

SAF-RC-040
300 Area D&D Waste Characterization
Sampling - Other Solid
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Barry Lawrence L1-07

KW 10/8/08
INITIAL/DATE

COMMENTS:

SDG K1340

SAF-RC-040

Rad only

Chem only

Rad & Chem

Complete

Partial

Sample Location/Waste Site: Bldg. 327

RECEIVED
OCT 20 2008
EDMC



EBERLINE ANALYTICAL CORPORATION
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Toll Free (800) 841-5487
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October 6, 2008

Ms. Joan Kessner
Washington Closure Hanford
2620 Fermi Avenue
MSIN H4-21
Richland, WA 99352



Reference: **P.O. #630**
Eberline Services R8-09-156-7700, SDG K1340

Dear Ms. Kessner:

Enclosed is the data report for one solid (other solid) sample designated under SAF No. RC-040 received at Eberline Services on September 19, 2008. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

For Melissa C. Mannion
Senior Program Manager

NJV

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1340 was composed of one solid (other solid) sample designated under SAF No. RC-040 with a Project Designation of: 300 Area D&D Waste Characterization Sampling-Other Solid.

Due to the activity of the samples all aliquots were reduced, and as a consequence most detection limits (MDA's) are greater than normal. Results are reported in pCi/sample.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on October 3, 2007.

2.0 ANALYSIS NOTES

2.1 Gross Alpha/Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Tritium Analysis

No problems were encountered during the course of the analyses.

2.3 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.4 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.5 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.6 Technetium-99 Analysis

The relative percent difference in the original and duplicate Tc-99 results was 141%, greater than the control limit of 97%; the DER was 4.3. No other problems were encountered during the course of the analyses.

2.7 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses.

2.8 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.9 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.10 Plutonium-241 Analysis

No problems were encountered during the course of the analyses.

2.11 Neptunium-237 Analysis

No problems were encountered during the course of the analyses.

2.12 Americium-241 and Curium-243/244 Analysis

No problems were encountered during the course of the analyses.

2.13 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

M. Mannion

FOR **Melissa C. Mannion**
Senior Program Manager

10/6/08

Date

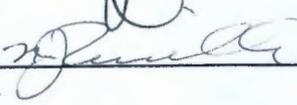
EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1340

SDG 7700
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG_K1340

S U M M A R Y D A T A S E C T I O N

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Prepared by 
Reviewed by 

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 10/06/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1340

SDG 7700
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1340

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

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DATA SUMMARY SECTION

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Lab id EBRINE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
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SAMPLE DELIVERY GROUP K1340

SDG 7700
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1340

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

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MMARY DATA SECTION

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Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

SDG 7700

Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford

Contract No. S00W235A00

Case no SDG K1340

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
109156-01	J17J47	327	OTHER		RC-040	RC-040-352	09/16/08 10:00
109156-02	Lab Control Sample		OTHER		RC-040		
109156-03	Method Blank		OTHER		RC-040		
109156-04	Duplicate (R809156-01)	327	OTHER		RC-040		09/16/08 10:00
109156-05	Duplicate (R809156-01)	327	OTHER		RC-040		09/16/08 10:00

LAB SUMMARY

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LABORATORY DATA SECTION

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Lab id EBRLNE

Protocol Hanford1

Version Ver 1.0

Form DVD-LS

Version 3.06

Report date 10/06/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

SDG 7700
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1340

BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
)	RC-040-352	J17J47	OTHER		0.4 g		09/19/08	3	R809156-01	7700-001
		Method Blank	OTHER						R809156-03	7700-003
		Lab Control Sample	OTHER						R809156-02	7700-002
		Duplicate (R809156-01)	OTHER		0.4 g		09/19/08	3	R809156-04	7700-004
		Duplicate (R809156-01)	OTHER		0.4 g		09/19/08	3	R809156-05	7700-005

QC SUMMARY

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LABORATORY DATA SECTION

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

PREP BATCH SUMMARY

SDG 7700
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1340

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS
Alpha Spectroscopy										
NP	OTHER	Neptunium in Solids	6169-107	14.8	1		1	1	1/1	
PU	OTHER	Plutonium, Isotopic in Solids	6169-107	8.0	1		1	1	1/1	
TH	OTHER	Thorium, Isotopic in Solids	6169-107	8.0	1		1	1	1/1	
TP	OTHER	Americium 241/Curium in Solids	6169-107	8.0	1		1	1	1/1	
U	OTHER	Uranium, Isotopic in Solids	6169-107	8.0	1		1	1	1/1	
Beta Counting										
SR	OTHER	Total Strontium in Solids	6169-107	10.4	1		1	1	1/1	
TC	OTHER	Technetium 99 in Solids	6169-107	13.2	1		1	1	1/1	
Gas Proportional Counting										
93A	OTHER	Gross Alpha	6169-107	20.6	1		1	1	1/1	
93B	OTHER	Gross Beta	6169-107	11.0	1		1	1	1/1	
Gamma Spectroscopy										
GAM	OTHER	Gamma Scan	6169-107	7.0	1		1	1	1/1	
Liquid Scintillation Counting										
C	OTHER	Carbon 14 in Solids	6169-107	10.0	1		1	1	1/1	
H	OTHER	Tritium in Solids	6169-107	10.0	1		1	1	1/1	
NI_L	OTHER	Nickel 63 in Solids	6169-107	11.2	1		1	1	1/1	
PU_L	OTHER	Plutonium 241 in Solids	6169-107	12.4	1		1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS plachets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP K1340

SDG 7700

Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford

Contract No. S00W235A00

Case no SDG K1340

SAMPLE RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
1156-01	J17J47			7700-001	93A/93		09/28/08	10/02/08	BW	Gross Alpha
09/16/08	327		OTHER	7700-001	93B/93		09/28/08	10/03/08	BW	Gross Beta
09/19/08	RC-040-352	RC-040		7700-001	C		09/29/08	10/03/08	BW	Carbon 14 in Solids
				7700-001	GAM		09/30/08	10/02/08	BW	Gamma Scan
				7700-001	H		09/29/08	10/03/08	BW	Tritium in Solids
				7700-001	NI_L		09/30/08	10/03/08	BW	Nickel 63 in Solids
				7700-001	NP		09/29/08	10/02/08	BW	Neptunium in Solids
				7700-001	PU		10/02/08	10/02/08	BW	Plutonium, Isotopic in Solids
				7700-001	PU_L		10/02/08	10/03/08	BW	Plutonium 241 in Solids
				7700-001	SR		09/26/08	09/30/08	BW	Total Strontium in Solids
				7700-001	TC		10/01/08	10/02/08	BW	Technetium 99 in Solids
				7700-001	TH		09/29/08	09/30/08	BW	Thorium, Isotopic in Solids
				7700-001	TP		10/06/08	10/06/08	BW	Americium 241/Curium in Solids
				7700-001	U		09/29/08	10/02/08	BW	Uranium, Isotopic in Solids
156-02	Lab Control Sample			7700-002	93A/93		09/28/08	10/02/08	BW	Gross Alpha
			OTHER	7700-002	93B/93		09/28/08	10/03/08	BW	Gross Beta
		RC-040		7700-002	C		09/29/08	10/03/08	BW	Carbon 14 in Solids
				7700-002	GAM		09/30/08	10/02/08	BW	Gamma Scan
				7700-002	H		09/29/08	10/03/08	BW	Tritium in Solids
				7700-002	NI_L		09/30/08	10/03/08	BW	Nickel 63 in Solids
				7700-002	NP		09/29/08	10/02/08	BW	Neptunium in Solids
				7700-002	PU		10/02/08	10/02/08	BW	Plutonium, Isotopic in Solids
				7700-002	PU_L		10/02/08	10/03/08	BW	Plutonium 241 in Solids
				7700-002	SR		09/26/08	09/30/08	BW	Total Strontium in Solids
				7700-002	TC		09/29/08	10/02/08	BW	Technetium 99 in Solids
				7700-002	TH		09/29/08	09/30/08	BW	Thorium, Isotopic in Solids
				7700-002	TP		10/03/08	10/06/08	BW	Americium 241/Curium in Solids
				7700-002	U		09/29/08	10/02/08	BW	Uranium, Isotopic in Solids

WORK SUMMARY

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LABORATORY DATA SECTION

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SAMPLE DELIVERY GROUP K1340

SDG 7700
 Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1340

SAMPLE RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	MATRIX SAF No	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
9156-03	Method Blank		7700-003	93A/93		09/30/08	10/02/08	BW	Gross Alpha
		OTHER	7700-003	93B/93		09/30/08	10/03/08	BW	Gross Beta
		RC-040	7700-003	C		09/29/08	10/03/08	BW	Carbon 14 in Solids
			7700-003	GAM		09/30/08	10/02/08	BW	Gamma Scan
			7700-003	H		09/29/08	10/03/08	BW	Tritium in Solids
			7700-003	NI_L		09/30/08	10/03/08	BW	Nickel 63 in Solids
			7700-003	NP		09/29/08	10/02/08	BW	Neptunium in Solids
			7700-003	PU		10/02/08	10/02/08	BW	Plutonium, Isotopic in Solids
			7700-003	PU_L		10/02/08	10/03/08	BW	Plutonium 241 in Solids
			7700-003	SR		09/26/08	09/30/08	BW	Total Strontium in Solids
			7700-003	TC		09/29/08	10/02/08	BW	Technetium 99 in Solids
			7700-003	TH		09/29/08	09/30/08	BW	Thorium, Isotopic in Solids
			7700-003	TP		10/01/08	10/06/08	BW	Americium 241/Curium in Solids
			7700-003	U		09/29/08	10/02/08	BW	Uranium, Isotopic in Solids
156-04	Duplicate (R809156-01)		7700-004	93A/93		09/28/08	10/02/08	BW	Gross Alpha
9/16/08	327	OTHER	7700-004	93B/93		09/28/08	10/03/08	BW	Gross Beta
9/19/08		RC-040	7700-004	C		09/29/08	10/03/08	BW	Carbon 14 in Solids
			7700-004	H		09/29/08	10/03/08	BW	Tritium in Solids
			7700-004	NI_L		09/30/08	10/03/08	BW	Nickel 63 in Solids
			7700-004	NP		09/29/08	10/02/08	BW	Neptunium in Solids
			7700-004	PU		10/02/08	10/02/08	BW	Plutonium, Isotopic in Solids
			7700-004	PU_L		10/02/08	10/03/08	BW	Plutonium 241 in Solids
			7700-004	SR		09/26/08	09/30/08	BW	Total Strontium in Solids
			7700-004	TC		10/01/08	10/02/08	BW	Technetium 99 in Solids
			7700-004	TH		09/29/08	09/30/08	BW	Thorium, Isotopic in Solids
			7700-004	TP		10/01/08	10/06/08	BW	Americium 241/Curium in Solids
			7700-004	U		09/29/08	10/02/08	BW	Uranium, Isotopic in Solids
156-05	Duplicate (R809156-01)		7700-005	GAM		10/01/08	10/02/08	BW	Gamma Scan
9/16/08	327	OTHER							
9/19/08		RC-040							

Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

SDG 7700
 Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1340

COUNTS OF TESTS BY SAMPLE TYPE

IST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
HA/93	RC-040	Gross Alpha	900.0_ALPHABETA_GPC	1			1	1	1	4
HB/93	RC-040	Gross Beta	900.0_ALPHABETA_GPC	1			1	1	1	4
	RC-040	Carbon 14 in Solids	C14_COX_LSC	1			1	1	1	4
AM	RC-040	Gamma Scan	GAMMA_GS	1			1	1	1	4
	RC-040	Tritium in Solids	TRITIUM_COX_LSC	1			1	1	1	4
IL	RC-040	Nickel 63 in Solids	NI63_LSC	1			1	1	1	4
	RC-040	Neptunium in Solids	NP237_LLE_PLATE_AEA	1			1	1	1	4
	RC-040	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
IL	RC-040	Plutonium 241 in Solids	PU241_IE_LSC	1			1	1	1	4
	RC-040	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
	RC-040	Technetium 99 in Solids	TC99_TR_SEP_GPC	1			1	1	1	4
	RC-040	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	1			1	1	1	4
	RC-040	Americium 241/Curium in Solids	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
	RC-040	Uranium, Isotopic in Solids	UIISO_PLATE_AEA	1			1	1	1	4
TOTALS				14			14	14	14	56

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1340

7700-003

Method Blank

METHOD BLANK

SDG <u>7700</u>	Client/Case no <u>Hanford</u>	<u>SDG K1340</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R809156-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7700-003</u>	Material/Matrix <u>OTHER</u>	
	SAF No <u>RC-040</u>	

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-43.0	270	<u>630</u>	10.0	U	93A
Gross Beta	12587-47-2	-213	320	<u>575</u>	15.0	U	93B
Tritium	10028-17-8	-17.7	230	<u>394</u>	400	U	H
Carbon 14	14762-75-5	-73.5	160	<u>276</u>	50.0	U	C
Nickel 63	13981-37-8	-411	880	<u>1520</u>	30.0	U	NI_L
Total Strontium	SR-RAD	35.4	130	<u>253</u>	1.00	U	SR
Neptunium 237	13994-20-2	0	31	<u>119</u>	1.00	U	NP
Americium 241	14596-10-2	19.0	38	<u>59.6</u>	1.00	U	TP
Curium 242	15510-73-3	-5.71	27	<u>53.4</u>		U	TP
Curium 243/244	CM-243/244	24.8	65	<u>112</u>	1.00	U	TP
Technetium 99	14133-76-7	5.90	24	<u>34.9</u>	15.0	U	TC
Thorium 228	14274-82-9	0	50	<u>112</u>		U	TH
Thorium 230	14269-63-7	0	33	<u>63.8</u>	1.00	U	TH
Thorium 232	TH-232	16.7	17	<u>63.8</u>	1.00	U	TH
Uranium 233/234	U-233/234	5.47	11	<u>20.1</u>	1.00	U	U
Uranium 235	15117-96-1	8.82	8.8	<u>16.9</u>	1.00	U	U
Uranium 238	U-238	1.82	7.3	<u>13.9</u>	1.00	U	U
Plutonium 238	13981-16-3	-49.6	99	<u>228</u>	1.00	U	PU
Plutonium 239/240	PU-239/240	-12.4	25	<u>94.8</u>	1.00	U	PU
Plutonium 241	14119-32-5	-4050	6300	<u>10600</u>	15.0	U	PU_L
Potassium 40	13966-00-2	U		<u>1020</u>		U	GAM
Cobalt 60	10198-40-0	U		<u>38.4</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>39.6</u>	0.100	U	GAM
Radium 226	13982-63-3	U		<u>83.2</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>178</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>105</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>104</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>112</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		<u>65.2</u>		U	GAM

300Area DD Wst.Charct.Sampl.-O. Soil

METHOD BLANKS

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SUMMARY DATA SECTION

Page 9

Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/06/08</u>

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1340

7700-003

Method Blank

BLANK, cont.

SDG <u>7700</u>	Client/Case no <u>Hanford</u>	<u>SDG K1340</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R809156-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7700-003</u>	Material/Matrix _____	<u>OTHER</u>
	SAF No <u>RC-040</u>	

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST
Thorium 232	TH-232	U		178		U	GAM
Uranium 235	15117-96-1	U		181		U	GAM
Uranium 238	U-238	U		4300		U	GAM
Americium 241	14596-10-2	U		150		U	GAM
Antimony 125	14234-35-6	U		92.5		U	GAM
Barium 133	13981-41-4	U		47.1		U	GAM
Niobium 94	14681-63-1	U		32.7		U	GAM

300Area DD Wst.Charct.Sampl.-O. Soil

QC-BLANK 67415

METHOD BLANKS

Page 2

SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/06/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

7700-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7700</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R809156-02</u> Dept sample id <u>7700-002</u>	Client/Case no <u>Hanford</u> <u>SDG K1340</u> Contract No. <u>S00W235A00</u> Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>OTHER</u> SAF No <u>RC-040</u>
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ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ LMTS	PROTOCOL	
	pCi/smpl	(COUNT)	pCi/smpl	pCi/smpl	FIERS	TEST	pCi/smpl	pCi/smpl	%	(TOTAL)	LIMITS
Gross Alpha	9410	1600	<u>594</u>	10.0		93A	10200	410	92	63-137	70-130
Gross Beta	8790	750	<u>655</u>	15.0		93B	9250	370	95	79-121	70-130
Tritium	49500	1100	<u>427</u>	400		H	48200	1900	103	83-117	80-120
Carbon 14	130000	1200	<u>302</u>	50.0		C	128000	5100	102	84-116	80-120
Nickel 63	108000	2900	<u>1530</u>	30.0		NI_L	110000	4400	98	82-118	80-120
Total Strontium	10000	540	<u>217</u>	1.00		SR	9250	370	108	80-120	80-120
Neptunium 237	8870	770	<u>44.8</u>	1.00		NP	9920	400	89	76-124	80-120
Americium 241	10600	1100	<u>131</u>	1.00		TP	10300	410	103	79-121	80-120
Technetium 99	10600	180	<u>35.6</u>	15.0		TC	10900	440	97	80-120	80-120
Thorium 230	8690	810	<u>57.2</u>	1.00		TH	9450	380	92	82-118	80-120
Uranium 233/234	9530	320	<u>135</u>	1.00		U	9290	370	103	85-115	80-120
Uranium 235	7520	270	<u>10.7</u>	1.00		U	7550	300	100	86-114	80-120
Uranium 238	9820	330	<u>128</u>	1.00		U	10100	400	97	86-114	80-120
Plutonium 238	12000	1000	<u>236</u>	1.00		PU	11700	470	103	81-119	80-120
Plutonium 239/240	13100	1100	<u>102</u>	1.00		PU	13200	530	99	82-118	80-120
Plutonium 241	116000	8100	<u>10400</u>	15.0		PU_L	98900	4000	117	74-126	80-120
Cobalt 60	964	83	<u>67.4</u>	0.050		GAM	1040	42	93	83-117	80-120
Cesium 137	1220	90	<u>75.8</u>	0.100		GAM	1160	46	105	83-117	80-120

300Area DD Wst.Charct.Sampl.-O. Soil

QC-LCS 67414

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LCS
 Version 3.06
 Report date 10/06/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

7700-004

J17J47

DUPLICATE

SDG <u>7700</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R809156-04</u> Dept sample id <u>7700-004</u>	Client/Case no <u>Hanford</u> SDG <u>K1340</u> Contract No. <u>S00W235A00</u> ORIGINAL Lab sample id <u>R809156-01</u> Dept sample id <u>7700-001</u> Received <u>09/19/08</u>
Client sample id <u>J17J47</u> Location/Matrix <u>327</u> OTHER Collected/Weight <u>09/16/08 10:00</u> <u>0.4 g</u> Custody/SAF No <u>RC-040-352</u> <u>RC-040</u>	

ANALYTE	DUPLICATE		MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/smpl	QUALI- FIERS	RPD %	3σ TOT	DER σ
	pCi/smpl	2σ ERR (COUNT)					pCi/smpl	2σ ERR (COUNT)					
Gross Alpha	207000	4400	<u>716</u>	10.0		93A	196000	4200	<u>284</u>		5	44	0.4
Gross Beta	1310000	7600	<u>599</u>	15.0		93B	1360000	7800	<u>872</u>		4	23	0.5
Tritium	212	260	<u>427</u>	400	U	H	330	230	<u>366</u>	U	-	-	0.7
Carbon 14	276	190	<u>306</u>	50.0	U	C	216	160	<u>253</u>	U	-	-	0.5
Nickel 63	873	920	<u>1520</u>	30.0	U	NI_L	617	920	<u>1520</u>	U	-	-	0.4
Total Strontium	351000	3600	<u>283</u>	1.00		SR	351000	3700	<u>396</u>		0	22	0
Neptunium 237	31.7	64	<u>95.3</u>	1.00	U	NP	75.4	<u>100</u>	<u>75.3</u>		82	334	0.7
Americium 241	73300	1900	<u>37.2</u>	1.00		TP	67700	4600	<u>112</u>		8	20	1.2
Curium 242	500	66	<u>51.7</u>			TP	495	160	<u>97.0</u>		1	55	0.1
Curium 243/244	392	92	<u>129</u>	1.00		TP	304	120	<u>112</u>		25	67	1.1
Technetium 99	11.0	12	<u>23.6</u>	15.0	U	TC	63.2	19	<u>30.7</u>		<u>141</u>	97	<u>4.3</u>
Thorium 228	172	79	<u>86.2</u>			TH	284	100	<u>80.4</u>		49	86	1.7
Thorium 230	38.9	47	<u>59.5</u>	1.00	U	TH	14.5	44	<u>69.6</u>	U	-	-	0.8
Thorium 232	7.78	16	<u>59.5</u>	1.00	U	TH	21.8	29	<u>55.6</u>	U	-	-	0.8
Iranium 233/234	92.4	22	<u>10.2</u>	1.00		U	88.1	27	<u>16.2</u>		5	60	0.2
Iranium 235	4.87	6.5	<u>12.4</u>	1.00	U	U	18.4	12	<u>15.7</u>		116	177	2.0
Iranium 238	1.34	5.4	<u>10.2</u>	1.00	U	U	-6.78	6.8	<u>20.8</u>	U	-	-	1.9
Plutonium 238	22600	1500	<u>208</u>	1.00		PU	21200	1600	<u>205</u>		6	23	0.8
Plutonium 239/240	84600	4600	<u>93.8</u>	1.00		PU	82100	5000	<u>117</u>		3	21	0.4
Plutonium 241	556000	13000	<u>9870</u>	15.0		PU_L	547000	11000	<u>8030</u>		2	27	0.2

.00Area DD Wst.Charct.Sampl.-O. Soil

IC-DUP#1 67416

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-DUP
 Version 3.06
 Report date 10/06/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

7700-005

J17J47

DUPLICATE

SDG <u>7700</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R809156-05</u> Dept sample id <u>7700-005</u>	ORIGINAL Lab sample id <u>R809156-01</u> Dept sample id <u>7700-001</u> Received <u>09/19/08</u>	Client/Case no <u>Hanford</u> SDG <u>K1340</u> Contract No. <u>S00W235A00</u> Client sample id <u>J17J47</u> Location/Matrix <u>327</u> OTHER Collected/Weight <u>09/16/08 10:00</u> <u>0.4 g</u> Custody/SAF No <u>RC-040-352</u> <u>RC-040</u>
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ANALYTE	DUPLICATE		MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/smpl	QUALI- FIERS	RPD %	3σ TOT	DER σ
	pCi/smpl	2σ ERR (COUNT)					pCi/smpl	2σ ERR (COUNT)					
Potassium 40	U		919		U	GAM	U		668	U	-		0.4
Cobalt 60	218	78	<u>70.2</u>	0.050		GAM	231	53	<u>43.5</u>		6	65	0.3
Cesium 137	754000	2300	<u>656</u>	0.100		GAM	756000	1700	<u>489</u>		0	15	0.1
Radium 226	U		<u>959</u>	0.100	U	GAM	U		<u>718</u>	U	-		0.4
Radium 228	U		<u>393</u>	0.200	U	GAM	U		<u>290</u>	U	-		0.4
Europium 152	U		<u>1950</u>	0.100	U	GAM	U		<u>1460</u>	U	-		0.4
Europium 154	2740	400	<u>289</u>	0.100		GAM	2900	280	<u>179</u>		6	30	0.6
Europium 155	2540	1100	<u>1600</u>	0.100		GAM	3380	810	<u>1180</u>		28	71	1.2
Thorium 228	U		886		U	GAM	U		652	U	-		0.4
Thorium 232	U		393		U	GAM	U		290	U	-		0.4
Uranium 235	U		2160		U	GAM	U		1600	U	-		0.4
Uranium 238	U		19800		U	GAM	U		14600	U	-		0.4
Americium 241	82000	2900	3560			GAM	74400	2000	2560		10	16	1.8
Antimony 125	U		2320		U	GAM	U		1890	U	-		0.3
Barium 133	U		881		U	GAM	U		652	U	-		0.4
Niobium 94	U		149		U	GAM	U		113	U	-		0.4

300Area DD Wst.Charct.Sampl.-O. Soil

DUPLICATES

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SUMMARY DATA SECTION

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Lab id <u>EBRLINE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>10/06/08</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1340

7700-001

J17J47

DATA SHEET

SDG <u>7700</u>	Client/Case no <u>Hanford</u>	SDG <u>K1340</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R809156-01</u>	Client sample id <u>J17J47</u>	
Dept sample id <u>7700-001</u>	Location/Matrix <u>327</u>	<u>OTHER</u>
Received <u>09/19/08</u>	Collected/Weight <u>09/16/08 10:00</u>	<u>0.4 g</u>
	Custody/SAF No <u>RC-040-352</u>	<u>RC-040</u>

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	196000	4200	<u>284</u>	10.0		93A
Gross Beta	12587-47-2	1360000	7800	<u>872</u>	15.0		93B
Tritium	10028-17-8	330	230	<u>366</u>	400	U	H
Carbon 14	14762-75-5	216	160	<u>253</u>	50.0	U	C
Nickel 63	13981-37-8	617	920	<u>1520</u>	30.0	U	NI_L
Total Strontium	SR-RAD	351000	3700	<u>396</u>	1.00		SR
Neptunium 237	13994-20-2	75.4	<u>100</u>	<u>75.3</u>	1.00		NP
Americium 241	14596-10-2	67700	4600	<u>112</u>	1.00		TP
Curium 242	15510-73-3	495	160	<u>97.0</u>			TP
Curium 243/244	CM-243/244	304	120	<u>112</u>	1.00		TP
Technetium 99	14133-76-7	63.2	19	<u>30.7</u>	15.0		TC
Thorium 228	14274-82-9	284	100	<u>80.4</u>			TH
Thorium 230	14269-63-7	14.5	44	<u>69.6</u>	1.00	U	TH
Thorium 232	TH-232	21.8	29	<u>55.6</u>	1.00	U	TH
Uranium 233/234	U-233/234	88.1	27	<u>16.2</u>	1.00		U
Uranium 235	15117-96-1	18.4	12	<u>15.7</u>	1.00		U
Uranium 238	U-238	-6.78	6.8	<u>20.8</u>	1.00	U	U
Plutonium 238	13981-16-3	21200	1600	<u>205</u>	1.00		PU
Plutonium 239/240	PU-239/240	82100	5000	<u>117</u>	1.00		PU
Plutonium 241	14119-32-5	547000	11000	<u>8030</u>	15.0		PU_L
Potassium 40	13966-00-2	U		<u>668</u>		U	GAM
Cobalt 60	10198-40-0	231	53	<u>43.5</u>	0.050		GAM
Cesium 137	10045-97-3	756000	1700	<u>489</u>	0.100		GAM
Radium 226	13982-63-3	U		<u>718</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>290</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>1460</u>	0.100	U	GAM
Europium 154	15585-10-1	2900	280	<u>179</u>	0.100		GAM
Europium 155	14391-16-3	3380	810	<u>1180</u>	0.100		GAM

300Area DD Wst.Charct.Sampl.-O. Soil

DATA SHEETS

Page 1

SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/06/08</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1340

7700-001

J17J47

DATA SHEET , c o n t

SDG <u>7700</u>	Client/Case no <u>Hanford</u>	SDG <u>K1340</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R809156-01</u>	Client sample id <u>J17J47</u>	
Dept sample id <u>7700-001</u>	Location/Matrix <u>327</u>	<u>OTHER</u>
Received <u>09/19/08</u>	Collected/Weight <u>09/16/08 10:00</u>	<u>0.4 g</u>
	Custody/SAF No <u>RC-040-352</u>	<u>RC-040</u>

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST
Thorium 228	14274-82-9	U		652		U	GAM
Thorium 232	TH-232	U		290		U	GAM
Uranium 235	15117-96-1	U		1600		U	GAM
Uranium 238	U-238	U		14600		U	GAM
Americium 241	14596-10-2	74400	2000	2560			GAM
Antimony 125	14234-35-6	U		1890		U	GAM
Barium 133	13981-41-4	U		652		U	GAM
Niobium 94	14681-63-1	U		113		U	GAM

300Area DD Wst.Charct.Sampl.-O. Soil

DATA SHEETS

Page 2

SUMMARY DATA SECTION

Page 15

Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>10/06/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

NEPTUNIUM IN SOLIDS
ALPHA SPECTROSCOPY

Test NP Matrix OTHER
SDG 7700
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Contract SDG K1340

SULTS

FILE ID	RAW TEST FIX	SUF- PLANCHET	CLIENT SAMPLE ID	Neptunium
				237
Preparation batch 6169-107				
156-01		7700-001	J17J47	75.4
156-02		7700-002	Lab Control Sample	ok
156-03		7700-003	Method Blank	U
156-04		7700-004	Duplicate (R809156-01)	ok U

Final values and limits from method RDLs (pCi/smpl) 1.00
Area DD Wst.Charct.Sampl.-O. Soil

METHOD PERFORMANCE

FILE ID	RAW TEST FIX	SUF- CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 6169-107 2σ prep error 14.8 % Reference Lab Notebook #6169, pg. 107														
156-01		J17J47	<u>75.3</u>	0.0010			32		144			13	09/29/08	09/29 SS-059
156-02		Lab Control Sample	<u>44.8</u>	0.0010			52		144			09/29/08	09/29	SS-060
156-03		Method Blank	<u>119</u>	0.0010			52		144			09/29/08	09/29	SS-065
156-04		Duplicate (R809156-01)	<u>95.3</u>	0.0010			24		144			13	09/29/08	09/29 SS-066
Final values and limits from method			1.00	0.0010			20-105		100			180		

PROCEDURES REFERENCE NP237_LLE_PLATE_AEA
SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
CP-930 Neptunium from Solids and Water by Extraction Chromatography, rev 1
CP-008 Heavy Element Electroplating, rev 12

AVERAGES ± 2 SD MDA 83.6 ± 62.9
FOR 4 SAMPLES YIELD 40 ± 28

METHOD SUMMARIES

Page 1

PRIMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/06/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

Test PU Matrix OTHER
 SDG 7700
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1340

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

SULTS

FILE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240	
Preparation batch 6169-107							
156-01			7700-001	J17J47	21200	82100	
156-02			7700-002	Lab Control Sample	ok	ok	
156-03			7700-003	Method Blank	U	U	
156-04			7700-004	Duplicate (R809156-01)	ok	ok	
Final values and limits from method					RDLs (pCi/smpl)	1.00	1.00
Area DD Wst.Charct.Sampl.-O. Soil							

LAB METHOD PERFORMANCE

FILE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MAX MDA pCi/smpl	ALIQ sample	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 6169-107 2σ prep error 8.0 % Reference Lab Notebook #6169, pg. 107															
156-01			J17J47	<u>205</u>	0.0010			38		232			16	10/01/08	10/02 SS-032
156-02			Lab Control Sample	<u>236</u>	0.0010			37		232				10/01/08	10/02 SS-033
156-03			Method Blank	<u>228</u>	0.0010			39		232				10/01/08	10/02 SS-035
156-04			Duplicate (R809156-01)	<u>208</u>	0.0010			39		232			16	10/01/08	10/02 SS-036
Final values and limits from method				1.00	0.0010			20-105		100	100		180		

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 3	
CP-008	Heavy Element Electroplating, rev 12	

AVERAGES ± 2 SD	MDA <u>219</u> ± <u>30.3</u>
FOR 4 SAMPLES	YIELD <u>38</u> ± <u>2</u>

LAB METHOD SUMMARIES

Page 2

LABORATORY DATA SECTION

Page 17

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 10/06/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Test TH Matrix OTHER
SDG 7700
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Contract SDG K1340

SULTS

RAW SUF-
FILE ID TEST FIX PLANCHET CLIENT SAMPLE ID Thorium 230

Preparation batch 6169-107

156-01	7700-001	J17J47	14.5	U
156-02	7700-002	Lab Control Sample	ok	
156-03	7700-003	Method Blank	U	
156-04	7700-004	Duplicate (R809156-01)	-	U

Final values and limits from method RDLs (pCi/smpl) 1.00
Area DD Wet.Charct.Sampl.-O. Soil

THOD PERFORMANCE

RAW SUF- MAX MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
FILE ID TEST FIX CLIENT SAMPLE ID pCi/smpl sample FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 6169-107 2σ prep error 8.0 % Reference Lab Notebook #6169, pg. 107

156-01	J17J47	<u>69.6</u>	0.0010	103	<u>144</u>	13	09/29/08	09/29	SS-061
156-02	Lab Control Sample	<u>57.2</u>	0.0010	102	<u>145</u>		09/29/08	09/29	SS-062
156-03	Method Blank	<u>63.8</u>	0.0010	94	<u>144</u>		09/29/08	09/29	SS-063
156-04	Duplicate (R809156-01)	<u>59.5</u>	0.0010	99	<u>144</u>	13	09/29/08	09/29	SS-064

Final values and limits from method 1.00 0.0010 20-105 150 180

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 12

AVERAGES ± 2 SD	MDA <u>62.5</u> ± <u>10.9</u>
FOR 4 SAMPLES	YIELD <u>100</u> ± <u>8</u>

METHOD SUMMARIES

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PRIMARY DATA SECTION

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Protocol Hanford1
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Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

Test TP Matrix OTHER
 SDG 7700
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241/CURIUM IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1340

SULTS

RAW	SUF-		Americium	Curium	
PLATE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	241	243/244
Preparation batch 6169-107					
156-01	7700-001	J17J47	67700	304	
156-02	7700-002	Lab Control Sample	ok		
156-03	7700-003	Method Blank	<u>19.0</u> U	<u>24.8</u> U	
156-04	7700-004	Duplicate (R809156-01)	ok	ok	
Nominal values and limits from method					
Area DD Wet.Charct.Sampl.-O. Soil			RDLs (pCi/smpl)	1.00	1.00

LAB METHOD PERFORMANCE

RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
PLATE ID	TEST FIX	CLIENT SAMPLE ID	pCi/smpl	sample	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6169-107 2σ prep error 8.0 % Reference Lab Notebook #6169, pg. 107															
156-01	J17J47		<u>112</u>	0.0010			84	115				20	09/30/08	10/06	SS-059
156-02	Lab Control Sample		<u>131</u>	0.0010			81	277					09/30/08	10/03	SS-064
156-03	Method Blank		<u>112</u>	0.0010			65	909					09/30/08	10/01	SS-035
156-04	Duplicate (R809156-01)		<u>129</u>	0.0010			73	909				15	09/30/08	10/01	SS-037
Nominal values and limits from method															
			1.00	0.0010			20-105	100	100			180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6	
CP-008	Heavy Element Electroplating, rev 12	

AVERAGES ± 2 SD MDA 121 ± 20.8
 FOR 4 SAMPLES YIELD 76 ± 17

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 10/06/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Test U Matrix OTHER
SDG 7700
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Contract SDG K1340

SULTS

FILE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)						
					233/234	235	238	1+3	2σ	2+3	2σ			
Variation batch 6169-107														
156-01				7700-001 J17J47	88.1	18.4	U							
156-02				7700-002 Lab Control Sample	ok	ok	ok							
156-03				7700-003 Method Blank	<u>5.47</u> U	<u>8.82</u> U	<u>1.82</u> U							
156-04				7700-004 Duplicate (R809156-01)	ok	ok	U	-	U					
Final values and limits from method					RDLs (pCi/smpl)	1.00	1.00	1.00	100	4	Averages			
Area DD Wst.Charct.Sampl.-O. Soil														

THOD PERFORMANCE

FILE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
				pCi/smpl	sample	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED
Variation batch 6169-107 2σ prep error 8.0 % Reference Lab Notebook #6169, pg. 107														
156-01			J17J47	<u>20.8</u>	0.0010			79		1028		13	09/29/08	09/29 SS-031
156-02			Lab Control Sample	<u>135</u>	0.0010			92		1028			09/29/08	09/29 SS-038
156-03			Method Blank	<u>20.1</u>	0.0010			74		1027			09/29/08	09/29 SS-042
156-04			Duplicate (R809156-01)	<u>12.4</u>	0.0010			78		1027		13	09/29/08	09/29 SS-051
Final values and limits from method				1.00	0.0010			20-105		100	100		180	

PROCEDURES	REFERENCE	UIISO_PLATE_AEA
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 12	

AVERAGES ± 2 SD	MDA <u>47.1</u> ± <u>117</u>
FOR 4 SAMPLES	YIELD <u>81</u> ± <u>16</u>

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS
BETA COUNTING

Test SR Matrix OTHER
SDG 7700

Contact Melissa C. Mannion

Client Hanford

Contract No. S00W235A00

Contract SDG K1340

SULTS

FILE ID	RAW TEST FIX	SUF- PLANCHET	CLIENT SAMPLE ID	Total Strontium
variation batch 6169-107				
156-01			J17J47	351000
156-02			Lab Control Sample	ok
156-03			Method Blank	<u>35.4</u> U
156-04			Duplicate (R809156-01)	ok

Final values and limits from method RDLs (pCi/smpl) 1.00
Area DD Wst.Charct.Sampl.-O. Soil

METHOD PERFORMANCE

FILE ID	RAW TEST FIX	SUF- CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
variation batch 6169-107 2σ prep error 10.4 % Reference Lab Notebook #6169, pg. 107														
156-01		J17J47	<u>396</u>	0.0010			95	100	10	09/26/08	09/26	GRB-206		
156-02		Lab Control Sample	<u>217</u>	0.0010			97	100		09/26/08	09/26	GRB-218		
156-03		Method Blank	<u>253</u>	0.0010			94	100		09/26/08	09/26	GRB-222		
156-04		Duplicate (R809156-01)	<u>283</u>	0.0010			98	100	10	09/26/08	09/26	GRB-222		

Final values and limits from method 1.00 0.0010 30-105 100 180

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
CP-383 Strontium in Dissolved Solid of < 5.0g Aliquot, rev 1

AVERAGES ± 2 SD MDA 287 ± 155
FOR 4 SAMPLES YIELD 96 ± 4

METHOD SUMMARIES

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LABORATORY DATA SECTION

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Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

GROSS ALPHA

GAS PROPORTIONAL COUNTING

Test 93A Matrix OTHER
 SDG 7700
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1340

SULTS

RAW	SUF-	FILE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha
Variation batch 6169-107						
		156-01	93	7700-001	J17J47	196000
		156-02	93	7700-002	Lab Control Sample	ok
		156-03	93	7700-003	Method Blank	U
		156-04	93	7700-004	Duplicate (R809156-01)	ok

Final values and limits from method RDLs (pCi/smpl) 10.0
 Area DD Wst.Charct.Sampl.-O. Soil

METHOD PERFORMANCE

RAW	SUF-	MDA	ALIQ	PREP	DILU-	RESID	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
FILE ID	TEST FIX	CLIENT SAMPLE ID	pCi/smpl	sample	FAC	TION	mg	%	min	keV	KeV	HELD PREPARED	YZED	DETECTOR
Variation batch 6169-107 2σ prep error 20.6 % Reference Lab Notebook #6169, pg. 107														
		156-01	93	J17J47	<u>284</u>	0.0010		<u>0</u>	100		12	09/27/08	09/28	GRB-107
		156-02	93	Lab Control Sample	<u>594</u>	0.0010		<u>59</u>	100			09/27/08	09/28	GRB-108
		156-03	93	Method Blank	<u>630</u>	0.0010		<u>60</u>	100			09/27/08	09/30	GRB-109
		156-04	93	Duplicate (R809156-01)	<u>716</u>	0.0010		<u>0</u>	100		12	09/27/08	09/28	GRB-110

Final values and limits from method 10.0 0.0010 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
 CP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
 CP-120 Gross Alpha and Gross Beta in Water, rev 6

AVERAGES ± 2 SD MDA 556 ± 377
 FOR 4 SAMPLES RESIDUE 30 ± 69

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 10/06/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

GROSS BETA

GAS PROPORTIONAL COUNTING

Test 93B Matrix OTHER
SDG 7700
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Contract SDG K1340

SULTS

FILE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta
Variation batch 6169-107				
156-01	93	7700-001	J17J47	1360000
156-02	93	7700-002	Lab Control Sample	ok
156-03	93	7700-003	Method Blank	U
156-04	93	7700-004	Duplicate (R809156-01)	ok

Final values and limits from method RDLs (pCi/smpl) 15.0
Area DD Wst.Charct.Sampl.-O. Soil

LAB METHOD PERFORMANCE

FILE ID	TEST FIX	CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Variation batch 6169-107 2σ prep error 11.0 % Reference Lab Notebook #6169, pg. 107														
156-01	93	J17J47	<u>872</u>	0.0010			<u>0</u>		100			12	09/27/08	09/28 GRB-107
156-02	93	Lab Control Sample	<u>655</u>	0.0010			59		100				09/27/08	09/28 GRB-108
156-03	93	Method Blank	<u>575</u>	0.0010			60		100				09/27/08	09/30 GRB-109
156-04	93	Duplicate (R809156-01)	<u>599</u>	0.0010			<u>0</u>		100			12	09/27/08	09/28 GRB-110

Final values and limits from method 15.0 0.0010 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
CP-120 Gross Alpha and Gross Beta in Water, rev 6

AVERAGES ± 2 SD MDA 675 ± 271
FOR 4 SAMPLES RESIDUE 30 ± 69

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix OTHER
SDG 7700
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Contract SDG K1340

SULTS

RAW	SUF-	CLIENT SAMPLE ID	Cobalt 60	Cesium 137	
FILE ID	TEST FIX	PLANCHET			
Preparation batch 6169-107					
156-01	7700-001	J17J47	231	756000	
156-02	7700-002	Lab Control Sample	ok	ok	
156-03	7700-003	Method Blank	U	U	
156-05	7700-005	Duplicate (R809156-01)	ok	ok	
Final values and limits from method			RDLs (pCi/smpl)	0.050	0.100
Area DD Wst.Charct.Sampl.-O. Soil					

METHOD PERFORMANCE

RAW	SUF-	CLIENT SAMPLE ID	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
FILE ID	TEST FIX		pCi/smpl	sample	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6169-107			2σ prep error 7.0 %			Reference Lab Notebook #6169, pg. 107									
156-01	J17J47		<u>100000</u>	0.256					208			14	09/29/08	09/30	JR,05,00
156-02	Lab Control Sample		<u>67.4</u>	0.200					380				09/29/08	09/30	JR,06,00
156-03	Method Blank		<u>9970</u>	0.200					423				09/29/08	09/30	JR,08,00
156-05	Duplicate (R809156-01)		<u>134000</u>	0.256					115			15	09/29/08	10/01	JR,05,00
Final values and limits from method			0.050	0.200					100						180

PROCEDURES REFERENCE GAMMA_GS
SPP-100 Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD MDA 61000 ± 132000
FOR 4 SAMPLES YIELD _____ ± _____

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Test C Matrix OTHER
 SDG 7700
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1340

SULTS

FILE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14
Preparation batch 6169-107				
156-01		7700-001	J17J47	216 U
156-02		7700-002	Lab Control Sample	ok
156-03		7700-003	Method Blank	U
156-04		7700-004	Duplicate (R809156-01)	- U

Final values and limits from method RDLs (pCi/smpl) 50.0
 Area DD Wst.Charct.Sampl.-O. Soil

METHOD PERFORMANCE

FILE ID	TEST FIX	CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANALYZED	DETECTOR
Preparation batch 6169-107			2σ prep error 10.0 %			Reference Lab Notebook #6169, pg. 107								
156-01		J17J47	<u>253</u>	0.0055			100		50			13	09/29/08	09/29 LSC-004
156-02		Lab Control Sample	<u>302</u>	0.0050			100		50				09/29/08	09/29 LSC-004
156-03		Method Blank	<u>276</u>	0.0050			100		50				09/29/08	09/29 LSC-004
156-04		Duplicate (R809156-01)	<u>306</u>	<u>0.0046</u>			100		50			13	09/29/08	09/29 LSC-004

Final values and limits from method 50.0 0.0050 10 180

PROCEDURES REFERENCE C14_COX_LSC
 CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD MDA 284 ± 49.4
 FOR 4 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-IMS
 Version 3.06
 Report date 10/06/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Test H Matrix OTHER
 SDG 7700
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1340

SULTS

RAW	SUF-	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Tritium
Preparation batch 6169-107					
156-01		7700-001		J17J47	U
156-02		7700-002		Lab Control Sample	ok
156-03		7700-003		Method Blank	U
156-04		7700-004		Duplicate (R809156-01)	- U

Final values and limits from method RDLs (pCi/smpl) 400
 Area DD Wst.Charct.Sampl.-O. Soil

THOD PERFORMANCE

RAW	SUF-	CLIENT SAMPLE ID	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
FILE ID	TEST FIX	CLIENT SAMPLE ID	pCi/smpl	sample	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 6169-107 2σ prep error 10.0 % Reference Lab Notebook #6169, pg. 107													
156-01		J17J47	366	0.0055			100		50		13	09/29/08	09/29 LSC-006
156-02		Lab Control Sample	<u>427</u>	0.0050			100		50			09/29/08	09/29 LSC-006
156-03		Method Blank	394	0.0050			100		50			09/29/08	09/29 LSC-006
156-04		Duplicate (R809156-01)	<u>427</u>	<u>0.0046</u>			100		50		13	09/29/08	09/29 LSC-006

Final values and limits from method 400 0.0050 25 180

PROCEDURES REFERENCE TRITIUM_COX_LSC
 CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD MDA 404 ± 58.9
 FOR 4 SAMPLES YIELD 100 ± 0

Lab id EBRLINE
 Protocol Hanford1
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Test NI L Matrix OTHER
SDG 7700
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Contract SDG K1340

SULTS

FILE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63
Preparation batch 6169-107				
156-01		7700-001	J17J47	617 U
156-02		7700-002	Lab Control Sample	ok
156-03		7700-003	Method Blank	U
156-04		7700-004	Duplicate (R809156-01)	- U

Final values and limits from method RDLs (pCi/smpl) 30.0
Area DD Wst.Charct.Sampl.-O. Soil

THOD PERFORMANCE

FILE ID	TEST FIX	CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ smpl	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 6169-107 2σ prep error 11.2 % Reference Lab Notebook #6169, pg. 107														
156-01		J17J47	<u>1520</u>	0.0010			99		50			14	09/30/08	LSC-004
156-02		Lab Control Sample	<u>1530</u>	0.0010			98		50				09/30/08	LSC-004
156-03		Method Blank	<u>1520</u>	0.0010			98		50				09/30/08	LSC-004
156-04		Duplicate (R809156-01)	<u>1520</u>	0.0010			98		50			14	09/30/08	LSC-004

Final values and limits from method 30.0 0.0010 30-105 25 180

PROCEDURES REFERENCE NI63_LSC
SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
CP-280 Nickel-63 Purification, rev 3

AVERAGES ± 2 SD MDA 1520 ± 10.0
FOR 4 SAMPLES YIELD 98 ± 1

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1340

LAB METHOD SUMMARY

PLUTONIUM 241 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Test PU L Matrix OTHER
SDG 7700
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Contract SDG K1340

SULTS

FILE ID	RAW TEST FIX	SUF- PLANCHET	CLIENT SAMPLE ID	Plutonium 241
Separation batch 6169-107				
156-01	7700-001	J17J47		547000
156-02	7700-002	Lab Control Sample		ok
156-03	7700-003	Method Blank		U
156-04	7700-004	Duplicate (R809156-01)		ok

Final values and limits from method RDLs (pCi/smpl) 15.0
Area DD Wst.Charct.Sampl.-O. Soil

LAB METHOD PERFORMANCE

FILE ID	RAW TEST FIX	SUF- CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Separation batch 6169-107 2σ prep error 12.4 % Reference Lab Notebook #6169, pg. 107														
156-01	J17J47		<u>8030</u>	0.0010			35	100	16	10/01/08	10/02	LSC-004		
156-02	Lab Control Sample		<u>10400</u>	0.0010			27	100		10/01/08	10/02	LSC-004		
156-03	Method Blank		<u>10600</u>	0.0010			26	100		10/01/08	10/02	LSC-004		
156-04	Duplicate (R809156-01)		<u>9870</u>	0.0010			28	100	16	10/01/08	10/02	LSC-004		

Final values and limits from method 15.0 0.0010 20-105 50 180

PROCEDURES REFERENCE PU241_IE_LSC
RP-948 Plutonium-241 by Liquid Scintillation Counting, rev 4

AVERAGES ± 2 SD MDA 9720 ± 2340
FOR 4 SAMPLES YIELD 29 ± 8

LAB METHOD SUMMARIES

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1340

SDG 7700
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1340

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/06/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1340

SDG 7700
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1340

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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SAMPLE DELIVERY GROUP K1340

SDG 7700
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
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WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

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

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

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

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:
 1. A fixed percentage specified in the protocol.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.
- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

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

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

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

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

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

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

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

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

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Washington Closure Hanford				CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST								RC-040-352		Page 1 of 1			
Collector Ron Holman				Company Contact Joan Kessner		Telephone No. 375-4688		Project Coordinator KESSNER, JH		Price Code 9K		Data Turnaround 15 Days					
Project Designation 300 Area D&D Waste Characterization Sampling - Other Soli				Sampling Location 300 327		K1340 (7700)		SAF No. RC-040									
Ice Chest No. RCC-07-001				Field Logbook No. EL-1518-10		COA RD4MXX2F00		Method of Shipment Fed Ex									
Shipped To EBERLINE SERVICES / LIONVILLE				Offsite Property No. See RSR				Bill of Lading/Air Bill No. see RSR									
POSSIBLE SAMPLE HAZARDS/REMARKS <i>Radioactive</i> Special Handling and/or Storage				Preservation		None	None	None	None	None	None	None	None	None	None	None	
				Type of Container		G/P	G/P	Snap Vial	G/P	G/P	G/P	G/P	G/P	G	G/P		
				No. of Container(s)		0	0	1	0	0	0	0	0	0	1		
				Volume		5g	5g	40mL	5g	1g	2g	5g	5g	25g	60g 247-17-08 AD 00ML		
SAMPLE ANALYSIS				Gross Alpha	Gross Beta	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Nickel-63	Carbon-14	Strontium-89,90 - Total Sr	Technetium-99	Tritium - H3	RF GEA Shipping 9/16/08				
				Sample No.	Matrix *	Sample Date	Sample Time										
J17J47	OTHER SOLID	9-16-08	10:00	X	X	X	X	X	X	X	X	RF	20665	X			
													↑X				
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS									
Relinquished By/Removed From Ron Holman				Date/Time 9-17-08 08:50				Received By/Stored In Blawerna				Date/Time 9-17-08 0850				Matrix * S=Soil SE=Sediment SO=Solid SI=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trace WI=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From Blawerna				Date/Time 9-17-08 0910				Received By/Stored In K. Elison				Date/Time 9-17-08 0910					
Relinquished By/Removed From K. Elison				Date/Time 9-17-08 1315				Received By/Stored In Mustankouch				Date/Time SEP 17 2008					
Relinquished By/Removed From Mustankouch				Date/Time SEP 18 2008				Received By/Stored In Fed Ex				Date/Time 09/19/08					
Relinquished By/Removed From Fed Ex				Date/Time				Received By/Stored In				Date/Time					
Relinquished By/Removed From				Date/Time				Received By/Stored In				Date/Time					
LABORATORY SECTION		Received By		Title				Date/Time									
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time									



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: W.C. HANFORD City RICHMOND State WA

Date/Time received 09/19/08 09:20 CoC No. RC-040-352

Container I.D. No. RCC-07-001 Requested TAT (Days) 15 P.O. Received Yes [] No []

INSPECTION

- 1. Custody seals on shipping container intact? Yes No [] N/A []
- 2. Custody seals on shipping container dated & signed? Yes No [] N/A []
- 3. Custody seals on sample containers intact? Yes No [] N/A []
- 4. Custody seals on sample containers dated & signed? Yes No [] N/A []
- 5. Packing material is: Wet [] Dry
- 6. Number of samples in shipping container: 1 Sample Matrix SOIL
- 7. Number of containers per sample: 1 (Or see CoC _____)
- 8. Samples are in correct container Yes No []
- 9. Paperwork agrees with samples? Yes No []
- 10. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels
- 11. Samples are: In good condition Leaking [] Broken Container [] Missing []
- 12. Samples are: Preserved [] Not preserved [] pH _____ Preservative _____
- 13. Describe any anomalies:

14. Was P.M. notified of any anomalies? Yes [] No [] Date _____

15. Inspected by PTG Date: 09/19/08 Time: 11:00

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
J17J48	280,000						

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. 100482 Calibration date 10 JUL 08