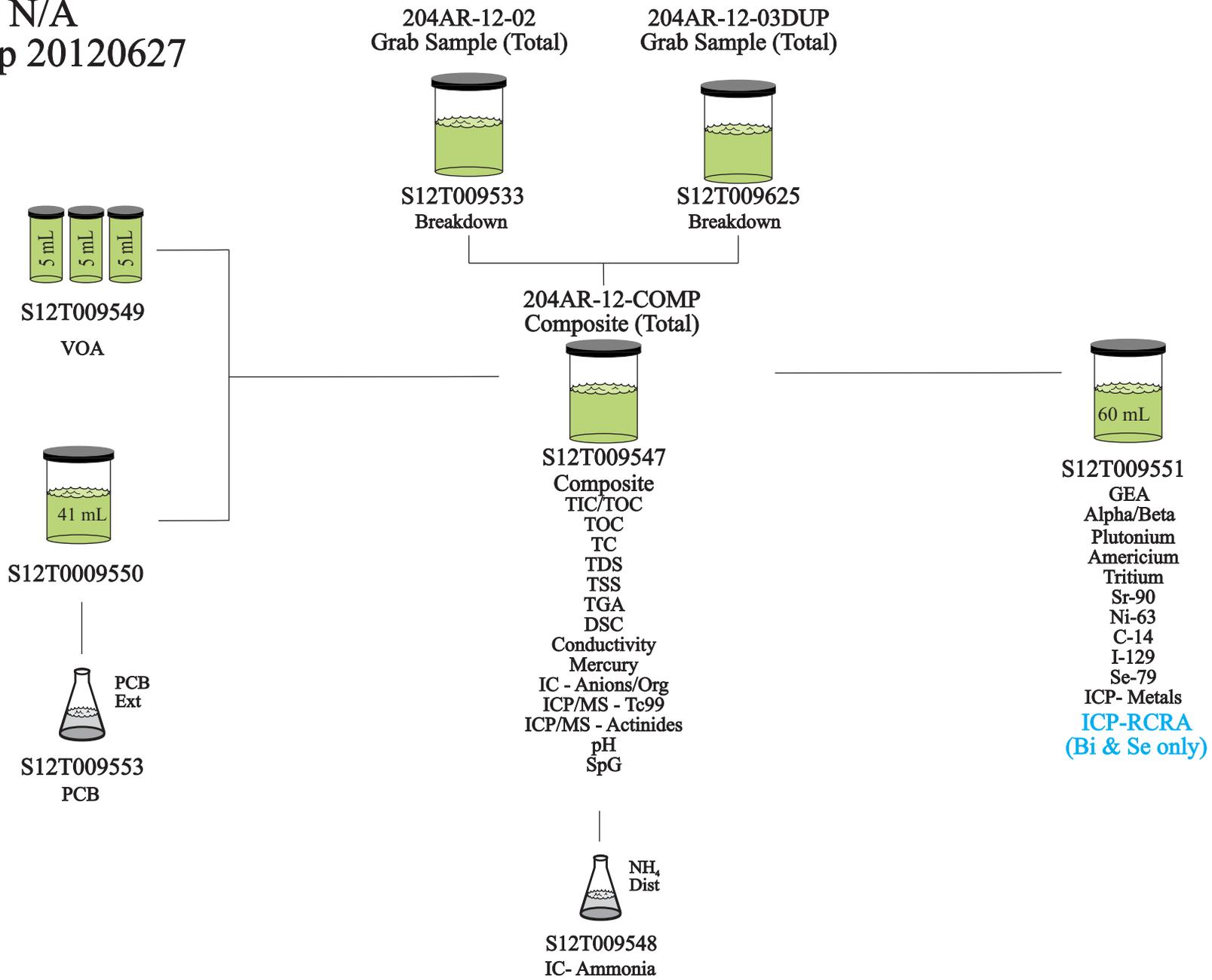
204-AR Catch Tank
Riser N/A
Group 20120627

204AR-12-01
Grab Sample (Total)



S12T009532
Breakdown
SpG

204-AR Catch Tank
 Riser N/A
 Group 20120627



204-AR Catch Tank
Riser N/A
Group 20120627

204AR-12-03
Grab Sample (Total)



S12T009540
Breakdown

Attachment 4

HOLDING TIME REPORT

HOLDING TIME REPORT

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time
20120627	S12T009529	LIQUID	ALPHA/BETA		04/23/2012 13:34	04/24/2012 13:30		05/02/2012 10:57	N
20120627	S12T009551	LIQUID	ALPHA/BETA		04/23/2012 14:06	04/24/2012 10:30		05/02/2012 10:57	N
20120627	S12T009529	LIQUID	AMERICIUM		04/23/2012 13:34	04/24/2012 13:30		05/02/2012 14:32	N
20120627	S12T009551	LIQUID	AMERICIUM		04/23/2012 14:06	04/24/2012 10:30		05/02/2012 14:32	N
20120627	S12T009551	LIQUID	CARBON-14		04/23/2012 14:06	04/24/2012 10:30		05/01/2012 16:15	N
20120627	S12T009547	LIQUID	CONDUCTIVITY		04/23/2012 14:06	04/24/2012 10:30		04/26/2012 09:00	N
20120627	S12T009529	LIQUID	GEA		04/23/2012 13:34	04/24/2012 13:30		04/25/2012 13:15	N
20120627	S12T009551	LIQUID	GEA		04/23/2012 14:06	04/24/2012 10:30		04/25/2012 13:13	N
20120627	S12T009547	LIQUID	HG		04/23/2012 14:06	04/24/2012 10:30		05/02/2012 13:11	N
20120627	S12T009525	LIQUID	IC - SW846 9056A		04/23/2012 13:34	04/24/2012 13:30		04/25/2012 00:13	N
20120627	S12T009547	LIQUID	IC - SW846 9056A		04/23/2012 14:06	04/24/2012 10:30		04/25/2012 00:46	N
20120627	S12T009526	LIQUID	IC - NH4	NH4 DIST	04/23/2012 13:34	04/24/2012 13:30	04/25/2012 08:30	04/25/2012 15:47	N
20120627	S12T009548	LIQUID	IC - NH4	NH4 DIST	04/23/2012 14:06	04/24/2012 10:30	04/25/2012 08:30	04/25/2012 14:39	N
20120627	S12T009529	LIQUID	ICP-SW846 6010C		04/23/2012 13:34	04/24/2012 13:30		04/28/2014 11:14	Y
20120627	S12T009551	LIQUID	ICP-SW846 6010C		04/23/2012 14:06	04/24/2012 10:30		04/28/2014 11:23	Y
20120627	S12T009525	LIQUID	ICP-SW846 6010C		04/23/2012 13:34	04/24/2012 13:30		05/14/2012 13:48	N
20120627	S12T009525	LIQUID	ICP-SW846 6010C		04/23/2012 13:34	04/24/2012 13:30		05/15/2012 11:23	N
20120627	S12T009551	LIQUID	ICP-SW846 6010C		04/23/2012 14:06	04/24/2012 10:30		05/14/2012 14:11	N
20120627	S12T009551	LIQUID	ICP-SW846 6010C		04/23/2012 14:06	04/24/2012 10:30		05/15/2012 10:59	N
20120627	S12T009551	LIQUID	ICP-SW846 6010C		04/23/2012 14:06	04/24/2012 10:30		05/15/2012 11:09	N
20120627	S12T009529	LIQUID	IODINE-129		04/23/2012 13:34	04/24/2012 13:30		05/01/2012 13:45	N
20120627	S12T009551	LIQUID	IODINE-129		04/23/2012 14:06	04/24/2012 10:30		05/01/2012 13:45	N
20120627	S12T009547	LIQUID	MS ACTINIDES-SW846 6020A		04/23/2012 14:06	04/24/2012 10:30		04/25/2012 12:28	N
20120627	S12T009547	LIQUID	MS TC-99- SW846 6020A		04/23/2012 14:06	04/24/2012 10:30		04/30/2012 11:19	N
20120627	S12T009551	LIQUID	NICKEL-63		04/23/2012 14:06	04/24/2012 10:30		05/03/2012 14:00	N
20120627	S12T009531	LIQUID	PCB - SW846 8082A	ORGANIC EXT.	04/23/2012 13:34	04/24/2012 13:30	05/03/2012 14:42	05/09/2012 00:06	N
20120627	S12T009553	LIQUID	PCB - SW846 8082A	ORGANIC EXT.	04/23/2012 14:06	04/24/2012 10:30	05/03/2012 14:42	05/08/2012 16:13	N
20120627	S12T009554	LIQUID	PCB SCREEN - SW846 8082A	ORGANIC EXT.	04/23/2012 14:06	04/24/2012 10:30	04/30/2012 01:15	04/30/2012 18:17	N
20120627	S12T009525	LIQUID	PH- SW846 9040C		04/23/2012 13:34	04/24/2012 13:30		04/24/2012 21:00	N
20120627	S12T009547	LIQUID	PH - SW876 9040C		04/23/2012 14:06	04/24/2012 10:30		04/24/2012 21:00	N
20120627	S12T009529	LIQUID	PLUTONIUM		04/23/2012 13:34	04/24/2012 13:30		05/02/2012 11:10	N
20120627	S12T009551	LIQUID	PLUTONIUM		04/23/2012 14:06	04/24/2012 10:30		05/02/2012 11:10	N
20120627	S12T009551	LIQUID	SELENIUM-79		04/23/2012 14:06	04/24/2012 10:30		05/01/2012 15:10	N
20120627	S12T009551	LIQUID	STRONTIUM-90		04/23/2012 14:06	04/24/2012 10:30		04/25/2012 16:00	N
20120627	S12T009547	LIQUID	SUSPENDED SOLIDS		04/23/2012 14:06	04/24/2012 10:30		04/25/2012 16:01	N
20120627	S12T009525	LIQUID	TICTOC - SW846-9060A		04/23/2012 13:34	04/24/2012 13:30		04/25/2012 15:31	N

HOLDING TIME REPORT

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time
20120627	S12T009547	LIQUID	TICTOC - SW846-9060A		04/23/2012 14:06	04/24/2012 10:30		04/25/2012 15:31	N
20120627	S12T009525	LIQUID	TOT. CARBON by FURNACE - ASTM D-4129		04/23/2012 13:34	04/24/2012 13:30		05/07/2012 15:30	N
20120627	S12T009547	LIQUID	TOT. CARBON by FURNACE - ASTM D-4129		04/23/2012 14:06	04/24/2012 10:30		05/07/2012 15:30	N
20120627	S12T009525	LIQUID	TOT. ORGANIC CARBON by FURNACE- ASTM-4129		04/23/2012 13:34	04/24/2012 13:30		05/01/2012 15:54	N
20120627	S12T009547	LIQUID	TOT. ORGANIC CARBON by FURNACE - ASTM-4129		04/23/2012 14:06	04/24/2012 10:30		05/01/2012 15:54	N
20120627	S12T009547	LIQUID	TOTAL DISSOLVED SOLIDS		04/23/2012 14:06	04/24/2012 10:30		04/30/2012 15:00	N
20120627	S12T009551	LIQUID	TRITIUM		04/23/2012 14:06	04/24/2012 10:30		05/16/2012 11:23	N
20120627	S12T009527	LIQUID	VOA-LIQ-NONTANK	VOA PURGE	04/23/2012 13:34	04/24/2012 13:30	04/26/2012 08:30	04/26/2012 15:26	N
20120627	S12T009549	LIQUID	VOA-LIQ-NONTANK	VOA PURGE	04/23/2012 14:06	04/24/2012 10:30	04/26/2012 08:30	04/26/2012 15:56	N

Attachment 5

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERIES

FORM 3

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Contract:
 Lab Code: Case No.: SAS No.: SDG No.: V120426ARO
 Matrix Spike - Sample No.: S12T009549

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	20.000	0.0000	23.972	120	62-136
Acetone	100.00	0.0000	136.64	137	43-146
2-Butanone	100.00	0.0000	127.28	127	67-127
n-Butanol	200.00	0.0000	294.47	147*	66-121
Benzene	20.000	0.06462	20.724	103	73-121
Trichloroethene	20.000	0.0000	19.870	99	69-121
Methyl Isobutyl Ketone	100.00	0.0000	119.55	120	73-136
Toluene	20.000	0.2626	17.777	88	76-125
2-Hexanone	100.00	0.0000	122.06	122	74-136
Chlorobenzene	20.000	0.0000	19.031	95	77-121

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene	20.000	22.397	112	7	30	62-136
Acetone	100.00	165.30	165*	18	30	43-146
2-Butanone	100.00	143.31	143*	12	30	67-127
n-Butanol	200.00	349.63	175*	17	30	66-121
Benzene	20.000	20.621	103	0	30	73-121
Trichloroethene	20.000	19.094	95	4	30	69-121
Methyl Isobutyl Ketone	100.00	129.59	130	8	30	73-136
Toluene	20.000	17.859	88	0	30	76-125
2-Hexanone	100.00	142.45	142*	15	30	74-136
Chlorobenzene	20.000	19.015	95	0	30	77-121

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 10 outside limits

Spike Recovery: 5 out of 20 outside limits

COMMENTS:

Attachment 6

SURROGATE RECOVERIES

WATER PESTICIDE SURROGATE RECOVERY

Lab Name:

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 204ARCATCH

GC Column(1): RESTEK XTI-5 ID: 0.25 (mm)

	EPA SAMPLE NO.	S1 %REC #	TCX %REC #	S3 %REC #	S4 %REC #	S5 %REC #	S6 %REC #	TOT OUT
01	BLANK	106	58					0
02	LCS	108	46					0
03	S12T009553	108	49					0
04	S12T009553MS	83	63					0
05	S12T009553MS	92	55					0
06	S12T009531	74	57					0
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

ADVISORY
QC LIMITS

S1 = Decachlorobiphenyl (DC (19-145))
S2 (TCX) = Tetrachloro-m-Xylene (21-106)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

Note: OMNILIAS Surrogate Limits for "PCB 2225" liquids
are as follows: Decachlorobiphenyl: 20.63 - 108.1

(TCX) Tetrachloro-m-xylene: 21 - 106

All surrogates here meet these limits

except for LCS which recovered at 108.2%
v.s. 108.1% (see case narrative)

JPM 5/9/12

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 204ARCATCH

Matrix Spike - EPA Sample No.: S12T009553

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Aroclor-1254	25.00	0.000	17.83	71	31-123

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
Aroclor-1254	25.00	19.51	78	9	30	31-123

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

Attachment 7

CORRESPONDENCE

CHARACTERIZATION CHANGE NOTICE

Document: RPP-PLAN-43865

Change Number: 11-CCN-10

DRF to TSAP Required? No

Requestor: S. J. Harrington Date: December 5, 2011

Samples Impacted: 204AR-11-02, 204AR-11-03 and 204AR-11-03DUP

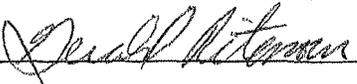
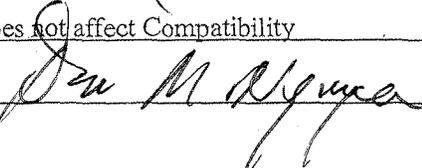
Proposed Change: On page 13, paragraph 2 and in Table 4-1, Note 2, change the required sample for duplicate QC analyses to samples 204AR-11-03 and 204AR-11-03DUP instead of 204AR-11-02.

Reason for Change:

In a note from JR Ritenour (see page A-2), it was noted that the analysis of all lab duplicate analyses would most likely not be possible with the sample volume remaining from 204AR-11-02. In order to ensure a sufficient amount of sample, this requirement (e.g. "Duplicate analyses shall be performed on subsurface sample 204AR-11-02, as specified by HNF-SD-WM-DQO-001.") is being changed from sample 204AR-11-02 to samples 204AR-11-03 and 204AR-11-03DUP. This should ensure all lab method QC analyses can be made (e.g. Dup, MS and MSD) and still be meaningful.

Date Change Effective: December 5, 2011

Schedule Impact: None

Tank Coordinator: S. J. Harrington  Date: 12/5/2011Sampling: Does not affect Sampling Date: —222-S Sample Management Office: Does not affect Sampling Date: —ATL Project Manager: Gerald "JR" Ritenour  Date: 12-05-11Compatibility Point of Contact: Does not affect Compatibility Date: —Other: Peer Review/D. M. Nguyen  Date: 12/5/2011

Harrington, Stephanie J

From: Ritenour, Gerald P
Sent: Thursday, September 22, 2011 10:29 AM
To: Harrington, Stephanie J
Cc: Bushaw, Ruth A
Subject: RPP-PLAN-43865 204AR

Stephanie,

As we have discussed, due to insufficient sample 222S would not be able to follow the instruction in the TSAP that requires all lab method QC samples (Dup, MS, MSD) be performed on client sample 204AR-11-02 (Section 4.1.2 next to last paragraph). If we can ignore this paragraph and follow the requirement in our QAPP and HASQARD that all batches contain the required QC elements for each method, this should give Tank Farms what is needed to meet the DQO requirements for batch QC samples. Please let me know if this is acceptable and if a CCN will be required.

Thanks, JR

*Gerald "JR" Ritenour
Project Manager
ATL Analytical Operations
Advanced Technologies and Laboratories International, Inc.
Contractor to the Office of River Protection
U.S. Department of Energy
(509) 372-2742 office
(509) 438-8837 cell
gerald_p_ritenour@rl.gov*

CHARACTERIZATION CHANGE NOTICE

Document: RPP-PLAN-43865 Rev. 0

Change Number: 12-CCN-01

DRF to TSAP Required? No

Requestor: S. J. Harrington

Date: January 09, 2012

Samples Impacted:

All samples, including field blanks, surface sample, subsurface samples, solid samples, and all duplicates.

Proposed Change:

The current sample number format used throughout the document and specified in Table 3-1 (e.g. XXX-YY-ZZ, where YY is the calendar year of the sampling event) needs to be updated to account for the correct calendar year of the sampling event. For example, sample 204AR-11-01FB becomes 204AR-12-01FB.

Justification:

The sample number format needs to be updated to correspond to the correct year of the sampling event. Since this sampling event did not take place in 2011, the sample numbers need to be updated to correspond with the current calendar year of 2012.

Date Change Effective: January 12, 2012

Schedule Impact: None

Tank Coordinator: S. J. Harrington

Date: 1/12/2012

Sampling: B. G. Orth

*S. J. Harrington for B. Orth
via telecam*

Date: 1/12/2012

222-S Sample Management Office: J. R. Prilucik

*S. J. Harrington for
J. Prilucik via telecam*

Date: 1/12/2012

ATL Project Manager: Gerald "JR" Ritenour

*S. J. Harrington for JR Ritenour
via e-mail*

Date: 1/9/2012

Other: None

Date: _____

CHARACTERIZATION CHANGE NOTICE

Document: RPP-PLAN-43865

Change Number: 12-CCN-08

DRF to TSAP Required? No

Requestor: S. J. Harrington Date: April 24, 2012

Samples Impacted: 204AR-12-02, 204AR-12-03, 204AR-12-03DUP, 204AR-12-04, and 204AR-12-04DUP

Proposed Change: Samples 204AR-12-02 and 204AR-12-03DUP will be composited for analysis in order to meet low detection limits of required analyses. Sample 204AR-12-03 will be archived. No solids were obtained for samples 204AR-12-04 or 204AR-12-04DUP, so the solid analyses listed in Table 4-2 of RPP-PLAN-43865 will NOT be required.

Reason for Change:

Tank 204-AR-TK-01 has been used since 2005 to contain weekly additions of water from seal loops and weekly eyewash and safety shower inspections. It was uncertain if any waste still existed in the tank and, if so, how contaminated the fluid in the tank would be. After sampling, the liquid samples were found to have no separable organic phase, no solids were observed or sampled, and there was a low dose (less than 5 mr) measured on the samples.

Due to the low detection limits required, additional sample volume is needed for the liquid analyses specified in RPP-PLAN-43865. With approval from the Compatibility Point of Contact, samples 204AR-12-02 and 204AR-12-03DUP will be composited and analyzed for all of the analytes listed in Table 4-1 of RPP-PLAN-43865. The duplicate analysis specified in HNF-SD-WM-DQO-001 shall be performed on this composite sample as well. Sample 204AR-12-03 will be archived.

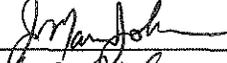
The analyses required in Table 4-2 for solid samples will not be performed. No solids were obtained in Samples 204AR-12-04 or 204AR-12-04DUP.

Date Change Effective: April 24, 2012

Schedule Impact: None

Tank Coordinator: S. J. Harrington  Date: 4/24/2012

Sampling: N/A Date: _____

222-S Sample Management Office: J. M. Johnson  Date: 4/24/2012

ATL Project Manager: J. R. Ritenour  Date: 4/24/2012

Compatibility Point of Contact: J. Jo  Date: 4/24/2012

Other: _____ Date: _____

Other: _____ Date: _____

cc:

Ritenour, Gerald P

From: Harrington, Stephanie J
Sent: Tuesday, September 13, 2011 5:11 PM
To: Ritenour, Gerald P
Subject: RE: RPP-PLAN-43865

I believe you are correct. These are only required for the chemistry control DQO, which is not a driver for this sampling event. Sorry for the confusion. The NO₃, NO₂, OH, and pH are not required for the Format I report for this sampling event. All of the other requirements in Tables 4.1 and 4.2 of this sampling plan for the Format I report should be correct.

Stephanie Harrington, Ph.D
Core (Process) Engineer
Washington River Protection Solutions,
contractor to the United States Department of Energy
(509) 376-1336

From: Ritenour, Gerald P
Sent: Tuesday, September 13, 2011 4:06 PM
To: Harrington, Stephanie J
Subject: RPP-PLAN-43865

Stephanie,
Table 4.1 and 4.2 indicate that a Format I report is required for NO₃, NO₂, OH, and pH. However, Section 8.1 does not list these analysis with those requiring a Format I report, nor is there a table designating the limits for the report. Since this tank is expected to contain a rather dilute solution, I am assuming a Format I report for these analytes is not required. Please let me know.
Thanks, JR

ATL Analytical Operations
Advanced Technologies and Laboratories International, Inc.
Contractor to the Office of River Protection
U.S. Department of Energy
Currently at 509-375-4200, Ext 247

From: [Harrington, Stephanie J](#)
To: [Osborn, Julie A](#)
Subject: RE: 204AR OH Analysis Cancelled
Date: Monday, June 11, 2012 1:49:34 PM

Julie,

That is ok so long as there are no elements present that would interfere with pH measurement.

Thanks for the heads up,

Stephanie Harrington, Ph.D
Chemical Process Engineer
Washington River Protection Solutions,
contractor to the United States Department of Energy

2750E Room A219 or 639 Cullum B119
(509) 376-1336

From: Osborn, Julie A
Sent: Monday, June 11, 2012 1:46 PM
To: Harrington, Stephanie J
Subject: 204AR OH Analysis Cancelled

Stephanie,

Since the pH for the field blank and the composite samples were below 11 the OH analysis was cancelled because the result would be less than the detection limit. Below is a more detailed explanation by JR.

Thanks,

Julie A. Osborn

Advanced Technologies and Laboratories International, Inc.
Contractor to the Office of River Protection
U.S. Department of Energy

From: Ritenour, Gerald P
Sent: Thursday, June 07, 2012 12:14 PM
To: Powell, William J (Bill); Templeton, Andrew M
Cc: Bushaw, Ruth A
Subject: pH vs OH

Bill, Andrew,

Ruth asked me to send you this explanation of when to use pH or OH analysis. The table below provides a correlation between pH and OH concentration. Our current detection limit for OH is around 10 ppm. So if the pH is less than 11 running an OH analysis is not recommended. Dan Herting recommends that OH be used if the pH is over 12.0 unless the pH probe is Na-compensated. Our probes are Na-compensated, but we have found that they degrade in high pH

solutions and become unstable and will not pass the ± 0.1 calibration check.
Hope this helps, JR

[OH⁻]	pH	OH⁻mg/mL
0.0001	10	1.7
0.0003	10.5	5.1
0.001	11	17
0.003	11.5	51
0.01	12	170
0.03	12.5	510
0.1	13	1700

Gerald "JR" Ritenour
Project Manager
ATL Analytical Operations
Advanced Technologies and Laboratories International, Inc.
Contractor to the Office of River Protection
U.S. Department of Energy
(509) 372-2742 office
(509) 438-8837 cell
gerald_p_ritenour@rl.gov

From: [Harrington, Stephanie J](#)
To: [Osborn, Julie A](#)
Subject: RE: 204AR IC DL
Date: Tuesday, June 19, 2012 7:46:41 AM

Hi Julie,

The detection limit of 11.6 mg/mL for Bromide is ok to use for the 204AR tank samples.

Thank you,

Stephanie Harrington, Ph.D
Chemical Process Engineer
Washington River Protection Solutions,
contractor to the United States Department of Energy

2750E Room A219 or 639 Cullum B119
(509) 376-1336

From: Osborn, Julie A
Sent: Tuesday, June 12, 2012 1:18 PM
To: Harrington, Stephanie J
Subject: 204AR IC DL

Hi Stephanie,

I just wanted to inform you that bromide did not meet the required detection limit of 10ug/mL. Because of the large nitrate peak and it's interference with bromide, the lowest detection limit we could get was 11.6ug/mL. The bromide was not detected in the field blank or the composite samples.

Thanks,

Julie A. Osborn

Advanced Technologies and Laboratories International, Inc.
Contractor to the Office of River Protection
U.S. Department of Energy

From: [Harrington, Stephanie J](#)
To: [Osborn, Julie A](#)
Subject: FW: 7-Day Interim Report for 204AR Catch Tank
Date: Tuesday, June 19, 2012 4:08:14 PM

Julie,

The following detection limit looks ok.

Thank you,

Stephanie Harrington, Ph.D
Chemical Process Engineer
Washington River Protection Solutions,
contractor to the United States Department of Energy

2750E Room A219 or 639 Cullum B119
(509) 376-1336

From: Ritenour, Gerald P
Sent: Tuesday, May 01, 2012 2:05 PM
To: Harrington, Stephanie J
Cc: Johnson, Jo M; Bushaw, Thomas H
Subject: 7-Day Interim Report for 204AR Catch Tank

Stephanie,

The attached spreadsheet contains the results for the five analytes requested in the TSAP for the Format II, 7-Day Interim Report. Note that the MDA for Ra-226 (1.99E-5 mCi/mL) is higher than the required reporting limit in the TSAP (6.4E-6uCi/mL). However 1.99E-5 mCi/mL is three times less than the maximum bounding concentration in Table D-1 of HNF-3172 (LERF WAC). If you would like another analysis to obtain a lower MDA for Ra-226 let us know. We will need to use one of the other samples. If you have any questions or need additional information please feel free to contact me at anytime.

Regards, JR

Gerald "JR" Ritenour
Project Manager
ATL Analytical Operations
Advanced Technologies and Laboratories International, Inc.
Contractor to the Office of River Protection
U.S. Department of Energy
(509) 372-2742 office
(509) 438-8837 cell
gerald_p_ritenour@rl.gov

Ritenour, Gerald P

From: Harrington, Stephanie J
Sent: Wednesday, April 23, 2014 7:08 AM
To: Osborn, Julie A
Cc: Denton, David B; Ritenour, Gerald P
Subject: RE: 204AR Catch Tank 2012

Julie,

Thank you so much for your help with this. I really appreciate it.

Thank you,
Stephanie Harrington, Ph.D
Chemical Process Engineer
Washington River Protection Solutions,
contractor to the United States Department of Energy

2750E Room A219
(509) 376-1336

From: Osborn, Julie A
Sent: Wednesday, April 23, 2014 7:00 AM
To: Harrington, Stephanie J
Cc: Ritenour, Gerald P
Subject: FW: 204AR Catch Tank 2012

Stephanie,

Yes, we can rerun the 204AR Catch Tank to meet your detection limits of 390ug/mL for Bi and 0.25ug/mL for Se. I'll get it set up and going.

Thanks,

Julie A. Osborn
Advanced Technologies and Laboratories International, Inc.
Contractor to the Office of River Protection
U.S. Department of Energy
509-373-3328
Julie_A_Osborn@RL.gov

From: Bolling, Stacey D
Sent: Monday, April 21, 2014 8:22 AM
To: Osborn, Julie A
Subject: 204AR Catch Tank 2012

Hi Julie,

We did run the 204AR Catch Tank 2012 on the old ICP in 1J.

We could rerun S12T0009525 @ a 2X dilution, which will give a reporting limit of 0.012 ug/mL for Bi and 0.008 ug/mL for Se.

S12T009551 will need to be analyzed at a 20X dilution, which will give a reporting limit of 0.12 ug/mL for Bi and 0.08 ug/mL for Se.

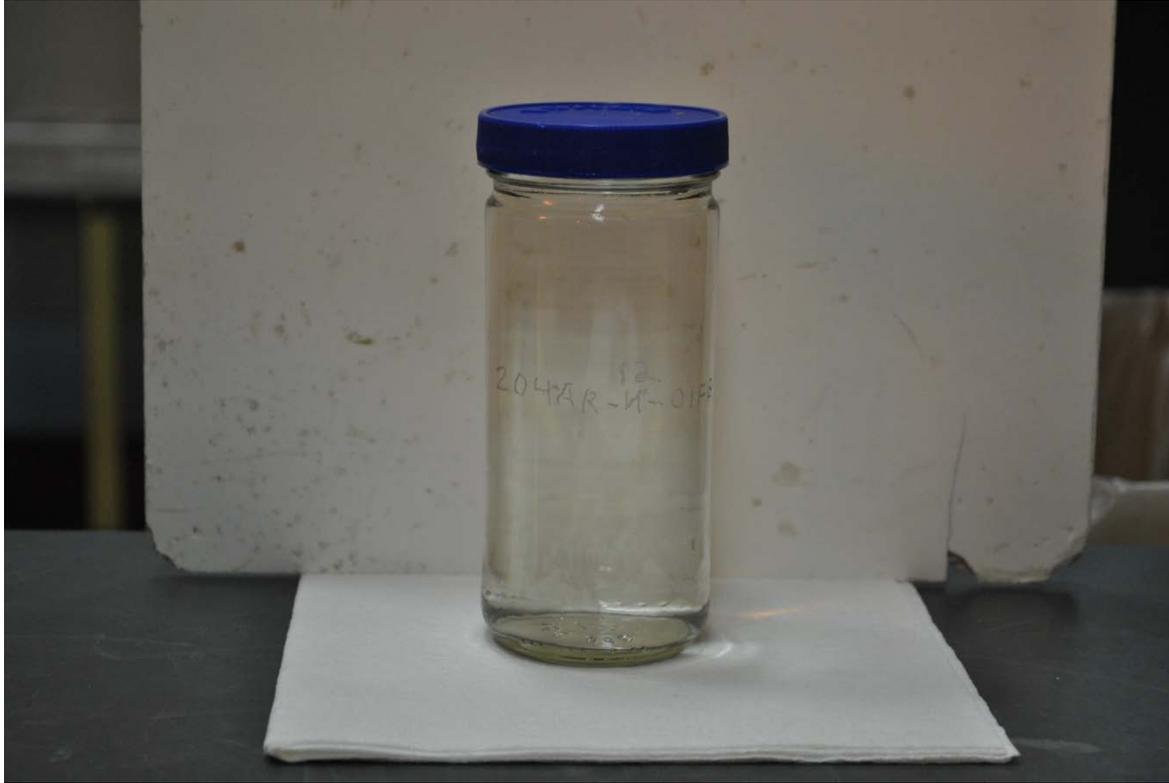
Thanks.

Stacey

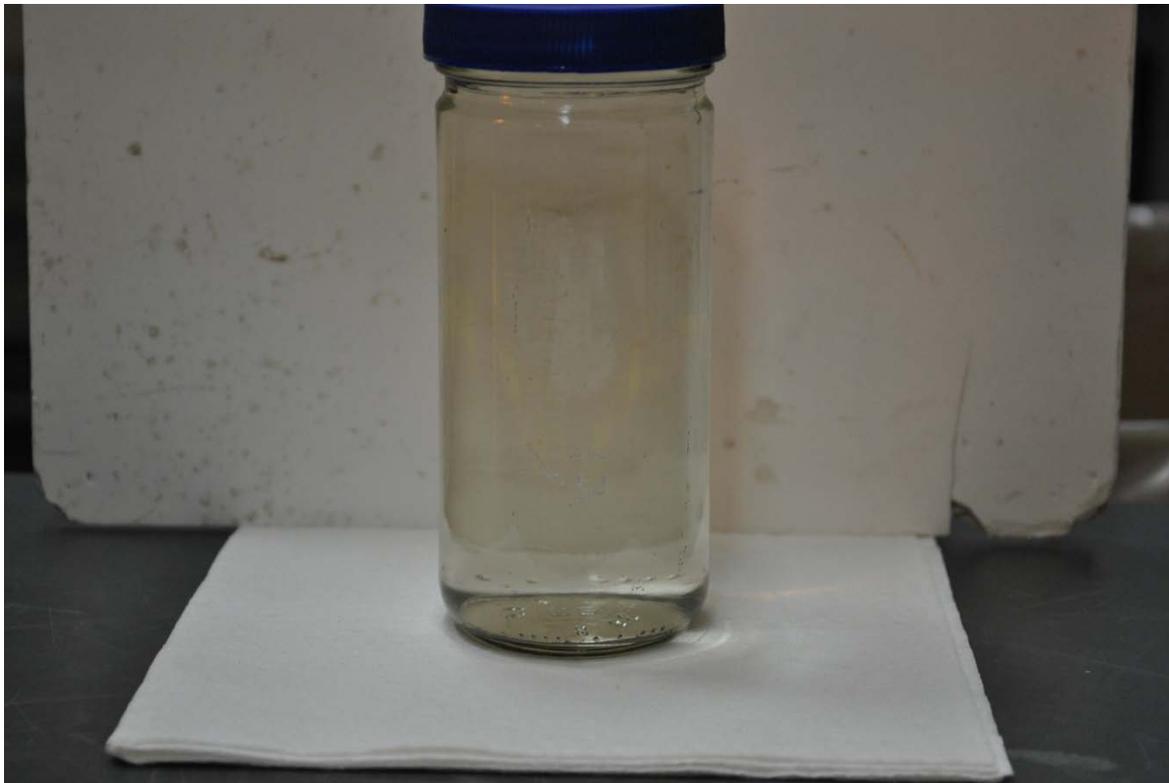
*Advanced Technologies and Laboratories International, Inc.
Contractor to the Office of River Protection
U.S. Department of Energy
Office: 373-1990*

Attachment 8

SAMPLE PHOTOGRAPHS



204AR-12-01FB



204AR-12-01



204AR-12-02



204AR-12-03



204AR-12-03DUP

Attachment 9

RECEIPT PAPERWORK

ATL	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST	LO-090-101 Rev <u>FFO</u>		
Date Samples Received: <u>4.24.12</u>		Group #: <u>20120 627</u>		
Number of Samples: <u>4 TOUAR GRABS + 1 FB</u>				
Sample Custodian: <u>RTK</u>				
Sample Custodian to Complete:				
Action	Yes	No	N/A	Comments
RSA/COC provided?	✓			
RSR provided?	✓			
Verify GKI is complete				<input checked="" type="checkbox"/> In Project File
Received from an alpha facility?		✓		<input type="checkbox"/> Contact PM for approval to release
Check that outer custody seal is intact, if present	✓			
Record cooler temperature in centigrade, as appropriate			✓	<input type="checkbox"/> Check if no cooler and/or no ice
Samples are intact and in good condition	✓			If No, provide comments below
Verify that COC or RSA is accurate and complete, containing the following information:				
● Client name and client sample number	✓			
● Date and time of sampling	✓			
● Sampling location or origin	✓			
● Container type, size, and number	✓			
● Preservatives (if used) are noted on the COC/RSA and sample bottle			✓	
● Analysis request is clear	✓			
● Signature of persons relinquishing and receiving samples	✓			
● Date and/or time of sample custody exchange	✓			
Verify that sample numbers on containers match the COC and/or RSA	✓			
Samples stored properly (e.g., refrigeration)	✓			<u>11 A HotCell</u>
Notify the PM immediately if any problems are noted.				
Samples acceptable for release? <u>yes</u> Initials <u>RTK</u> Date <u>4.24.12</u>				
If No, comment on communication and resolution:				
Other Comments:				

CHAIN-OF-CUSTODY RECORD FOR WTS

(1) Sample Number 204AR-12-01		(2) Supervisor/Sampler Tom Craft / Tom Craft		(9) Seal Intact Upon Release? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
(3) Tank 204-AR-Tk-1	(4) Riser M	(5) Cask/Pig Serial No. 25		(10) Seal Intact Upon Receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
(6) Shipment Description:		(7) Sampling Data		(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
A. Work Package Number TFC-WO-11-2580		- Lithium Bromide <input checked="" type="checkbox"/> Y <input type="checkbox"/> N		(12) Laboratory Comments: GRP# 20120627 SAM# 512T009532 OMNI ✓ MARS ✓ RPT'd 4.24.12	
B. Cask/Pig Seal Number 3134		Amount _____			
C. Date Sample Collected 4/23/12		Concentration N _____			
D. Time Sample Collected 1344		- X-Ray <input type="checkbox"/> <input type="checkbox"/>			
		- Partial Sample <input type="checkbox"/> <input type="checkbox"/>			
(8) Field Comments: Clear		- Retrieved Partial Sample Stroke Length _____			
9' 8 1/4" < 100mR/hr					
(13) Relinquished By (Sign and PRINT) Tom Craft / Tom Craft		(14) Received By (Sign and PRINT) Dave L. Pierce / Dave L. Pierce		(15) Date/Time 4-24-12 1345	(16) Receiver Comments N/A
(17) Relinquished By (Sign and PRINT) Dave L. Pierce / Dave L. Pierce		(18) Received By (Sign and PRINT) R. Steele / R. Steele		(19) Date/Time 4.24.12 1430	(20) Receiver Comments N/A
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)		(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)		(27) Date/Time	(28) Receiver Comments

CHAIN-OF-CUSTODY RECORD FOR WTS

(1) Sample Number 204AR-12-02		(2) Supervisor/Sampler Tom Craft / Tom Lane		(9) Seal Intact Upon Release? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																						
(3) Tank 204AR-TK-1	(4) Riser M	(5) Cask/Pig Serial No. 40		(10) Seal Intact Upon Receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																						
(6) Shipment Description: A. Work Package Number TFC-WO-11-2580 B. Cask/Pig Seal Number 3135 C. Date Sample Collected 4/23/12 D. Time Sample Collected 1349		(7) Sampling Data <table style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td>- Lithium Bromide</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Amount</td> <td colspan="2" style="text-align: center;">aw</td> </tr> <tr> <td>Concentration</td> <td colspan="2" style="text-align: center;">A</td> </tr> <tr> <td>- X-Ray</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>- Partial Sample</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>- Retrieved Partial Sample Stroke Length</td> <td colspan="2"></td> </tr> </table>			Y	N	- Lithium Bromide	<input type="checkbox"/>	<input type="checkbox"/>	Amount	aw		Concentration	A		- X-Ray	<input type="checkbox"/>	<input type="checkbox"/>	- Partial Sample	<input type="checkbox"/>	<input type="checkbox"/>	- Retrieved Partial Sample Stroke Length			(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
					Y	N																				
				- Lithium Bromide	<input type="checkbox"/>	<input type="checkbox"/>																				
				Amount	aw																					
Concentration	A																									
- X-Ray	<input type="checkbox"/>	<input type="checkbox"/>																								
- Partial Sample	<input type="checkbox"/>	<input type="checkbox"/>																								
- Retrieved Partial Sample Stroke Length																										
(8) Field Comments: Cleary 11' 4 1/2" < 100m R/hr		(12) Laboratory Comments: GRP# 20120627 SM # 512T009533 Omni ✓ MARS ✓ retail 4.24.12																								
(13) Relinquished By (Sign and PRINT) Tom Craft Tom Lane		(14) Received By (Sign and PRINT) Doreen Darra Latimore		(15) Date/Time 0942 4-24-12	(16) Receiver Comments N/A																					
(17) Relinquished By (Sign and PRINT) Doreen Darra Latimore		(18) Received By (Sign and PRINT) RT Steele & R Steele		(19) Date/Time 4-24-12 1030	(20) Receiver Comments N/A																					
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)		(23) Date/Time	(24) Receiver Comments																					
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)		(27) Date/Time	(28) Receiver Comments																					

CHAIN-OF-CUSTODY RECORD FOR WTS

(1) Sample Number <i>204AR-12-03</i>		(2) Supervisor/Sampler <i>Tom Craft / Tom Craft</i>		(9) Seal Intact Upon Release? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
(3) Tank <i>204-AR-TK-1</i>	(4) Riser <i>M</i>	(5) Cask/Pig Serial No. <i>33</i>		(10) Seal Intact Upon Receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
(6) Shipment Description: A. Work Package Number <i>TF-C-WO-11-2580</i> B. Cask/Pig Seal Number <i>1819</i> <i>4/23/12</i> C. Date Sample Collected <i>1358</i> <i>4/23/12</i> D. Time Sample Collected <i>1358</i>		(7) Sampling Data Y N - Lithium Bromide <input type="checkbox"/> <input type="checkbox"/> Amount _____ Concentration _____ - X-Ray <input type="checkbox"/> <input type="checkbox"/> - Partial Sample <input type="checkbox"/> <input type="checkbox"/> Retrieved Partial Sample Stroke Length _____ <i>N</i> <i>A</i>		(11) Seal Number AND Cask/Pig SERIAL Number consistent with this record? (Block 5 & 6b) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
				(12) Laboratory Comments: <i>GR? # 20120627</i> <i>SAM # 5127009540</i> <i>Omni ✓</i> <i>MARS ✓</i> <i>Retracted 2/24/12</i>	
(8) Field Comments: <i>clear</i> <i>12' 4" < 100 m/hr</i>					
(13) Relinquished By (Sign and PRINT) <i>Tom Craft Tom Craft</i>		(14) Received By (Sign and PRINT) <i>Darrel Pierre Darrel Pierre</i>		(15) Date/Time <i>1231</i> <i>4-24-12</i>	(16) Receiver Comments <i>N/A</i>
(17) Relinquished By (Sign and PRINT) <i>Darrel Pierre Darrel Pierre</i>		(18) Received By (Sign and PRINT) <i>RT STEELE ATL</i>		(19) Date/Time <i>1330</i> <i>4-24-12</i>	(20) Receiver Comments <i>N/A</i>
(21) Relinquished By (Sign and PRINT)		(22) Received By (Sign and PRINT)		(23) Date/Time	(24) Receiver Comments
(25) Relinquished By (Sign and PRINT)		(26) Received By (Sign and PRINT)		(27) Date/Time	(28) Receiver Comments

GENERATOR KNOWLEDGE INFORMATION

1. Chain of Custody Number N/A CACN/COA N/A Customer Identification Number 204-AR-TK-1

2. List generator knowledge or description of process that produced sample. Or list description of sample source:
 Following transfer to 241-AP-107 (2005), volume in this tank has increased due to additions of water to seal loops & weekly eyewash & safety shower inspections (see RPP-PLAN-43865).
 MSDS Available? No Yes Hanford MSDS No. _____

3. List all waste codes and constituents associated with the waste or media that was sampled, regardless of CERCLA status.

a) Does the sample contain any of the following listed waste codes?
By checking "unknown" the customer understands that no knowledge is available following a careful search.

List Federal Waste Code(s):	List Constituent(s):			
P Codes: _____	_____	<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> Unknown
U Codes: _____	_____	<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> Unknown
K Codes: _____	_____	<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> Unknown
F Codes: _____	_____	<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> Unknown

b) List applicable characteristic waste codes, flash point, pH, constituents, and concentrations as appropriate.

D001: <input type="checkbox"/> FP <100°F	<input type="checkbox"/> FP ≥100 <140°F	<input type="checkbox"/> DOT Oxidizer	<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> Unknown
D002: <input type="checkbox"/> pH <2	<input type="checkbox"/> pH ≥12.5	<input type="checkbox"/> Solid Corrosive (WSC2)	<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> Unknown
D003: <input type="checkbox"/> Cyanide	<input type="checkbox"/> Sulfide	<input type="checkbox"/> Water Reactive	<input type="radio"/> Yes	<input checked="" type="radio"/> No	<input type="radio"/> Unknown
D004-D043 (Identify applicable waste codes and concentrations):	<input type="checkbox"/> Other _____ (i.e., peroxide former, explosive, air reactive)		<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Unknown

c) If characteristic, list any known underlying hazardous constituents (UHCs) reasonably expected to be present, and their concentrations that may be present above the LDR treatment standard (40 CFR 268.48):
 N/A

d) List any known Land Disposal Restrictions (LDR) subcategories, if applicable (40 CFR 268.40):
 N/A

e) List any applicable Washington State dangerous waste codes: (not required if federally regulated) (*State mixture rule for ignitability)

WT01: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown	WP01: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown
WT02: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown	WP02: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown
W001: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown	WP03: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown
List constituents and concentrations:	F003:* <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown

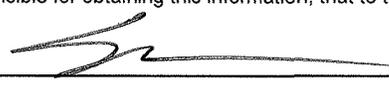
4. Is this material TSCA regulated for PCBs? Yes No Unknown Analysis Requested

List concentration if applicable: _____
 If yes, what is the source of the PCBs? (see TSCA PCB Hanford Site User Guide, DOE/RL-2001-50)

<input type="checkbox"/> PCB Liquid Waste	<input type="checkbox"/> PCB Bulk Product Waste	<input type="checkbox"/> PCB Transformer ≥500 ppm	<input type="checkbox"/> Unknown
<input type="checkbox"/> PCB Remediation Waste	<input type="checkbox"/> PCB R&D Waste	<input type="checkbox"/> PCB contaminated electrical equipment (capacitor/ballast) <500 ppm	
<input type="checkbox"/> PCB Spill Material	<input type="checkbox"/> PCB Item	<input type="checkbox"/> Other PCB Waste (list) _____	

5. Is this material TRU? Yes No Unknown

6. ACCURACY OF INFORMATION
 Based on my inquiry of those individuals immediately responsible for obtaining this information, that to the best of my knowledge, the information entered in this document is true, accurate, and complete.

Print & Sign Stephanie Harrington  Date 4/19/2012

Attachment 10

RAW DATA FOR THERMOGRAVIMETRIC ANALYSIS

LABCORE Completed Batch Report for Batch# 00034742

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1204250244	LCS-INST				
2	S12T009547	SAMPLE		20120627	204AR-12-COMP	204AR Catch Tank
3	S1204250245	DUP	S12T009547			

4/25/2012 1:46:55PM
IncompleteBatchShort Version 2.7.29
batchreports 2.7.30

Page: 1

LABCORE Data Entry Template for Batch# 00034742

Analyst: Purinton, Tony

Standard ID / Book#: 26N26A

Instrument: DSC4/TGA6 Analyzer

Method: TGA-TA, LA-514-115 Rev/Mod G-0

Prep Batch: N/A

Batch Comment:

204 AR Catch Tank for TGA

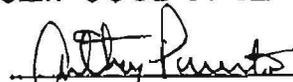
CACN:2A.06

S	Type	Sample	R	A	Matrix	Group#	Project
1	LCS-INST	S1204250244	0		LIQUID		
	Analytes Requested: %WATER						
2	SAMPLE	S12T009547	0		LIQUID	20120627	204AR Catch Tank
	Analytes Requested: %WATER						
3	DUP	S1204250245	0		LIQUID		
	Analytes Requested: %WATER						

Final Page for Batch# 00034742


Analyst Signature

4-25-12
Date 4-25-12


Data Entry Signature

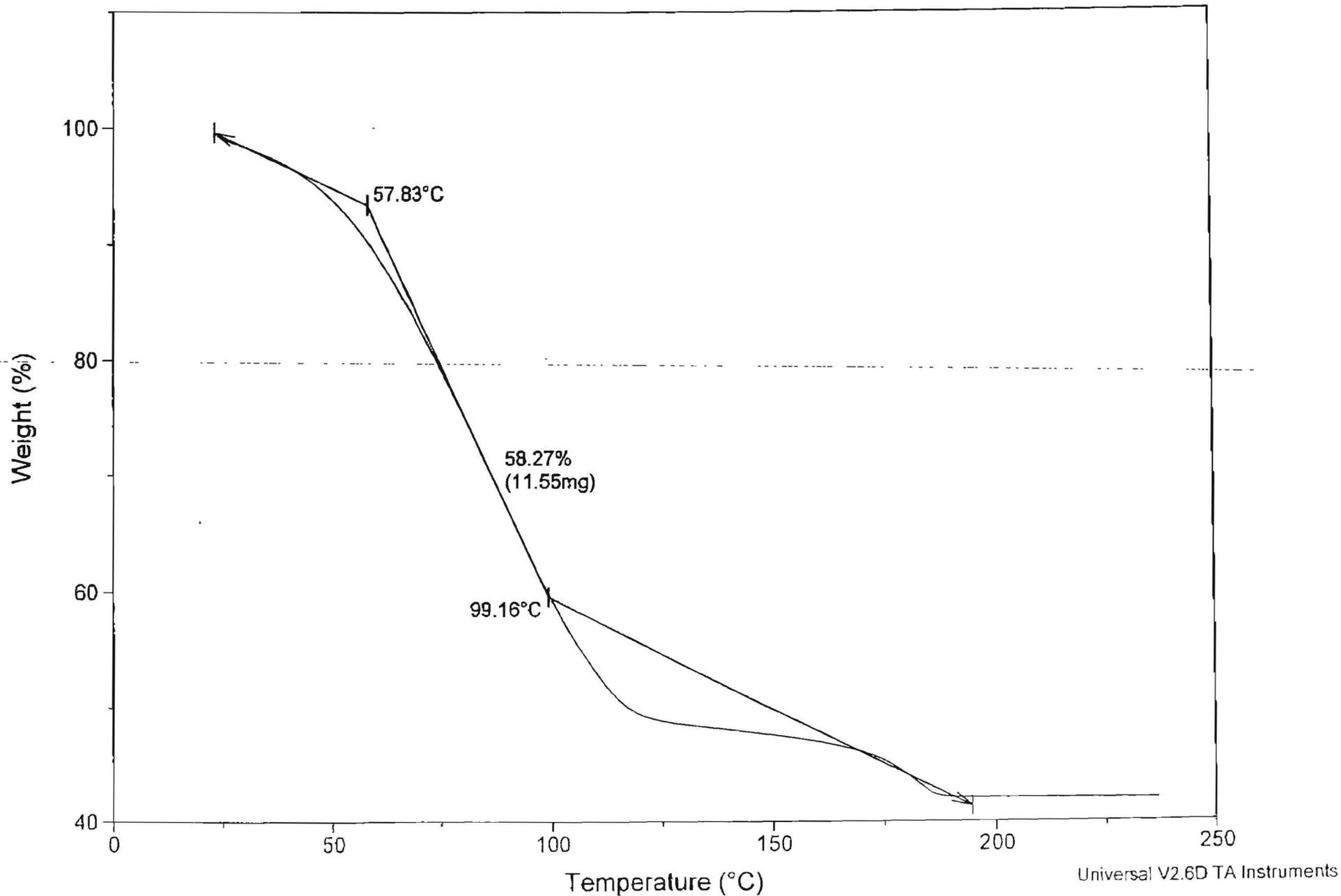
4/25/12
Date

Data Entry Comments:

Sample: 26N26A TERLIQ
Size: 19.8160 mg
Method: TERLIQ
Comment: 204 CATCH TANK

TGA

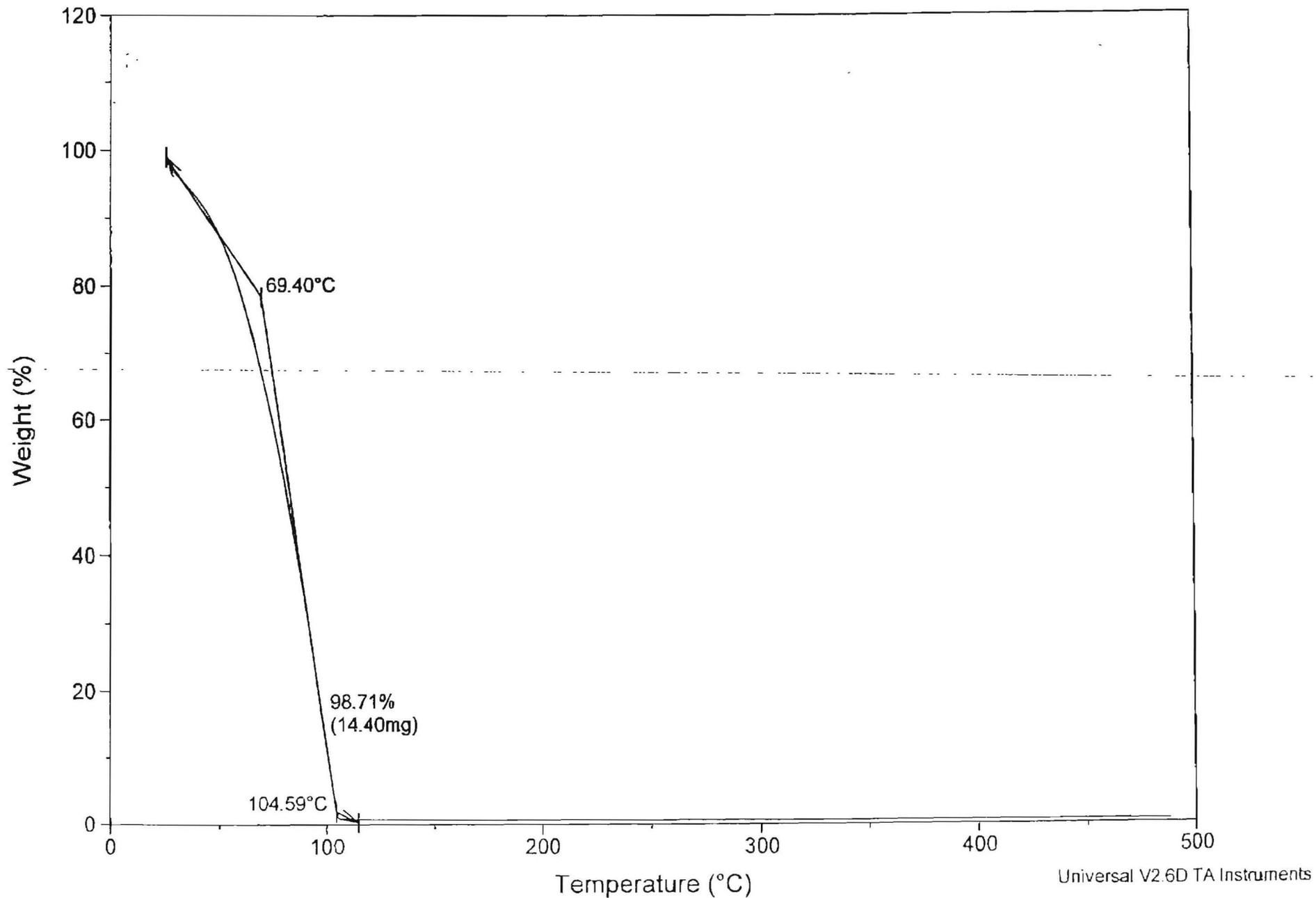
File: ...TGA-6 2012TER120424.01
Operator: ADP
Run Date: 25-Apr-12 09:12



Sample: SS12T009547 SAM
Size: 14.5870 mg
Method: Sample
Comment: 204 CATCH TANK

TGA

File: ...TGA-6 2012SAM120425.01
Operator: ADP
Run Date: 25-Apr-12 10:41



04/25/2012 16:18 FAX 15093721143

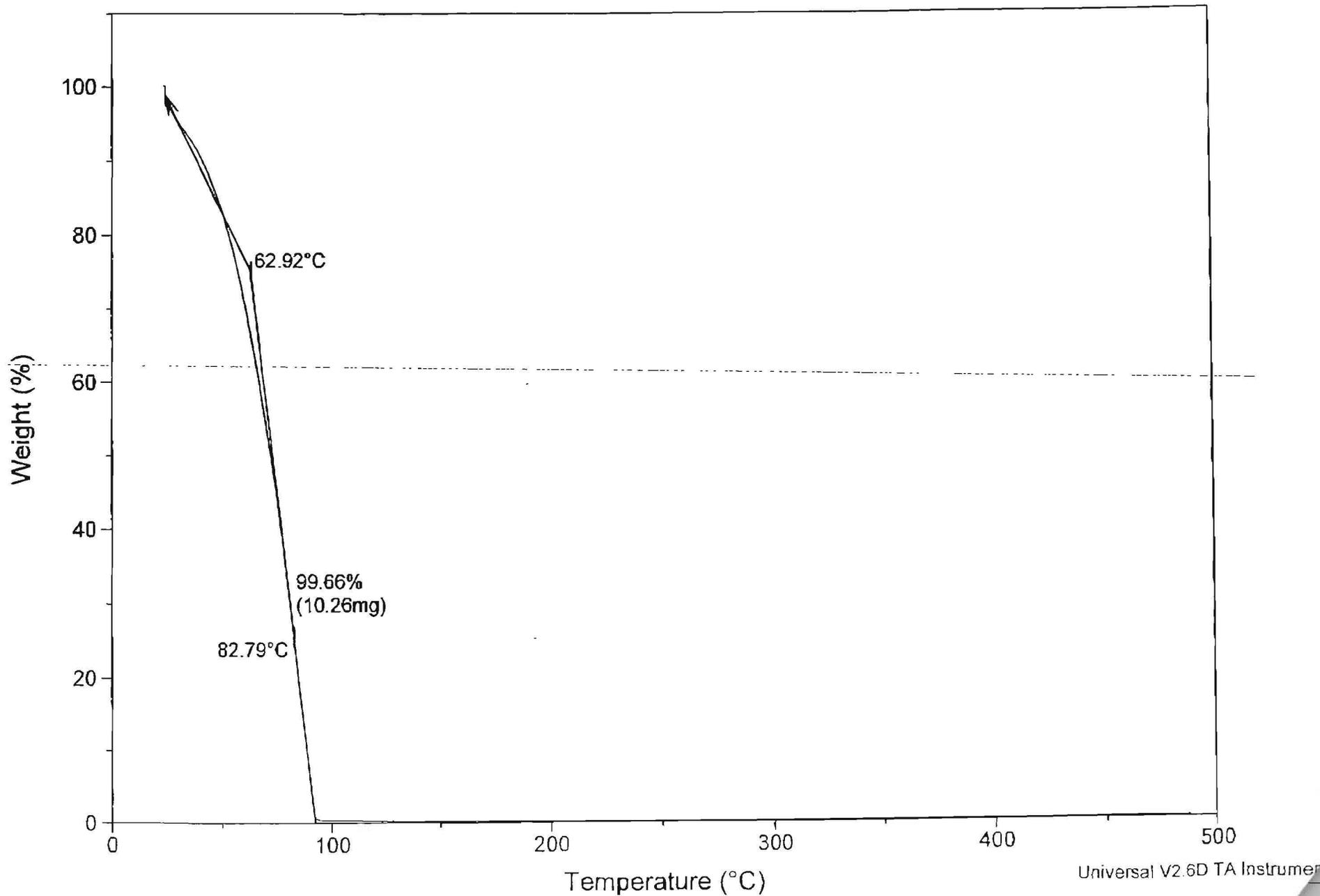
WRPS

032/040

Sample: SS12T009547 DUP
Size: 10.2930 mg
Method: Sample
Comment: 204 CATCH TANK

TGA

File: ...TGA-6 2012SAM120425.02
Operator: ADP
Run Date: 25-Apr-12 13:17



04/25/2012 16:18 FAX 15093721143

WRPS

0.5

DISTRIBUTION SHEET

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J. G. Reynolds	C. S. Menjivar	Date	6/11/14
Project Title/Work Order RPP-RPT-52786 Rev. 1 mw 6/13/2014		EDT No.	N/A
Final Report for Analysis of 204-AR-TK-1 Catch Tank Samples Collected in April 2012		ECN No.	N/A

Name	MSIN	Text With All Attach.	Text Only	Attach./Appendix Only	EDT/ECN Only
C. E. Menjivar	T6-10	E			
J. H. Rasmussen	R2-58	E			
D. L. Dyekman	R1-51	E			
N. W. Kirch	R2-58	E			
D. M. Nguyen	R2-58	E			
S. D. Kozlowski	R2-58	E			
D. P. Mackay	S5-12	E			
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DOE Reading Room	H2-53	E			
J. D. Guberski	R1-51	E			