

SAF-B01-052

100 B/C Area Effluent Pipeline & Proximity Site Remediation Activities - Quick Turn FINAL DATA PACKAGE

E:MAIL RESULTS TO:

Dave Shea

N/A
INITIAL/DATE

Dean Strom

N/A
INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Dave Shea

X3-40

DS 4/9/03
INITIAL/DATE

Dean Strom

X3-40

DS 4/9/03
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE COVER SHEET)

SDG H2115

SAF-B01-052

X Rad only

Chem only

Rad & Chem

X Complete

Partial

Sample Location/Waste Site: 100 BC Pipe, Deep Zones

RECEIVED
MAY 30 2003
EDMC



EBERLINE

SERVICES

April 7, 2003

Ms. Joan Kessner
Bechtel Hanford Inc.
3350 George Washington Way
Richland, WA 99352
MSIN: H0-25

Reference: **P.O. #630**
Eberline Services R3-03-116-7465, SDG H2115

Dear Ms. Kessner:

Enclosed is the data report for one solid sample designated under SAF No. B01-052 received at Eberline Services on March 26, 2003. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package



Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2115 was composed of one solid (soil) sample designated under SAF No. B01-052 with a Project Designation of: 100 B/C Area Effluent Pipeline & Proximity Site Remediation.

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 BHI via e-Fax on April 2, 2003. The electronic data deliverable was transmitted to BHI via e-mail on April 2, 2003

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

The LCS and method blank were not scaled to the nominal aliquot. No problems were encountered during the course of the analyses.

2.2 Isotopic Uranium Analyses

The LCS and method blank were not scaled to the nominal aliquot. No problems were encountered during the course of the analyses.

2.3 Isotopic Plutonium Analyses

The LCS and method blank were not scaled to the nominal aliquot. No problems were encountered during the course of the analyses.

2.4 Americium-241 Analyses

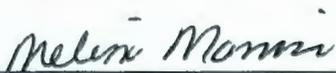
The LCS and method blank were not scaled to the nominal aliquot. No problems were encountered during the course of the analyses.

2.5 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

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."



Melissa C. Mannion
Program Manager



Date

EBRLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2115

SDG 7465
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2115

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

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Melissa Mann
Prepared by

Melissa Mann
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 04/02/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2115

SDG 7465
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2115

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

Page 1

SUMMARY DATA SECTION

Page 1

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/02/03

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2115

SDG 7465
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2115

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.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2115

SDG 7465
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2115

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J00JD6	100 BC Pipe. Deep Zones	SOLID		R303116-01	B01-052	B01-052-143	03/19/03 09:37
Method Blank		SOLID		R303116-03	B01-052		
Lab Control Sample		SOLID		R303116-02	B01-052		
Duplicate (R303116-01)	100 BC Pipe. Deep Zones	SOLID		R303116-04	B01-052		03/19/03 09:37

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 04/02/03

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2115

SDG 7465
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2115

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7465	B01-052-143	J00JD6	SOLID	89.5	599.1 g		03/26/03 7	R303116-01	7465-001
		Method Blank	SOLID					R303116-03	7465-003
		Lab Control Sample	SOLID					R303116-02	7465-002
		Duplicate (R303116-01)	SOLID	89.5	599.1 g		03/26/03 7	R303116-04	7465-004

Lab id EBRLME
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 04/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2115

SDG 7465
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2115

TEST MATRIX	METHOD	PREPARATION ERROR BATCH	PREPARATION ERROR			PLANCHETS ANALYZED			QUALI- FIERS
			2σ %	CLIENT	MORE	RE	BLANK	LCS	
Alpha Spectroscopy									
AM	SOLID	Americium 241 in Soil	7043-190	5.0	1		1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	7043-190	5.0	1		1	1	1/1
U	SOLID	Uranium, Isotopic in Soil	7043-190	5.0	1		1	1	1/1
Beta Counting									
SR	SOLID	Total Strontium in Soil	7043-190	10.0	1		1	1	1/1
Gamma Spectroscopy									
GAM	SOLID	Gamma Scan	7043-190	15.0	1		1	1	1/1

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 04/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2115

SDG 7465
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2115

CLIENT SAMPLE ID	LAB SAMPLE ID				SUF-					
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
CUSTODY	SAF No	RECEIVED								
J00JD6		R303116-01	7465-001	AM		04/01/03	04/02/03	MCM	Americium 241 in Soil	
100 BC Pipe. Deep Zones	SOLID	03/19/03	7465-001	GAM		03/31/03	04/02/03	MCM	Gamma Scan	
B01-052-143	B01-052	03/26/03	7465-001	PU		04/01/03	04/02/03	MCM	Plutonium, Isotopic in Solids	
			7465-001	SR		04/01/03	04/02/03	MCM	Total Strontium in Soil	
			7465-001	U		03/31/03	04/02/03	MCM	Uranium, Isotopic in Soil	
Method Blank		R303116-03	7465-003	AM		04/01/03	04/02/03	MCM	Americium 241 in Soil	
	SOLID		7465-003	GAM		03/31/03	04/02/03	MCM	Gamma Scan	
	B01-052		7465-003	PU		04/01/03	04/02/03	MCM	Plutonium, Isotopic in Solids	
			7465-003	SR		04/01/03	04/02/03	MCM	Total Strontium in Soil	
			7465-003	U		03/31/03	04/02/03	MCM	Uranium, Isotopic in Soil	
Lab Control Sample		R303116-02	7465-002	AM		04/01/03	04/02/03	MCM	Americium 241 in Soil	
	SOLID		7465-002	GAM		03/31/03	04/02/03	MCM	Gamma Scan	
	B01-052		7465-002	PU		04/01/03	04/02/03	MCM	Plutonium, Isotopic in Solids	
			7465-002	SR		04/01/03	04/02/03	MCM	Total Strontium in Soil	
			7465-002	U		03/31/03	04/02/03	MCM	Uranium, Isotopic in Soil	
Duplicate (R303116-01)		R303116-04	7465-004	AM		04/01/03	04/02/03	MCM	Americium 241 in Soil	
100 BC Pipe. Deep Zones	SOLID	03/19/03	7465-004	GAM		03/31/03	04/02/03	MCM	Gamma Scan	
B01-052		03/26/03	7465-004	PU		04/01/03	04/02/03	MCM	Plutonium, Isotopic in Solids	
			7465-004	SR		04/01/03	04/02/03	MCM	Total Strontium in Soil	
			7465-004	U		03/31/03	04/02/03	MCM	Uranium, Isotopic in Soil	

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	B01-052	Americium 241 in Soil	AMCHISO_IE_PLATE_AEA	1			1	1	1		4
GAM	B01-052	Gamma Scan	GAMMA_GS	1			1	1	1		4
PU	B01-052	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1		4
SR	B01-052	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1		4
U	B01-052	Uranium, Isotopic in Soil	UIISO_PLATE_AEA	1			1	1	1		4
TOTALS				5			5	5	5		20

Lab Id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/02/03

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2115

R303116-03

Method Blank

METHOD BLANK

SDG <u>7465</u>	Client/Case no <u>Hanford</u>	<u>SDG H2115</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R303116-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7465-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B01-052</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.043	0.13	0.18	1.0	U	SR
Uranium 233/234	U-233/234	0.019	0.038	0.072	1.0	U	U
Uranium 235	15117-96-1	0	0.023	0.087	1.0	U	U
Uranium 238	U-238	0	0.019	0.072	1.0	U	U
Plutonium 238	13981-16-3	-0.013	0.025	0.097	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.025	0.097	1.0	U	PU
Americium 241	14596-10-2	0.009	0.056	0.10	1.0	U	AM
Potassium 40	13966-00-2	U		4.2		U	GAM
Cobalt 60	10198-40-0	U		<u>0.31</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>0.28</u>	0.10	U	GAM
Radium 226	13982-63-3	U		0.66		U	GAM
Radium 228	15262-20-1	U		1.3		U	GAM
Europium 152	14683-23-9	U		<u>0.74</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>1.1</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.56</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		0.34		U	GAM
Thorium 232	TH-232	U		1.3		U	GAM
Uranium 235	15117-96-1	U		0.73		U	GAM
Uranium 238	U-238	U		39		U	GAM
Americium 241	14596-10-2	U		0.61		U	GAM

100 B/C Area Effluent Pipe. & Prox.

QC-BLANK 44187

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP #2115

R303116-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7465</u> Contact <u>Melissa C. Marnion</u> Lab sample id <u>R303116-02</u> Dept sample id <u>7465-002</u>	Client/Case no <u>Hanford</u> SDG <u>H2115</u> Contract <u>No. 630</u> Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>B01-052</u>
---	--

ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ LMTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST	pCi/g	pCi/g	%	(TOTAL)	LIMITS
Total Strontium	23.6	0.56	0.19	1.0	SR	22.2	0.89	106	83-117	80-120
Uranium 233/234	9.19	0.83	0.40	1.0	U	9.66	0.39	95	84-116	80-120
Uranium 235	7.64	0.74	0.086	1.0	U	7.85	0.31	97	83-117	80-120
Uranium 238	10.4	0.90	0.39	1.0	U	10.5	0.42	99	84-116	80-120
Plutonium 238	13.4	1.2	0.089	1.0	PU	13.4	0.54	100	83-117	80-120
Plutonium 239/240	14.8	1.3	0.089	1.0	PU	14.5	0.58	102	83-117	80-120
Americium 241	10.4	0.89	0.12	1.0	AM	10.5	0.42	99	84-116	80-120
Cobalt 60	93.9	4.8	<u>2.1</u>	0.050	GAM	99.1	4.0	95	77-123	80-120
Cesium 137	95.0	4.0	<u>2.5</u>	0.10	GAM	94.4	3.8	101	76-124	80-120

100 B/C Area Effluent Pipe. & Prox.

QC-LCS 44186

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LCS
 Version 3.06
 Report date 04/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2115

R303116-04

J00JD6

DUPLICATE

SDG <u>7465</u> Contact <u>Melissa C. Marnion</u> DUPLICATE Lab sample id <u>R303116-04</u> Dept sample id <u>7465-004</u> % solids <u>89.5</u>	ORIGINAL Lab sample id <u>R303116-01</u> Dept sample id <u>7465-001</u> Received <u>03/26/03</u> % solids <u>89.5</u>	Client/Case no <u>Hanford</u> SDG <u>H2115</u> Contract No. <u>630</u> Client sample id <u>J00JD6</u> Location/Matrix <u>100 BC Pipe, Deep Zones SOLID</u> Collected/Weight <u>03/19/03 09:37 599.1 g</u> Custody/SAF No <u>B01-052-143 B01-052</u>
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ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Strontium	590	25	<u>8.3</u>	1.0		SR	574	12	<u>3.7</u>		3	22	
Uranium 233/234	3.12	2.7	<u>3.4</u>	1.0	U	U	2.80	2.8	<u>3.6</u>	U	-		
Uranium 235	1.08	1.1	<u>4.1</u>	1.0	U	U	0.565	1.1	<u>4.3</u>	U	-		
Uranium 238	3.12	2.7	<u>3.4</u>	1.0	U	U	0.467	0.93	<u>3.6</u>	U	-		
Plutonium 238	23.9	8.6	<u>5.4</u>	1.0		PU	19.0	7.3	<u>4.6</u>		23	80	
Plutonium 239/240	399	45	<u>5.4</u>	1.0		PU	406	42	<u>4.6</u>		2	25	
Americium 241	294	38	<u>10</u>	1.0		AM	292	39	<u>7.8</u>		1	30	
Potassium 40	U		<u>83</u>		U	GAM	U		<u>71</u>	U	-		
Cobalt 60	924	18	<u>13</u>	0.050		GAM	984	14	<u>9.1</u>		6	32	
Cesium 137	12000	40	<u>25</u>	0.10		GAM	12800	30	<u>15</u>		6	32	
Radium 226	U		<u>27</u>		U	GAM	U		<u>19</u>	U	-		
Radium 228	U		<u>63</u>		U	GAM	U		<u>44</u>	U	-		
Europium 152	8510	58	<u>54</u>	0.10		GAM	8150	44	<u>39</u>		4	32	
Europium 154	1890	52	<u>45</u>	0.10		GAM	2000	41	<u>32</u>		6	32	
Europium 155	U		<u>130</u>	0.10	U	GAM	U		<u>110</u>	U	-		
Thorium 228	U		<u>16</u>		U	GAM	U		<u>11</u>	U	-		
Thorium 232	U		<u>63</u>		U	GAM	U		<u>44</u>	U	-		
Uranium 235	U		<u>42</u>		U	GAM	U		<u>25</u>	U	-		
Uranium 238	U		<u>2200</u>		U	GAM	U		<u>2100</u>	U	-		
Americium 241	U		<u>330</u>		U	GAM	U		<u>330</u>	U	-		

100 B/C Area Effluent Pipe. & Prox.

OC-DUP#1 44188

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2115

R303116-01

J00JD6

DATA SHEET

SDG <u>7465</u>	Client/Case no <u>Hanford</u>	<u>SDG H2115</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R303116-01</u>	Client sample id <u>J00JD6</u>	
Dept sample id <u>7465-001</u>	Location/Matrix <u>100 BC Pipe, Deep Zones SOLID</u>	
Received <u>03/26/03</u>	Collected/Weight <u>03/19/03 09:37 599.1 g</u>	
% solids <u>89.5</u>	Custody/SAF No <u>B01-052-143 B01-052</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	574	12	<u>3.7</u>	1.0		SR
Uranium 233/234	U-233/234	2.80	2.8	<u>3.6</u>	1.0	U	U
Uranium 235	15117-96-1	0.565	1.1	<u>4.3</u>	1.0	U	U
Uranium 238	U-238	0.467	0.93	<u>3.6</u>	1.0	U	U
Plutonium 238	13981-16-3	19.0	7.3	<u>4.6</u>	1.0		PU
Plutonium 239/240	PU-239/240	406	42	<u>4.6</u>	1.0		PU
Americium 241	14596-10-2	292	39	<u>7.8</u>	1.0		AM
Potassium 40	13966-00-2	U		71		U	GAM
Cobalt 60	10198-40-0	984	14	<u>9.1</u>	0.050		GAM
Cesium 137	10045-97-3	12800	30	<u>15</u>	0.10		GAM
Radium 226	13982-63-3	U		19		U	GAM
Radium 228	15262-20-1	U		44		U	GAM
Europium 152	14683-23-9	8150	44	<u>39</u>	0.10		GAM
Europium 154	15585-10-1	2000	41	<u>32</u>	0.10		GAM
Europium 155	14391-16-3	U		<u>110</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		11		U	GAM
Thorium 232	TH-232	U		44		U	GAM
Uranium 235	15117-96-1	U		25		U	GAM
Uranium 238	U-238	U		2100		U	GAM
Americium 241	14596-10-2	U		330		U	GAM

100 B/C Area Effluent Pipe. & Prox.

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/02/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2115

Test AM Matrix SOLID
 SDG 7465
 Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H2115

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Americium 241
Preparation batch 7043-190					
J00JD6	R303116-01	7465-001			292
BLK (QC ID=44187)	R303116-03	7465-003			U
LCS (QC ID=44186)	R303116-02	7465-002			ok
Duplicate (R303116-01)	R303116-04	7465-004			ok

Nominal values and limits from method RDLs (pCi/g) 1.0
 100 B/C Area Effluent Pipe. & Prox.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF COUNT %	MIN KEV	FWHM KEV	DRIFT KEV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7043-190 2σ prep error 5.0 % Reference Lab Notebook 7043 pg. 190																
J00JD6	R303116-01			<u>7.8</u>	<u>0.0100</u>			91	145				13	04/01/03	04/01	SS-016
BLK (QC ID=44187)	R303116-03			0.10	1.00			92	150					04/01/03	04/01	SS-032
LCS (QC ID=44186)	R303116-02			0.12	1.00			91	150					04/01/03	04/01	SS-031
Duplicate (R303116-01)	R303116-04			<u>10</u>	<u>0.0100</u>			88	154				13	04/01/03	04/01	SS-039
	(QC ID=44188)															

Nominal values and limits from method 1.0 1.00 20-105 100 100 180

PROCEDURES	REFERENCE	AMCNISO_IE_PLATE_AEA
CP-060		Soil Preparation, rev 4
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 2
CP-963		Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 3
CP-008		Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA <u>4.5</u> ± <u>10</u>
FOR 4 SAMPLES	YIELD <u>90</u> ± <u>3</u>

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 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 04/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2115

Test PU Matrix SOLID
SDG 7465
Contact Melissa C. Mannion

METHOD SUMMARY
PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2115

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Plutonium 238	Plutonium 239/240
------------------	---------------	----------	----------	----------	---------------	-------------------

Preparation batch 7043-190

J00JD6	R303116-01	7465-001			19.0	406
BLK (QC ID=44187)	R303116-03	7465-003			U	U
LCS (QC ID=44186)	R303116-02	7465-002			ok	ok
Duplicate (R303116-01)	R303116-04	7465-004			ok	ok

Nominal values and limits from method RDLs (pCi/g) 1.0 1.0
100 B/C Area Effluent Pipe. & Prox.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF COUNT %	MIN	FUHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
------------------	---------------	----------	----------	---------------	--------	----------	------------	---------	-------------	-----	----------	-----------	-----------	----------------	------	----------

Preparation batch 7043-190 2σ prep error 5.0 % Reference Lab Notebook 7043 pg. 190

J00JD6	R303116-01	4.6		0.0200				77	149				13	04/01/03	04/01	SS-011
BLK (QC ID=44187)	R303116-03	0.097		1.00				69	154					04/01/03	04/01	SS-043
LCS (QC ID=44186)	R303116-02	0.089		1.00				76	154					04/01/03	04/01	SS-042
Duplicate (R303116-01) (QC ID=44188)	R303116-04	5.4		0.0200				60	154				13	04/01/03	04/01	SS-044

Nominal values and limits from method 1.0 1.00 20-105 100 100 180

PROCEDURES	REFERENCE	PUIISO_PLATE_AEA
CP-060		Soil Preparation, rev 4
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 2
CP-941		Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 1
CP-008		Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD	MDA	2.5 ± 5.7
FOR 4 SAMPLES	YIELD	70 ± 16

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Protocol Hanford
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Form DVD-CNS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2115

Test SR Matrix SOLID
 SDG 7465
 Contact Melissa C. Mernion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
 BETA COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H2115

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7043-190					
J00JD6	R303116-01			7465-001	57%
BLK (QC ID=44187)	R303116-03			7465-003	U
LCS (QC ID=44186)	R303116-02			7465-002	ok
Duplicate (R303116-01)	R303116-04			7465-004	ok
Nominal values and limits from method					
100 B/C Area Effluent Pipe. & Prox.				RDLs (pCi/g)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIO g	PREP FAC	DILU-TION	YIELD %	EFF COUNT %	MIN	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANALYZED	DETECTOR
Preparation batch 7043-190 2σ prep error 10.0 % Reference Lab Notebook 7043 pg. 190																
J00JD6	R303116-01			<u>3.7</u>	<u>0.0500</u>			83	400				13	04/01/03	04/01	GRB-222
BLK (QC ID=44187)	R303116-03			0.18	1.00			87	400					04/01/03	04/01	GRB-224
LCS (QC ID=44186)	R303116-02			0.19	1.00			85	400					04/01/03	04/01	GRB-223
Duplicate (R303116-01)	R303116-04			<u>8.3</u>	<u>0.0500</u>			88	100				13	04/01/03	04/01	GRB-229
(QC ID=44188)																
Nominal values and limits from method				1.0	1.00			30-105	100				180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
CP-060		Soil Preparation, rev 4
CP-071		Soil Dissolution, > 1.0g Aliquot, rev 2
CP-381		Strontium in Solids, rev 1

AVERAGES ± 2 SD	MDA	<u>3.1</u>	±	<u>7.7</u>
FOR 4 SAMPLES	YIELD	<u>86</u>	±	<u>4</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2115

Test GAM Matrix SOLID
 SDG 7465
 Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN
 GAMMA SPECTROSCOPY

Client Manford
 Contract No. 630
 Contract SDG H2115

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Cobalt 60	Cesium 137
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Preparation batch 7043-190

J00J06	R303116-01	7465-001		984		12800
BLK (QC ID=44187)	R303116-03	7465-003		U		U
LCS (QC ID=44186)	R303116-02	7465-002		ok		ok
Duplicate (R303116-01)	R303116-04	7465-004		ok		ok

Nominal values and limits from method RDLs (pCi/g) 0.050 0.10
 100 B/C Area Effluent Pipe. & Prox.

METHOD PERFORMANCE

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

Preparation batch 7043-190 2σ prep error 15.0 % Reference Lab Notebook 7043 pg. 190

J00J06	R303116-01			<u>120</u>	10.8			<u>86</u>					12	03/28/03	03/31	SP,04,00
BLK (QC ID=44187)	R303116-03			<u>2.8</u>	10.8			100						03/28/03	03/31	SP,04,00
LCS (QC ID=44186)	R303116-02			<u>2.1</u>	10.8			<u>91</u>						03/28/03	03/31	SP,03,00
Duplicate (R303116-01) (QC ID=44188)	R303116-04			<u>190</u>	10.8			<u>95</u>					12	03/28/03	03/31	SP,03,00

Nominal values and limits from method 0.050 10.8 100 180

PROCEDURES	REFERENCE	GAMMA_GS
CP-060		Soil Preparation, rev 4
CP-100		Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES ± 2 SD	MDA <u>79</u> ± <u>190</u>
FOR 4 SAMPLES	YIELD _____ ± _____

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SDG 7465
Contact Melissa C. Mannion

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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.

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SAMPLE DELIVERY GROUP H2115

SDG 7465
Contact Melissa C. Mannion

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Client Hanford
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Case no SDG H2115

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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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.

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 04/02/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2115

SDG 7465
 Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
 Contract No. 630
 Case no SDG H2115

METHOD SUMMARY

- * 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

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 04/02/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2115

SDG 7465
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2115

METHOD SUMMARY

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/02/03

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B01-052-143	Page 1 of 1
Collector D. Shea	Company Contact Dave Shea	Telephone No. 373-6425	Project Coordinator KESSNER, JH	Price Code	Data Turnaround	
Project Designation 100 B/C Area Effluent Pipeline & Proximity Site Remediation		Sampling Location 100 BC Pipelines deep zones	H215 (7465)	SAF No. B01-052	Air Quality <input type="checkbox"/> 7 days	
Ice Chest No. ERC 01 037	Field Logbook No. EL-1548-3	COA R100BC2600	Method of Shipment FED EX			
Shipped To TMA/RECRA		Offsite Property No. RSR 106955	Bill of Lading/Air Bill No. N/A			

POSSIBLE SAMPLE HAZARDS/REMARKS Possibly radiologically contaminated Special Handling and/or Storage	Preservation	None	None										
	Type of Container	G/P	G										
	No. of Container(s)	1	1										
	Volume	500mL	60mL										

SAMPLE ANALYSIS				See item (1) in Special Instructions	See item (2) in Special Instructions								
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Sample No.	Matrix *	Sample Date	Sample Time										
J00JD6	SOIL	3/19/03	0937	✓	✓								

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix * S=Soil SS=Soils/soot SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Solid DL=Dry Liquids T=Time WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From DWShea DWShea	Date/Time 3/19/03 1423	Received By/Stored In WDBC Sample RMSA	Date/Time 3/19/03 1423	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108 metastable, Uranium-238) (2) Isotopic Uranium, Americium-241; Isotopic Plutonium; Strontium-89,90 - Total Sr; Nickel-63 DWS 3/19/03 Personnel not available to relinquish samples from the 3728 Ref # 1A on 3.125.03				
Relinquished By/Removed From WDBC Sample RMSA	Date/Time 3/19/03 1823	Received By/Stored In DWShea DWShea	Date/Time 3/19/03 1823					
Relinquished By/Removed From DWShea DWShea	Date/Time 3/19/03 1808	Received By/Stored In Friden 1A	Date/Time 3/19/03 1808					
Relinquished By/Removed From REF 1A 32503	Date/Time 0830	Received By/Stored In SJOAL/Alph	Date/Time 32503 0830					
Relinquished By/Removed From SJOAL/Alph	Date/Time 32503 0830	Received By/Stored In FED EX	Date/Time					
Relinquished By/Removed From FED EX	Date/Time	Received By/Stored In Lue C	Date/Time 1003-2803					

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B01-052-143	Page 1 of 1
Collector D. Shea	Company Contact Dave Shea	Telephone No. 373-6425	Project Coordinator KESSNER, JH		Price Code	Data Turnaround
Project Designation 100 B/C Area Effluent Pipeline & Proximity Site Remediation		Sampling Location 100 BC Pipelines deep zones	H2115 (7465)		SAF No. B01-052	Air Quality 11 7days
Ice Chest No. ERC9F-051	Field Logbook No. EL-1548-3	COA R100BC2600	Method of Shipment 80V VEHICLE			
Shipped To AD 32403 RCF Mail - 32503		Offsite Property No. N/A	Bill of Lading/Air Bill No. N/A			

POSSIBLE SAMPLE HAZARDS/REMARKS Possibly radiologically contaminated Special Handling and/or Storage	Preservation	None	None										
	Type of Container	G/P	G										
	No. of Container(s)	1	1										
	Volume	500mL	60mL	500ml									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions										
Sample No.	Matrix *	Sample Date	Sample Time										
J00JD6	SOIL	3/17/03	0937										

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix * S=Soil SS=Soil/Screen SD=Soil/Dredge W=Water O=Oil A=Air DS=Drum Spill DL=Drum Liquids T=Traces W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From DWShea DWShea	Date/Time 3/19/03 1423	Received By/Stored In WDBC Sample RMSA	Date/Time 3/19/03 1423	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108 metastable, Uranium-238) (2) Isotopic Uranium; Americium-241; Isotopic Plutonium; Strontium-89,90 - Total Sr; Nickel-63 DWS 3/19/03 QUALITATIVE ONLY Personnel not available to relinquish samples from the 3728 Ref # 1A on 3/24/03				
Relinquished By/Removed From WDBC Sample RMSA	Date/Time 3/19/03 1823	Received By/Stored In DWShea DWShea	Date/Time 3/19/03 1823					
Relinquished By/Removed From DWShea DWShea	Date/Time 3/19/03 1808	Received By/Stored In Fridger 1A	Date/Time 3/19/03 1808					
Relinquished By/Removed From REF 1A 3728	Date/Time 3-24-03 0940	Received By/Stored In K.S. Eliason/Rubin	Date/Time 3-24-03/0940					
Relinquished By/Removed From CW Lander	Date/Time 3-25-03/0905	Received By/Stored In SEALE	Date/Time 32503 0805					
Relinquished By/Removed From FEO ex	Date/Time	Received By/Stored In C J	Date/Time 1000 3-26-03					

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



ANALYTICAL SERVICES GROUP

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: BHI Date/Time received 1000 3-26-03
 CoC No. B01052-143
 Container I.D. No. ERC-01-037 Requested TAT (Days) 7 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
 7. Number of containers per sample: 2 (Or see CoC)
 8. Paperwork agrees with samples? Yes [] No []
 9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
 10. Samples are: In good condition [] Leaking [] Broken Container [] Missing []
 11. Samples are: Preserved [] Not preserved [] Preservative
 12. Describe any anomalies:

 13. Was P.M. notified of any anomalies? Yes [] No [] Date
 14. Received by [Signature] Date: 3-26-03 Time: 1000

Customer Sample				Customer Sample			
No.	cpm	mR/hr	wipe	No.	cpm	mR/hr	wipe
J00JD6	3400	0.015					

Ion Chamber Ser. No. 1198 Calibration date 10-25-02
 Alpha Meter Ser. No. Calibration date
 Beta/Gamma Meter Ser. No. 99574 Calibration date 12-12-02