



August 24, 2007

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Avenue
Richland, WA 99352

Reference: **P.O. #630**
Eberline Services R7-07-066-7663, SDG H3542

Dear Mr. Trent:

Enclosed is the data report for one solid (soil) sample designated under SAF No. F07-043 received at Eberline Services on July 12, 2007. 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
Senior Program Manager

MCM/njv

Enclosure: Data Package

RECEIVED
MAY 06 2008
EDMC



0000001

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2631 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H3542 was composed of one solid (soil) samples designated under SAF No. F07-043 with a Project Designation of: 216-A-2 and 216-A-21 Characterization Sampling and Analysis-Soil.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analysis

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analysis

No problems were encountered during the course of the analyses.

2.5 Iodine-129 Analysis

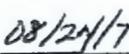
No problems were encountered during the course of the analyses.

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."



Melissa C. Mannion
Senior Program Manager



Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H3542

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

T A B L E O F C O N T E N T S	
About this section	1
Sample Summaries	3
Prep Batch Summary	5
Work Summary	6
Method Blanks	7
Lab Control Samples	8
Duplicates	9
Data Sheets	10
Method Summaries	11
Report Guides	16
End of Section	30

Melissa Mannion
Prepared by
Melissa Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. 630

Case no SDG H3542

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 EBRLINE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 08/24/07

0000003

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3542

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

Page 2

SUMMARY DATA SECTION

Page 2

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/24/07

0000004

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3542

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R707066-01	B1NRH0	C5515, I-001 13'-15.5'	SOLID		F07-043	F07-043-005	06/12/07 13:30
R707066-02	Lab Control Sample		SOLID		F07-043		
R707066-03	Method Blank		SOLID		F07-043		
R707066-04	Duplicate (R707066-01)	C5515, I-001 13'-15.5'	SOLID		F07-043		06/12/07 13:30

LAB SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id EBERLINE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 08/24/07

0000005

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H3542

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7663	F07-043-005	B1NRH0	SOLID	93.9	85 g		07/12/07 30	R707066-01	7663-001
		Method Blank	SOLID					R707066-03	7663-003
		Lab Control Sample	SOLID					R707066-02	7663-002
		Duplicate (R707066-01)	SOLID	93.9	85 g		07/12/07 30	R707066-04	7663-004

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

0000006

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 08/24/07

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H3542

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED			QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE		BLANK
Beta Counting									
TC	SOLID	Technetium 99 in Solids	6116-095	10.0	1		1	1	1/1
Gamma Spectroscopy									
I	SOLID	Iodine 129 in Solids	6116-095	10.0	1		1	1	1/1
Liquid Scintillation Counting									
C	SOLID	Carbon 14 in Solids	6116-095	10.0	1		1	1	1/1
H	SOLID	Tritium in Solids	6116-095	10.0	1		1	1	1/1
NI_L	SOLID	Nickel 63 in Solids	6116-095	10.0	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.

0000007

Lab id EBRIME
 Protocol Hanford
 Version Ver 1.0
 Form DVD-FBS
 Version 3.06
 Report date 08/24/07

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3542

LAB SAMPLE	CLIENT SAMPLE ID									
COLLECTED	LOCATION	MATRIX		SUF-						
RECEIVED	CUSTODY	SAF No	PLANCHET	TRST	FIX	ANALYZED	REVIEWED	BY	METHOD	
R707066-01	B1NRH0		7663-001	C		08/18/07	08/22/07	BW	Carbon 14 in Solids	
06/12/07	C5515, I-001 13'-15.5'	SOLID	7663-001	H		08/18/07	08/22/07	BW	Tritium in Solids	
07/12/07	F07-043-005	F07-043	7663-001	I		08/21/07	08/22/07	BW	Iodine 129 in Solids	
			7663-001	NI_L		08/09/07	08/22/07	BW	Nickel 63 in Solids	
			7663-001	TC		08/18/07	08/20/07	BW	Technetium 99 in Solids	
R707066-02	Lab Control Sample		7663-002	C		08/18/07	08/22/07	BW	Carbon 14 in Solids	
		SOLID	7663-002	H		08/18/07	08/22/07	BW	Tritium in Solids	
		F07-043	7663-002	I		08/21/07	08/22/07	BW	Iodine 129 in Solids	
			7663-002	NI_L		08/09/07	08/22/07	BW	Nickel 63 in Solids	
			7663-002	TC		08/17/07	08/20/07	BW	Technetium 99 in Solids	
R707066-03	Method Blank		7663-003	C		08/18/07	08/22/07	BW	Carbon 14 in Solids	
		SOLID	7663-003	R		08/18/07	08/22/07	BW	Tritium in Solids	
		F07-043	7663-003	I		08/22/07	08/22/07	BW	Iodine 129 in Solids	
			7663-003	NI_L		08/09/07	08/22/07	BW	Nickel 63 in Solids	
			7663-003	TC		08/17/07	08/20/07	BW	Technetium 99 in Solids	
R707066-04	Duplicate (R707066-01)		7663-004	C		08/18/07	08/22/07	BW	Carbon 14 in Solids	
06/12/07	C5515, I-001 13'-15.5'	SOLID	7663-004	H		08/18/07	08/22/07	BW	Tritium in Solids	
07/12/07		F07-043	7663-004	I		08/22/07	08/22/07	BW	Iodine 129 in Solids	
			7663-004	NI_L		08/09/07	08/22/07	BW	Nickel 63 in Solids	
			7663-004	TC		08/17/07	08/20/07	BW	Technetium 99 in Solids	

COUNTS OF TESTS BY SAMPLE TYPE

TRST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
C	F07-043	Carbon 14 in Solids	C14_COX_LSC	1			1	1	1		4
H	F07-043	Tritium in Solids	TRITIUM_COX_LSC	1			1	1	1		4
I	F07-043	Iodine 129 in Solids	I129_SEP_LEPS_GS	1			1	1	1		4
NI_L	F07-043	Nickel 63 in Solids	NI63_LSC	1			1	1	1		4
TC	F07-043	Technetium 99 in Solids	TC99_TR_SEP_GPC	1			1	1	1		4
TOTALS				5			5	5	5		20

0000008

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 08/24/07

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3542

7663-003

Method Blank

METHOD BLANK

SDG <u>7663</u>	Client/Case no <u>Hanford</u>	<u>SDG H3542</u>
Contact <u>Melissa C. Mannon</u>	Contract No. <u>630</u>	
Lab sample id <u>R707066-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7663-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F07-043</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-2.29	2.6	4.62	400	U	H
Carbon 14	14762-75-5	1.89	2.2	3.64	50.0	U	C
Nickel 63	13981-37-8	-1.59	1.9	3.26	30.0	U	NI_L
Technetium 99	14133-76-7	0.064	0.22	0.590	15.0	U	TC
Iodine 129	15046-84-1	-0.378	0.45	1.03	2.00	U	I

216A2/216A21 CharactrztnSam&Ana-Soil

QC-BLANK #62187

0000009

Lab id <u>EBERLINE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>08/24/07</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

7663-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7663</u>	Client/Case no <u>Hanford</u>	<u>SDG H3542</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R707056-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7663-002</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F07-043</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LIMS (TOTAL)	PROTOCOL LIMITS
Tritium	646	13	4.27	400		H	642	26	101	83-117	80-120
Carbon 14	1640	15	3.73	50.0		C	1600	64	102	83-117	80-120
Nickel 63	216	5.9	3.30	30.0		NI_L	266	11	<u>81</u>	86-114	80-120
Technetium 99	113	2.8	0.682	15.0		TC	120	4.8	94	84-116	80-120
Iodine 129	140	1.1	1.48	2.00		I	127	5.1	110	82-118	80-120

216A2/216A21 CharactrzttnSam&Ana-Soil

QC-LCS #62186

0000010

Lab id <u>EERLINE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.05</u>
Report date <u>08/24/07</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

7663-004

B1NRH0

DUPLICATE

SDG <u>7663</u>	Client/Case no <u>Hanford</u>	SDG <u>H3542</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R707066-04</u>	Lab sample id <u>R707066-01</u>	Client sample id <u>B1NRH0</u>
Dept sample id <u>7663-004</u>	Dept sample id <u>7663-001</u>	Location/Matrix <u>C5515, I-001 13'-15.5' SOLID</u>
	Received <u>07/12/07</u>	Collected/Weight <u>06/12/07 13:30 85 g</u>
% solids <u>93.9</u>	% solids <u>93.9</u>	Custody/SAF No <u>F07-043-005 F07-043</u>

ANALYTE	DUPLICATE		MDA	RDL	QUALI- FIERS	TEST	ORIGINAL		MDA	QUALI- FIERS	RPD	3σ	DER
	pCi/g	2σ ERR (COUNT)					pCi/g	2σ ERR (COUNT)					
Tritium	-1.69	2.6	4.52	400	U	H	-1.02	2.6	4.49	U	-	0.4	
Carbon 14	0.660	2.1	3.55	50.0	U	C	1.66	2.1	3.54	U	-	0.7	
Nickel 63	-2.26	2.3	4.09	30.0	U	NI_L	-2.80	2.6	4.60	U	-	0.3	
Technetium 99	0.122	0.16	0.518	15.0	U	TC	0.068	0.23	0.520	U	-	0.4	
Iodine 129	0.232	0.56	1.27	2.00	U	I	-0.195	0.33	0.751	U	-	1.3	

216A2/216A21 CharacterztnSam&Ana-Soil

QC-DUP#1 62188

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 9

0000011

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>08/24/07</u>

EBERLINE SERVICES / RICHMOND
 SAMPLE DELIVERY GROUP H3542

7663-001

B1NRH0

DATA SHEET

SDG <u>7663</u>	Client/Case no <u>Hanford</u>	SDG <u>H3542</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R707066-01</u>	Client sample id <u>B1NRH0</u>	
Dept sample id <u>7663-001</u>	Location/Matrix <u>C5515, I-001 13'-15.5'</u>	<u>SOLID</u>
Received <u>07/12/07</u>	Collected/Weight <u>06/12/07 13:30</u>	<u>85 g</u>
% solids <u>93.9</u>	Custody/SAF No <u>F07-043-005</u>	<u>F07-043</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-1.02	2.6	4.49	400	U	H
Carbon 14	14762-75-5	1.66	2.1	3.54	50.0	U	C
Nickel 63	13981-37-8	<u>-2.80</u>	2.6	4.60	30.0	U	NI_L
Technetium 99	14133-76-7	0.068	0.23	0.520	15.0	U	TC
Iodine 129	15046-84-1	-0.195	0.33	0.751	2.00	U	I

216A2/216A21 CharactrzttnSam&Ana-Soil

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>08/24/07</u>

0000012

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

Test TC Matrix SOLID
 SDG 7663
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS
 BETA COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H3542

RESULTS

LAB	RAW	SUF-			Technetium
SAMPLE ID	TRST FIX	PLANCHET	CLIENT SAMPLE ID		99

Preparation batch 6116-095

R707066-01	7663-001	B1NRH0		U
R707066-02	7663-002	Lab Control Sample		ok
R707066-03	7663-003	Method Blank		U
R707066-04	7663-004	Duplicate (R707066-01)		- U

Nominal values and limits from method RDLs (pCi/g) 15.0
 216A2/216A21 CharactrzttnSam&Ana-Soil

METHOD PERFORMANCE

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

Preparation batch 6116-095 2σ prep error 10.0 % Reference Lab Notebook #6116, pg. 95

R707066-01	B1NRH0		0.520	1.00			100		50			67	08/14/07	08/18	GRB-224
R707066-02	Lab Control Sample		0.682	1.00			104		50				08/14/07	08/17	GRB-226
R707066-03	Method Blank		0.590	1.00			93		50				08/14/07	08/17	GRB-227
R707066-04	Duplicate (R707066-01)		0.518	1.00			99		50			66	08/14/07	08/17	GRB-228

Nominal values and limits from method 15.0 1.00 20-105 50 180

PROCEDURES	REFERENCE	TC99_TR_SEP_GPC
SPP-061	Determination of Moisture Content in Solid Samples	rev 0
SPP-062	Sample Aliquoting, rev 0	
SPP-060	Soil Preparation, rev 0	
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-431	Technetium-99 Purification of Soil or Resin by	Extraction Chromatography, rev 2
CP-008	Heavy Element Electroplating, rev 9	

AVERAGES ± 2 SD	MDA	0.578 ± 0.155
FOR 4 SAMPLES	YIELD	99 ± 9

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 11

0000013

Lab id	<u>EBERLINE</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-LMS</u>
Version	<u>3.06</u>
Report date	<u>08/24/07</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

Test I Matrix SOLID
 SDG 7663
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H3542

LAB METHOD SUMMARY

IODINE 129 IN SOLIDS
 GAMMA SPECTROSCOPY

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Iodine 129

Preparation batch 6116-095

R707066-01	7663-001	BLNRH0	U
R707066-02	7663-002	Lab Control Sample	ok
R707066-03	7663-003	Method Blank	U
R707066-04	7663-004	Duplicate (R707066-01)	- U

Nominal values and limits from method RDLs (pCi/g) 2.00
 216A2/216A21 CharactrstnSam&Ana-Soil

METHOD PERFORMANCE

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

Preparation batch 6116-095 2σ prep error 10.0 % Reference Lab Notebook #6116, pg. 95

R707066-01	BLNRH0	0.751	1.00	79	1457	70	08/15/07	08/21	XSPEC-004
R707066-02	Lab Control Sample	1.48	1.00	83	1457		08/15/07	08/21	XSPEC-002
R707066-03	Method Blank	1.03	1.00	89	607		08/15/07	08/22	XSPEC-004
R707066-04	Duplicate (R707066-01)	1.27	1.00	80	608	71	08/15/07	08/22	XSPEC-002

Nominal values and limits from method 2.00 1.00 20-105 300 180

PROCEDURES	REFERENCE	I129_SEP_LEPS_GS
SPP-061		Determination of Moisture Content in Solid Samples rev 0
SPP-062		Sample Aliquoting, rev 0
SPP-060		Soil Preparation, rev 0
SPP-070		Soil Dissolution, < 1.0g Aliquot, rev 7
CP-024		Iodine-129, Sample Dissolution, rev 5
CP-530		Iodine-129 Purification, rev 1

AVERAGES ± 2 SD	MDA <u>1.13</u> ± <u>0.628</u>
FOR 4 SAMPLES	YIELD <u>83</u> ± <u>9</u>

METHOD SUMMARIES

Page 2

SUMMARY DATA SECTION

Page 12

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 08/24/07

0000014

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

Test C Matrix SOLID
 SDG 7663
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H3542

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

RESULTS

LAB RAW SUP-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Carbon 14

Preparation batch 6116-095

R707066-01	7663-001	B1NRHO	U
R707066-02	7663-002	Lab Control Sample	ok
R707066-03	7663-003	Method Blank	U
R707066-04	7663-004	Duplicate (R707066-01)	- U

Nominal values and limits from method RDLs (pCi/g) 50.0
 216A2/216A21 CharacteriztnSam&Ana-Soil

METHOD PERFORMANCE

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

Preparation batch 6116-095 2σ prep error 10.0 % Reference Lab Notebook #6116, pg. 95

R707066-01	B1NRHO	3.54	0.416	100	50	67	08/17/07	08/18	LSC-004
R707066-02	Lab Control Sample	3.73	0.400	100	50	08/17/07	08/18	LSC-004	
R707066-03	Method Blank	3.64	0.400	100	50	08/17/07	08/18	LSC-004	
R707066-04	Duplicate (R707066-01)	3.55	0.415	100	50	67	08/17/07	08/18	LSC-004

Nominal values and limits from method 50.0 0.400 10 180

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

AVERAGES ± 2 SD MDA 3.62 ± 0.178
 FOR 4 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

Page 3

SUMMARY DATA SECTION

Page 13

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 08/24/07

0000015

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

Test H Matrix SOLID
 SDG 7663
 Contact Melissa C. Marrison

Client Hanford
 Contract No. 630
 Contract SDG H3542

LAB METHOD SUMMARY

TRITIUM IN SOLIDS
 LIQUID SCINTILLATION COUNTING

RESULTS

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 6116-095					
R707066-01		7663-001	B1NRHO	U	
R707066-02		7663-002	Lab Control Sample	ok	
R707066-03		7663-003	Method Blank	U	
R707066-04		7663-004	Duplicate (R707066-01)	-	U
Nominal values and limits from method RDLs (pCi/g) 400					
216A2/216A21 CharactrstrnSam&Ana-Soil					

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6116-095 2σ prep error 10.0 % Reference Lab Notebook #6116, pg. 95															
R707066-01		B1NRHO	4.49	0.416			100					67	08/17/07	08/18	LSC-004
R707066-02		Lab Control Sample	4.27	0.400			100						08/17/07	08/18	LSC-004
R707066-03		Method Blank	4.62	0.400			100						08/17/07	08/18	LSC-004
R707066-04		Duplicate (R707066-01)	4.52	0.415			100					67	08/17/07	08/18	LSC-004
Nominal values and limits from method 400 0.400 25 180															

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

AVERAGES ± 2 SD MDA 4.48 ± 0.295
 FOR 4 SAMPLES YIELD 100 ± 0

Lab id EBRLINE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 08/24/07

0000016

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3542

Test NI L Matrix SOLID
 SDG 7663
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS
 LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H3542

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63
Preparation batch 6116-095				
R707066-01		7663-001	B1NRH0	U
R707066-02		7663-002	Lab Control Sample	<u>LOW</u>
R707066-03		7663-003	Method Blank	U
R707066-04		7663-004	Duplicate (R707066-01)	U
Nominal values and limits from method			RDLs (pCi/g)	30.0
216A2/216A21 CharactrstrnSamsAna-Soil				

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6116-095			2σ prep error 10.0 %		Reference Lab Notebook #6116, pg. 95										
R707066-01		B1NRH0	4.60	0.500			71		50			58	08/09/07	08/09	LSC-006
R707066-02		Lab Control Sample	3.30	0.500			97		50				08/09/07	08/09	LSC-006
R707066-03		Method Blank	3.26	0.500			98		50				08/09/07	08/09	LSC-006
R707066-04		Duplicate (R707066-01)	4.09	0.500			79		50			58	08/09/07	08/09	LSC-006
Nominal values and limits from method			30.0	0.500			30-105		25			180			

PROCEDURES	REFERENCE	NI63_LSC
SPP-061	Determination of Moisture Content in Solid Samples	rev 0
SPP-060	Soil Preparation, rev 0	
SPP-062	Sample Aliquoting, rev 0	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-281	Nickel-63 Purification By Extraction Chromatography, rev 2	

AVERAGES ± 2 SD	MDA <u>3.81</u> ± <u>1.30</u>
FOR 4 SAMPLES	YIELD <u>86</u> ± <u>27</u>

METHOD SUMMARIES

Page 5

SUMMARY DATA SECTION

Page 15

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 08/24/07

0000017

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3542

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.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 16

0000018

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3542

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.

0000019

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG H3542

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.

0000020

Lab id EBRINE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3542

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).

REPORT GUIDES

Page 4

SUMMARY DATA SECTION

Page 19

0000021

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. 630
 Case no SDG H3542

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.

0000022

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3542

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.

REPORT GUIDES

Page 6

SUMMARY DATA SECTION

Page 21

0000023

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG H3542

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.

0000024

Lab id EBRINE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG H3542

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.

REPORT GUIDES

Page 8

SUMMARY DATA SECTION

Page 23

0000025

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H3542

GUIDE, cont.

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.

REPORT GUIDES

Page 9

SUMMARY DATA SECTION

Page 24

0000026

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG H3542

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

0000027

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H3542

GUIDE, cont.

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.

REPORT GUIDES

Page 11

SUMMARY DATA SECTION

Page 26

000028

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3542

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'

0000029

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
 Contract No. 630
 Case no SDG H3542

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.

REPORT GUIDES

Page 13

SUMMARY DATA SECTION

Page 28

000030

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3542

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

Page 14

SUMMARY DATA SECTION

Page 29

0000031

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/24/07

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3542

SDG 7663

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H3542

GUIDE, cont.

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

Page 15

SUMMARY DATA SECTION

Page 30

0000032

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 08/24/07

Fluor Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F07-043-005	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Mokler <i>Connally</i>		COMPANY CONTACT Trent, SJ		TELEPHONE NO. 373-5869		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION C5515, I-001 - 13'-15.5"		PROJECT DESIGNATION 216-A-2 and 216-A-21 Characterization Sampling and Analysis - Soil		H3542 (7463)		PRICE CODE 8N DATA TURNAROUND 45 Days / 45 Days	
ICE CHEST NO. GRP-03-026		FIELD LOGBOOK NO.		COA 122868 ES3		METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. See PTR 14857		BILL OF LADING/AIR BILL NO. See PTR 14857			
MATRIX* A=Air DL=Drum L=Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION	None			
			TYPE OF CONTAINER	G/P			
			NO. OF CONTAINER(S)	1			
			VOLUME	60mL			
	SPECIAL HANDLING AND/OR STORAGE <i>Boo tu to BINRBY</i>		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B1NRH0	SOIL	6/12/07	1330	✓			
CHAIN OF POSSESSION				SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	(1) Tritium - H3; Carbon-14; Iodine-129; Nickel-63; Technetium-99 (Technetium-99)	
<i>D. Pauer</i>		6-12-07 1530	Site A2 REP		6-12-07 1510		
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME		
Site REP A2		6-25-07 1517	DC Connally		6-25-07 1517		
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME		
DC Connally		6-25-07 1647	M0745 REP		6-25-07 1640		
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME		
M0745 REP		JUL 11 2007 0840	M.A. Baechler		JUL 11 2007 0840		
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME		
M.A. Baechler		JUL 11 2007 0840	Fed Ex				
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME		
Fed Ex			MFM		07/12/07 9:30		
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	

0000000000



RICHMOND, CA LABORATORY
SAMPLE RECEIPT CHECKLIST

JK
7/12/07

Client: F. HANFORD City RICHMOND State WA
Date/Time received 07/12/07 9:30 CoC No. #07-043-005
Container I.D. No. 649-13-126 Requested TAT (Days) 45 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 S
- 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 *JK* Date: 07/12/07 Time: 11:30

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. _____ Calibration date _____
Alpha Meter Ser. No. _____ Calibration date _____
Beta/Gamma Meter Ser. No. _____ Calibration date _____

0000034