



EBERLINE SERVICES

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June 19, 2008

RECEIVED

JUN 23 2008

Mr. Steve Trent
Fluor Hanford Inc.
1200 Jadwin Avenue
Richland, WA 99352

Reference: **P.O. #33677**
Eberline Services R8-05-145-7094, SDG H3738

Dear Mr. Trent:

Enclosed is the report for three solid (soil) samples designated under SAF No. F08-031 received at Eberline Services on May 16, 2008. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

00000001

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H3738 was composed of three solid (soil) samples designated under SAF No. F08-031 with a Project Designation of: 216-B-55 Supplemental Characterization.

The samples were received as stated on the Chain-of-Custody documents. 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 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.3 Total Strontium 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 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses.

2.6 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.7 Neptunium-237 Analysis

Neptunium-237 activity greater than the sample MDA was observed in the QC blank sample; the error in the observed activity was 100% at 2σ . All field sample results were less than the respective sample specific MDA, and all MDA's were less than the RDL (1.0 pCi/g). The source of the activity was probably the QC LCS. No other problems were encountered during the course of the analyses.

2.8 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.9 Americium-241 Analysis

No problems were encountered during the course of the analyses.

2.10 Gamma Spectroscopy

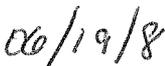
No problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

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



Melissa C. Mannion
Senior Program Manager



Date

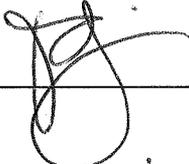
EBRLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H3738

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Prepared by 
Melissa Mannion
Reviewed by

Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
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Version 3.06
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3738

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

REPORT GUIDES

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3738

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

REPORT GUIDES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H3738

LAB SAMPLE SUMMARY

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R805145-01	B1VDT5	C6743, I-003	SOLID		F08-031	F08-031-167	05/12/08 13:10
R805145-02	B1VDT9	C6743, I-004	SOLID		F08-031	F08-031-173	05/13/08 07:35
R805145-03	B1VDV5	C6743, I-005	SOLID		F08-031	F08-031-181	05/13/08 10:00
R805145-04	Lab Control Sample		SOLID		F08-031		
R805145-05	Method Blank		SOLID		F08-031		
R805145-06	Duplicate (R805145-01)	C6743, I-003	SOLID		F08-031		05/12/08 13:10

LAB SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Case no SDG H3738

QC SUMMARY

BATCH	CHAIN OF	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE		LAB	DEPARTMENT
	CUSTODY						RECEIVED	COLL	SAMPLE ID	SAMPLE ID
094	F08-031-167	B1VDT5	SOLID	94.0	674 g		05/16/08	4	R805145-01	7094-001
	F08-031-173	B1VDT9	SOLID	97.0	828 g		05/16/08	3	R805145-02	7094-002
	F08-031-181	B1VDV5	SOLID	98.0	792 g		05/16/08	3	R805145-03	7094-003
		Method Blank	SOLID						R805145-05	7094-005
		Lab Control Sample	SOLID						R805145-04	7094-004
		Duplicate (R805145-01)	SOLID	94.0	674 g		05/16/08	4	R805145-06	7094-006

QC SUMMARY

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SAMPLE DELIVERY GROUP H3728

SDG 7094
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H3738

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS
Alpha Spectroscopy										
AM	SOLID	Americium 241 in Solids	6152-106	8.0	3			1	1	1/1
NP	SOLID	Neptunium in Solids	6152-106	14.8	3			1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	6152-106	8.0	3			1	1	1/1
TH	SOLID	Thorium, Isotopic in Solids	6152-106	8.0	3			1	1	1/1
U	SOLID	Uranium, Isotopic in Solids	6152-106	8.0	3			1	1	1/1
Beta Counting										
SR	SOLID	Total Strontium in Solids	6152-106	10.4	3			1	1	1/1
TC	SOLID	Technetium 99 in Solids	6152-106	13.2	3			1	1	1/1
Gamma Spectroscopy										
GAM	SOLID	Gamma Scan	6152-106	7.0	3			1	1	1/1
Liquid Scintillation Counting										
H	SOLID	Tritium in Solids	6152-106	10.0	3			1	1	1/1
NI_L	SOLID	Nickel 63 in Solids	6152-106	11.2	3			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.

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SAMPLE DELIVERY GROUP H3728

SDG 7094

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H3738

LAB WORK SUMMARY

AB SAMPLE	CLIENT SAMPLE ID				SUF-					
COLLECTED	LOCATION	MATRIX			FIX	ANALYZED	REVIEWED	BY	METHOD	
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST						
805145-01	B1VDT5		7094-001	AM		06/13/08	06/13/08	BW	Americium 241 in Solids	
05/12/08	C6743, I-003	SOLID	7094-001	GAM		06/04/08	06/06/08	CSS	Gamma Scan	
05/16/08	F08-031-167	F08-031	7094-001	H		06/05/08	06/10/08	BW	Tritium in Solids	
			7094-001	NI_L		06/13/08	06/18/08	BW	Nickel 63 in Solids	
			7094-001	NP		06/11/08	06/18/08	BW	Neptunium in Solids	
			7094-001	PU		06/13/08	06/13/08	BW	Plutonium, Isotopic in Solids	
			7094-001	SR		06/09/08	06/16/08	BW	Total Strontium in Solids	
			7094-001	TC		06/09/08	06/11/08	BW	Technetium 99 in Solids	
			7094-001	TH		06/13/08	06/16/08	BW	Thorium, Isotopic in Solids	
			7094-001	U		06/12/08	06/12/08	BW	Uranium, Isotopic in Solids	
805145-02	B1VDT9		7094-002	AM		06/13/08	06/13/08	BW	Americium 241 in Solids	
05/13/08	C6743, I-004	SOLID	7094-002	GAM		06/04/08	06/06/08	CSS	Gamma Scan	
05/16/08	F08-031-173	F08-031	7094-002	H		06/05/08	06/10/08	BW	Tritium in Solids	
			7094-002	NI_L		06/13/08	06/18/08	BW	Nickel 63 in Solids	
			7094-002	NP		06/11/08	06/18/08	BW	Neptunium in Solids	
			7094-002	PU		06/13/08	06/13/08	BW	Plutonium, Isotopic in Solids	
			7094-002	SR		06/09/08	06/16/08	BW	Total Strontium in Solids	
			7094-002	TC		06/10/08	06/11/08	BW	Technetium 99 in Solids	
			7094-002	TH		06/13/08	06/16/08	BW	Thorium, Isotopic in Solids	
			7094-002	U		06/12/08	06/12/08	BW	Uranium, Isotopic in Solids	
805145-03	B1VDV5		7094-003	AM		06/13/08	06/13/08	BW	Americium 241 in Solids	
05/13/08	C6743, I-005	SOLID	7094-003	GAM		06/04/08	06/06/08	CSS	Gamma Scan	
05/16/08	F08-031-181	F08-031	7094-003	H		06/05/08	06/10/08	BW	Tritium in Solids	
			7094-003	NI_L		06/13/08	06/18/08	BW	Nickel 63 in Solids	
			7094-003	NP		06/11/08	06/18/08	BW	Neptunium in Solids	
			7094-003	PU		06/13/08	06/13/08	BW	Plutonium, Isotopic in Solids	
			7094-003	SR		06/09/08	06/16/08	BW	Total Strontium in Solids	
			7094-003	TC		06/10/08	06/11/08	BW	Technetium 99 in Solids	
			7094-003	TH		06/13/08	06/16/08	BW	Thorium, Isotopic in Solids	
			7094-003	U		06/12/08	06/12/08	BW	Uranium, Isotopic in Solids	

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SAMPLE DELIVERY GROUP H3728

SDG 7094

Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford

Contract No. 630

Case no SDG H3738

AB SAMPLE	CLIENT SAMPLE ID				SUF-					
COLLECTED	LOCATION	MATRIX			FIX	ANALYZED	REVIEWED	BY	METHOD	
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST						
805145-04	Lab Control Sample		7094-004	AM		06/13/08	06/13/08	BW	Americium 241 in Solids	
		SOLID	7094-004	GAM		06/04/08	06/06/08	CSS	Gamma Scan	
		F08-031	7094-004	H		06/05/08	06/10/08	BW	Tritium in Solids	
			7094-004	NI_L		06/13/08	06/18/08	BW	Nickel 63 in Solids	
			7094-004	NP		06/11/08	06/18/08	BW	Neptunium in Solids	
			7094-004	PU		06/13/08	06/13/08	BW	Plutonium, Isotopic in Solids	
			7094-004	SR		06/09/08	06/16/08	BW	Total Strontium in Solids	
			7094-004	TC		06/09/08	06/11/08	BW	Technetium 99 in Solids	
			7094-004	TH		06/13/08	06/16/08	BW	Thorium, Isotopic in Solids	
			7094-004	U		06/12/08	06/12/08	BW	Uranium, Isotopic in Solids	
805145-05	Method Blank		7094-005	AM		06/13/08	06/13/08	BW	Americium 241 in Solids	
		SOLID	7094-005	GAM		06/04/08	06/06/08	CSS	Gamma Scan	
		F08-031	7094-005	H		06/05/08	06/10/08	BW	Tritium in Solids	
			7094-005	NI_L		06/13/08	06/18/08	BW	Nickel 63 in Solids	
			7094-005	NP		06/18/08	06/18/08	BW	Neptunium in Solids	
			7094-005	PU		06/13/08	06/13/08	BW	Plutonium, Isotopic in Solids	
			7094-005	SR		06/09/08	06/16/08	BW	Total Strontium in Solids	
			7094-005	TC		06/10/08	06/11/08	BW	Technetium 99 in Solids	
			7094-005	TH		06/13/08	06/16/08	BW	Thorium, Isotopic in Solids	
			7094-005	U		06/12/08	06/12/08	BW	Uranium, Isotopic in Solids	
805145-06	Duplicate (R805145-01)		7094-006	AM		06/13/08	06/13/08	BW	Americium 241 in Solids	
05/12/08	C6743, I-003	SOLID	7094-006	GAM		06/05/08	06/06/08	CSS	Gamma Scan	
05/16/08		F08-031	7094-006	H		06/05/08	06/10/08	BW	Tritium in Solids	
			7094-006	NI_L		06/13/08	06/18/08	BW	Nickel 63 in Solids	
			7094-006	NP		06/11/08	06/17/08	BW	Neptunium in Solids	
			7094-006	PU		06/13/08	06/13/08	BW	Plutonium, Isotopic in Solids	
			7094-006	SR		06/09/08	06/16/08	BW	Total Strontium in Solids	
			7094-006	TC		06/09/08	06/11/08	BW	Technetium 99 in Solids	
			7094-006	TH		06/13/08	06/16/08	BW	Thorium, Isotopic in Solids	
			7094-006	U		06/12/08	06/12/08	BW	Uranium, Isotopic in Solids	

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094

Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford

Contract No. 630

Case no SDG H3738

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	F08-031	Americium 241 in Solids	AMCMISO_IE_PLATE_AEA	3			1	1	1	6
GAM	F08-031	Gamma Scan	GAMMA_GS	3			1	1	1	6
H	F08-031	Tritium in Solids	TRITIUM_COX_LSC	3			1	1	1	6
NI_L	F08-031	Nickel 63 in Solids	NI63_LSC	3			1	1	1	6
NP	F08-031	Neptunium in Solids	NP237_LLE_PLATE_AEA	3			1	1	1	6
PU	F08-031	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	3			1	1	1	6
SR	F08-031	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	3			1	1	1	6
TC	F08-031	Technetium 99 in Solids	TC99_TR_SEP_GPC	3			1	1	1	6
TH	F08-031	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	3			1	1	1	6
U	F08-031	Uranium, Isotopic in Solids	UIISO_PLATE_AEA	3			1	1	1	6
TOTALS				30			10	10	10	60

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3728

7094-005

Method Blank

METHOD BLANK

SDG <u>7094</u>	Client/Case no <u>Hanford</u>	SDG <u>H3738</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R805145-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7094-005</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F08-031</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	1.65	3.8	3.13	400	U	H
Nickel 63	13981-37-8	-6.38	8.7	15.3	30.0	U	NI_L
Total Strontium	SR-RAD	-1.23	1.4	2.01	0.120	U	SR
Neptunium 237	13994-20-2	0.429	0.43	0.322	1.00		NP
Americium 241	14596-10-2	0	0.40	0.739	1.00	U	AM
Technetium 99	14133-76-7	0.390	0.69	2.08	12.0	U	TC
Thorium 228	14274-82-9	0.063	0.25	0.485	1.00	U	TH
Thorium 230	14269-63-7	0.127	0.25	0.484	1.00	U	TH
Thorium 232	TH-232	0	0.13	0.484	1.00	U	TH
Uranium 233/234	U-233/234	-0.054	0.11	0.410	1.00	U	U
Uranium 235	15117-96-1	0.195	0.26	0.496	1.00	U	U
Uranium 238	U-238	0	0.11	0.410	1.00	U	U
Plutonium 238	13981-16-3	0.058	0.35	0.716	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.12	0.446	1.00	U	PU
Beryllium 7	13966-02-4	U		0.209		U	GAM
Potassium 40	13966-00-2	U		0.439		U	GAM
Cobalt 60	10198-40-0	U		0.038	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.287		U	GAM
Antimony 125	14234-35-6	U		0.071		U	GAM
Cesium 134	13967-70-9	U		0.040		U	GAM
Cesium 137	10045-97-3	U		0.032	0.100	U	GAM
Europium 152	14683-23-9	U		0.086	0.100	U	GAM
Europium 154	15585-10-1	U		0.082	0.100	U	GAM
Europium 155	14391-16-3	U		0.066	0.100	U	GAM
Niobium 94	14681-63-1	U		0.031		U	GAM
Radium 226	13982-63-3	U		0.071		U	GAM
Radium 228	15262-20-1	U		0.144		U	GAM

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METHOD BLANKS

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3728

7094-005

Method Blank

BLANK, cont.

SDG <u>7094</u>	Client/Case no <u>Hanford</u>	<u>SDG H3738</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R805145-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7094-005</u>	Material/Matrix _____	<u>SOLID</u>
	SAF No <u>F08-031</u>	

QC-BLANK #65890

METHOD BLANKS

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

7094-004

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7094</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R805145-04</u> Dept sample id <u>7094-004</u>	Client/Case no <u>Hanford</u> SDG <u>H3738</u> Contract No. <u>630</u> Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>F08-031</u>
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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	
Tritium	594	19	6.04	400	H	612	24	97	84-116	80-120	
Nickel 63	1040	28	14.7	30.0	NI_L	1100	44	95	83-117	80-120	
Total Strontium	99.4	4.0	<u>2.05</u>	0.120	SR	93.2	3.7	107	81-119	80-120	
Neptunium 237	52.0	4.2	0.193	1.00	B NP	49.6	2.0	105	73-127	80-120	
Americium 241	49.6	4.9	0.875	1.00	AM	51.0	2.0	97	81-119	80-120	
Technetium 99	518	8.6	1.95	12.0	TC	545	22	95	80-120	80-120	
Thorium 230	48.3	5.4	0.395	1.00	TH	47.2	1.9	102	78-122	80-120	
Uranium 233/234	43.2	4.9	<u>2.23</u>	1.00	U	46.4	1.9	93	80-120	80-120	
Uranium 235	34.5	4.2	0.560	1.00	U	37.8	1.5	91	79-121	80-120	
Uranium 238	46.9	5.1	<u>2.11</u>	1.00	U	50.5	2.0	93	80-120	80-120	
Plutonium 238	53.5	5.6	0.566	1.00	PU	58.5	2.3	91	81-119	80-120	
Plutonium 239/240	60.4	6.2	0.566	1.00	PU	66.0	2.6	92	81-119	80-120	
Cobalt 60	1.73	0.11	<u>0.051</u>	0.050	GAM	1.76	0.070	98	85-115	80-120	
Cesium 137	2.08	0.098	0.056	0.100	GAM	1.90	0.076	110	85-115	80-120	

216-B55 SupplementalCharacterization

QC-LCS #65889

LAB CONTROL SAMPLES

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Lab id EBRLNE

Protocol Fluor

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 06/19/08

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

7094-006

B1VDT5

DUPLICATE

SDG <u>7094</u>	Client/Case no <u>Hanford</u>	SDG <u>H3738</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R805145-06</u>	Lab sample id <u>R805145-01</u>	Client sample id <u>B1VDT5</u>
Dept sample id <u>7094-006</u>	Dept sample id <u>7094-001</u>	Location/Matrix <u>C6743, I-003</u> <u>SOLID</u>
	Received <u>05/16/08</u>	Collected/Weight <u>05/12/08 13:10</u> <u>674 g</u>
% solids <u>94.0</u>	% solids <u>94.0</u>	Custody/SAF No <u>F08-031-167</u> <u>F08-031</u>

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	TEST	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	DER
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS		pCi/g	(COUNT)	pCi/g	FIERS	%	TOT	σ
Tritium	-1.50	3.5	2.85	400	U	H	-0.593	3.4	2.85	U	-		0.4
Nickel 63	0.696	9.1	15.4	30.0	U	NI_L	-4.60	8.7	15.1	U	-		0.8
Total Strontium	18800	53	2.38	0.120		SR	18900	51	2.29		1	22	0.1
Neptunium 237	0	0.15	0.228	1.00	U	NP	0.115	0.23	0.440	U	-		0.8
Americium 241	0.102	0.41	0.978	1.00	U	AM	0	0.35	0.830	U	-		0.4
Technetium 99	-0.310	0.65	1.66	12.0	U	TC	-0.339	0.61	1.84	U	-		0.1
Thorium 228	1.10	0.53	0.504	1.00		TH	0.788	0.48	0.528		33	115	0.9
Thorium 230	1.42	0.64	0.402	1.00		TH	1.06	0.48	0.301		29	98	0.9
Thorium 232	0.998	0.43	0.402	1.00		TH	0.826	0.40	0.301		19	98	0.6
Uranium 233/234	0.488	0.33	0.415	1.00		U	0.974	0.54	0.678		66	131	1.5
Uranium 235	0.066	0.13	0.502	1.00	U	U	0.107	0.21	0.820	U	-		0.3
Uranium 238	0.868	0.44	0.415	1.00		U	0.443	0.36	0.678	U	65	131	1.5
Plutonium 238	-0.075	0.30	0.716	1.00	U	PU	-0.079	0.32	0.878	U	-		0
Plutonium 239/240	0.149	0.15	0.571	1.00	U	PU	0	0.16	0.607	U	-		1.4
Beryllium 7	U		30.5		U	GAM	U		35.0	U	-		0.2
Potassium 40	10.5	1.7	1.55			GAM	10.7	2.2	1.97		2	42	0.1
Cobalt 60	U		0.204	0.050	U	GAM	U		0.238	U	-		0.2
Ruthenium 106	U		15.2		U	GAM	U		17.6	U	-		0.2
Antimony 125	U		7.04		U	GAM	U		8.15	U	-		0.2
Cesium 134	U		1.04		U	GAM	U		1.19	U	-		0.2
Cesium 137	7340	7.0	2.78	0.100		GAM	7300	8.0	3.20		1	15	0.1
Europium 152	U		6.08	0.100	U	GAM	U		7.07	U	-		0.2
Europium 154	U		1.19	0.100	U	GAM	U		1.48	U	-		0.3
Europium 155	U		4.39	0.100	U	GAM	U		5.09	U	-		0.2
Niobium 94	U		0.700		U	GAM	U		0.818	U	-		0.2
Radium 226	U		2.93		U	GAM	U		3.39	U	-		0.2
Radium 228	U		2.81		U	GAM	U		3.02	U	-		0.1

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DUPLICATES

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Protocol <u>Fluor</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>06/19/08</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

7094-006

B1VDT5

DUPLICATE, cont.

SDG <u>7094</u>		Client/Case no <u>Hanford</u>	<u>SDG H3738</u>
Contact <u>Melissa C. Mannion</u>		Contract <u>No. 630</u>	
DUPLICATE	ORIGINAL		
Lab sample id <u>R805145-06</u>	Lab sample id <u>R805145-01</u>	Client sample id <u>B1VDT5</u>	
Dept sample id <u>7094-006</u>	Dept sample id <u>7094-001</u>	Location/Matrix <u>C6743, I-003</u>	<u>SOLID</u>
	Received <u>05/16/08</u>	Collected/Weight <u>05/12/08 13:10</u>	<u>674 g</u>
% solids <u>94.0</u>	% solids <u>94.0</u>	Custody/SAF No <u>F08-031-167</u>	<u>F08-031</u>

QC-DUP#1 65891

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Lab id <u>EBRLNE</u>
Protocol <u>Fluor</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>06/19/08</u>

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3728

7094-001

B1VDT5

DATA SHEET

SDG <u>7094</u>	Client/Case no <u>Hanford</u>	SDG <u>H3738</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R805145-01</u>	Client sample id <u>B1VDT5</u>	
Dept sample id <u>7094-001</u>	Location/Matrix <u>C6743, I-003</u>	<u>SOLID</u>
Received <u>05/16/08</u>	Collected/Weight <u>05/12/08 13:10</u>	<u>674 g</u>
% solids <u>94.0</u>	Custody/SAF No <u>F08-031-167</u>	<u>F08-031</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.593	3.4	2.85	400	U	H
Nickel 63	13981-37-8	-4.60	8.7	15.1	30.0	U	NI_L
Total Strontium	SR-RAD	18900	51	2.29	0.120		SR
Neptunium 237	13994-20-2	0.115	0.23	0.440	1.00	U	NP
Americium 241	14596-10-2	0	0.35	0.830	1.00	U	AM
Technetium 99	14133-76-7	-0.339	0.61	1.84	12.0	U	TC
Thorium 228	14274-82-9	0.788	0.48	0.528	1.00		TH
Thorium 230	14269-63-7	1.06	0.48	0.301	1.00		TH
Thorium 232	TH-232	0.826	0.40	0.301	1.00		TH
Uranium 233/234	U-233/234	0.974	0.54	0.678	1.00		U
Uranium 235	15117-96-1	0.107	0.21	0.820	1.00	U	U
Uranium 238	U-238	0.443	0.36	0.678	1.00	U	U
Plutonium 238	13981-16-3	-0.079	0.32	0.878	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.16	0.607	1.00	U	PU
Beryllium 7	13966-02-4	U		35.0		U	GAM
Potassium 40	13966-00-2	10.7	2.2	1.97			GAM
Cobalt 60	10198-40-0	U		0.238	0.050	U	GAM
Ruthenium 106	13967-48-1	U		17.6		U	GAM
Antimony 125	14234-35-6	U		8.15		U	GAM
Cesium 134	13967-70-9	U		1.19		U	GAM
Cesium 137	10045-97-3	7300	8.0	3.20	0.100		GAM
Europium 152	14683-23-9	U		7.07	0.100	U	GAM
Europium 154	15585-10-1	U		1.48	0.100	U	GAM
Europium 155	14391-16-3	U		5.09	0.100	U	GAM
Niobium 94	14681-63-1	U		0.818		U	GAM
Radium 226	13982-63-3	U		3.39		U	GAM
Radium 228	15262-20-1	U		3.02		U	GAM

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Protocol <u>Fluor</u>
Version <u>Ver 1.0</u>
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Report date <u>06/19/08</u>

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3728

7094-002

B1VDT9

DATA SHEET

SDG <u>7094</u>	Client/Case no <u>Hanford</u>	SDG <u>H3738</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R805145-02</u>	Client sample id <u>B1VDT9</u>	
Dept sample id <u>7094-002</u>	Location/Matrix <u>C6743, I-004</u>	<u>SOLID</u>
Received <u>05/16/08</u>	Collected/Weight <u>05/13/08 07:35</u>	<u>828 g</u>
% solids <u>97.0</u>	Custody/SAF No <u>F08-031-173</u>	<u>F08-031</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.283	3.7	3.00	400	U	H
Nickel 63	13981-37-8	0.708	2.0	3.30	30.0	U	NI_L
Total Strontium	SR-RAD	1.21	0.25	0.236	0.120		SR
Neptunium 237	13994-20-2	0	0.094	0.141	1.00	U	NP
Americium 241	14596-10-2	-0.113	0.11	0.432	1.00	U	AM
Technetium 99	14133-76-7	0.035	0.18	0.374	12.0	U	TC
Thorium 228	14274-82-9	0.942	0.46	0.417	1.00		TH
Thorium 230	14269-63-7	0.715	0.38	0.288	1.00		TH
Thorium 232	TH-232	0.940	0.38	0.288	1.00		TH
Uranium 233/234	U-233/234	0.548	0.22	0.210	1.00		U
Uranium 235	15117-96-1	0.033	0.066	0.254	1.00	U	U
Uranium 238	U-238	0.576	0.28	0.210	1.00		U
Plutonium 238	13981-16-3	0	0.13	0.321	1.00	U	PU
Plutonium 239/240	PU-239/240	-0.033	0.067	0.256	1.00	U	PU
Beryllium 7	13966-02-4	U		0.308		U	GAM
Potassium 40	13966-00-2	17.8	1.0	0.338			GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.300		U	GAM
Antimony 125	14234-35-6	U		0.076		U	GAM
Cesium 134	13967-70-9	U		0.050		U	GAM
Cesium 137	10045-97-3	U		0.068	0.100	U	GAM
Europium 152	14683-23-9	U		0.089	0.100	U	GAM
Europium 154	15585-10-1	U		0.123	0.100	U	GAM
Europium 155	14391-16-3	U		0.084	0.100	U	GAM
Niobium 94	14681-63-1	U		0.031		U	GAM
Radium 226	13982-63-3	0.453	0.063	0.059			GAM
Radium 228	15262-20-1	0.687	0.14	0.131			GAM

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Lab id <u>EBRLNE</u>
Protocol <u>Fluor</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/19/08</u>

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3728

7094-003

B1VDV5

DATA SHEET

SDG <u>7094</u>	Client/Case no <u>Hanford</u>	SDG <u>H3738</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R805145-03</u>	Client sample id <u>B1VDV5</u>	
Dept sample id <u>7094-003</u>	Location/Matrix <u>C6743, I-005</u>	<u>SOLID</u>
Received <u>05/16/08</u>	Collected/Weight <u>05/13/08 10:00</u>	<u>792 g</u>
% solids <u>98.0</u>	Custody/SAF No <u>F08-031-181</u>	<u>F08-031</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.909	3.5	2.92	400	U	H
Nickel 63	13981-37-8	0.654	1.9	3.22	30.0	U	NI_L
Total Strontium	SR-RAD	1.15	0.18	<u>0.186</u>	0.120		SR
Neptunium 237	13994-20-2	0.061	0.061	0.092	1.00	U	NP
Americium 241	14596-10-2	0	0.18	0.345	1.00	U	AM
Technetium 99	14133-76-7	-0.016	0.12	0.349	12.0	U	TC
Thorium 228	14274-82-9	1.42	0.47	0.366	1.00		TH
Thorium 230	14269-63-7	1.22	0.47	0.292	1.00		TH
Thorium 232	TH-232	1.41	0.47	0.292	1.00		TH
Uranium 233/234	U-233/234	0.683	0.29	0.180	1.00		U
Uranium 235	15117-96-1	0.029	0.057	0.218	1.00	U	U
Uranium 238	U-238	0.730	0.29	0.180	1.00		U
Plutonium 238	13981-16-3	0.076	0.15	0.243	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.051	0.194	1.00	U	PU
Beryllium 7	13966-02-4	U		0.275		U	GAM
Potassium 40	13966-00-2	17.8	0.75	0.319			GAM
Cobalt 60	10198-40-0	U		0.028	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.236		U	GAM
Antimony 125	14234-35-6	U		0.067		U	GAM
Cesium 134	13967-70-9	U		0.047		U	GAM
Cesium 137	10045-97-3	U		0.033	0.100	U	GAM
Europium 152	14683-23-9	U		0.076	0.100	U	GAM
Europium 154	15585-10-1	U		<u>0.106</u>	0.100	U	GAM
Europium 155	14391-16-3	U		0.086	0.100	U	GAM
Niobium 94	14681-63-1	U		0.024		U	GAM
Radium 226	13982-63-3	0.611	0.062	0.058			GAM
Radium 228	15262-20-1	0.966	0.12	0.116			GAM

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DATA SHEETS

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Lab id <u>EBRLNE</u>
Protocol <u>Fluor</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/19/08</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

Test AM Matrix SOLID
 SDG 7094
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H3738

LAB METHOD SUMMARY

AMERICIUM 241 IN SOLIDS
 ALPHA SPECTROSCOPY

RESULTS

AB	RAW	SUF-	Americium	
AMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	241
reparation batch 6152-106				
805145-01		7094-001	B1VDT5	U
805145-02		7094-002	B1VDT9	U
805145-03		7094-003	B1VDV5	U
805145-04		7094-004	Lab Control Sample	ok
805145-05		7094-005	Method Blank	U
805145-06		7094-006	Duplicate (R805145-01)	- U

nominal values and limits from method RDLs (pCi/g) 1.00
 16-B55 SupplementalCharacterization

METHOD PERFORMANCE

AB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
AMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
reparation batch 6152-106			2σ prep error 8.0 %		Reference Lab Notebook #6152		pg. 106								
805145-01		B1VDT5	0.830	0.200			49		142		32	06/12/08	06/13	SS-038	
805145-02		B1VDT9	0.432	0.500			39		141		31	06/12/08	06/13	SS-040	
805145-03		B1VDV5	0.345	0.500			42		142		31	06/12/08	06/13	SS-042	
805145-04		Lab Control Sample	0.875	0.200			61		145			06/12/08	06/13	SS-055	
805145-05		Method Blank	0.739	0.200			64		145			06/12/08	06/13	SS-056	
805145-06		Duplicate (R805145-01)	0.978	0.200			41		146		32	06/12/08	06/13	SS-061	

nominal values and limits from method 1.00 0.200 20-105 100 100 180

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6	
CP-008	Heavy Element Electroplating, rev 9	

AVERAGES ± 2 SD	MDA	<u>0.700</u> ± <u>0.509</u>
FOR 6 SAMPLES	YIELD	<u>49</u> ± <u>22</u>

Lab id EBRLNE
 Protocol Fluor
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 06/19/08

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

Test NP Matrix SOLID
 SDG 7094
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H3738

LAB METHOD SUMMARY

NEPTUNIUM IN SOLIDS
 ALPHA SPECTROSCOPY

RESULTS

AB	RAW	SUF-		Neptunium
AMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	237
reparation batch 6152-106				
305145-01		7094-001	B1VDT5	U
305145-02		7094-002	B1VDT9	U
305145-03		7094-003	B1VDV5	U
305145-04		7094-004	Lab Control Sample	ok
305145-05		7094-005	Method Blank	<u>0.429</u>
305145-06		7094-006	Duplicate (R805145-01)	- U

ominal values and limits from method RDLs (pCi/g) 1.00
 16-B55 SupplementalCharacterization

METHOD PERFORMANCE

AB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
AMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
reparation batch 6152-106			2σ prep error 14.8 %			Reference Lab Notebook #6152			pg. 106				
805145-01		B1VDT5	0.440	0.200			77		130		30	06/10/08 06/11	SS-055
805145-02		B1VDT9	0.141	0.500			41		130		29	06/10/08 06/11	SS-056
805145-03		B1VDV5	0.092	0.500			59		130		29	06/10/08 06/11	SS-057
805145-04		Lab Control Sample	0.193	0.200			67		130			06/10/08 06/11	SS-058
805145-05		Method Blank	0.322	0.200			63		<u>96</u>			06/10/08 06/18	SS-060
805145-06		Duplicate (R805145-01)	0.228	0.200			70		130		30	06/10/08 06/11	SS-062

ominal values and limits from method 1.00 0.200 20-105 100 180

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-930	Neptunium from Solids and Water by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 9	

AVERAGES ± 2 SD	MDA <u>0.236</u> ± <u>0.254</u>
FOR 6 SAMPLES	YIELD <u>63</u> ± <u>25</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

Test PU Matrix SOLID
 SDG 7094
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H3738

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

RESULTS

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

reparation batch 6152-106

805145-01			7094-001	B1VDT5	U	U
805145-02			7094-002	B1VDT9	U	U
805145-03			7094-003	B1VDV5	U	U
805145-04			7094-004	Lab Control Sample	ok	ok
805145-05			7094-005	Method Blank	U	U
805145-06			7094-006	Duplicate (R805145-01)	- U	- U

nominal values and limits from method RDLs (pCi/g) 1.00 1.00
 16-B55 Supplemental Characterization

METHOD PERFORMANCE

AB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
AMPLE ID	TEST	FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
reparation batch 6152-106				2σ prep error 8.0 %				Reference Lab Notebook #6152				pg. 106		
805145-01			B1VDT5	0.878	0.200			59		147			32 06/12/08 06/13	SS-062
805145-02			B1VDT9	0.321	0.500			62		150			31 06/12/08 06/13	SS-063
805145-03			B1VDV5	0.243	0.500			63		150			31 06/12/08 06/13	SS-064
805145-04			Lab Control Sample	0.566	0.200			62		151			06/12/08 06/13	SS-065
805145-05			Method Blank	0.716	0.200			65		148			06/12/08 06/13	SS-027
805145-06			Duplicate (R805145-01)	0.716	0.200			59		148			32 06/12/08 06/13	SS-028

nominal values and limits from method 1.00 0.200 20-105 100 100 180

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 3	
CP-008	Heavy Element Electroplating, rev 9	

AVERAGES ± 2 SD	MDA <u>0.573</u> ± <u>0.495</u>
FOR 6 SAMPLES	YIELD <u>62</u> ± <u>5</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

Test TH Matrix SOLID
 SDG 7094
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H3738

RESULTS

AB RAW SUF-
 AMPL ID TEST FIX PLANCHET CLIENT SAMPLE ID Thorium 230

reparation batch 6152-106

805145-01	7094-001	B1VDT5	1.06
805145-02	7094-002	B1VDT9	0.715
805145-03	7094-003	B1VDV5	1.22
805145-04	7094-004	Lab Control Sample	ok
805145-05	7094-005	Method Blank	U
805145-06	7094-006	Duplicate (R805145-01)	ok

nominal values and limits from method RDLs (pCi/g) 1.00
 16-B55 SupplementalCharacterization

METHOD PERFORMANCE

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

reparation batch 6152-106 2σ prep error 8.0 % Reference Lab Notebook #6152 pg. 106

805145-01	B1VDT5	0.528	0.200	98	150	32	06/12/08	06/13	SS-055
805145-02	B1VDT9	0.417	0.250	97	151	31	06/12/08	06/13	SS-062
805145-03	B1VDV5	0.366	0.250	83	151	31	06/12/08	06/13	SS-064
805145-04	Lab Control Sample	0.395	0.200	88	151		06/12/08	06/13	SS-065
805145-05	Method Blank	0.485	0.200	74	151		06/12/08	06/13	SS-066
805145-06	Duplicate (R805145-01)	0.504	0.200	81	152	32	06/12/08	06/13	SS-028

nominal values and limits from method 1.00 0.200 20-105 150 180

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA	<u>0.449</u> ± <u>0.131</u>
FOR 6 SAMPLES	YIELD	<u>87</u> ± <u>19</u>

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

Test U Matrix SOLID
 SDG 7094
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H3738

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

RESULTS

AB	RAW	SUF-		1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)					
AMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	233/234	235	238	1+3	2σ	2+3	2σ	
reparation batch 6152-106												
805145-01			7094-001	B1VDT5	0.974	U	U					
805145-02			7094-002	B1VDT9	0.548	U	0.576	95	60	6	12	
805145-03			7094-003	B1VDV5	0.683	U	0.730	94	54	4	8	
805145-04			7094-004	Lab Control Sample	ok	ok	ok					
805145-05			7094-005	Method Blank	U	U	U					
805145-06			7094-006	Duplicate (R805145-01)	ok	-	U	ok	56	48	8	15
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00	100		4		
16-B55 Supplemental Characterization								Averages	82		6	

METHOD PERFORMANCE

AB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
AMPLE ID	TEST	FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
reparation batch 6152-106				2σ prep error	8.0 %	Reference	Lab Notebook #6152	pg.	106							
805145-01			B1VDT5	0.820	0.200			76		114		31	06/11/08	06/12	SS-040	
805145-02			B1VDT9	0.254	0.500			86		114		30	06/11/08	06/12	SS-042	
805145-03			B1VDV5	0.218	0.500			85		114		30	06/11/08	06/12	SS-036	
805145-04			Lab Control Sample	<u>2.23</u>	0.200			88		114			06/11/08	06/12	SS-038	
805145-05			Method Blank	0.496	0.200			87		122			06/11/08	06/12	SS-036	
805145-06			Duplicate (R805145-01)	0.502	0.200			91		122		31	06/11/08	06/12	SS-038	
Nominal values and limits from method				1.00	0.200			20-105		100	100	180				

PROCEDURES REFERENCE UIISO_PLATE_AEA
 SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
 CP-921 Uranium in Water and Dissolved Samples by
 Extraction Chromatography, rev 1
 CP-008 Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD MDA 0.753 ± 1.51
 FOR 6 SAMPLES YIELD 86 ± 10

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

Test SR Matrix SOLID
 SDG 7094
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H3738

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS
 BETA COUNTING

RESULTS

AB	RAW	SUF-		Total
AMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Strontium
reparation batch 6152-106				
805145-01		7094-001	B1VDT5	18900
805145-02		7094-002	B1VDT9	1.21
805145-03		7094-003	B1VDV5	1.15
805145-04		7094-004	Lab Control Sample	ok
805145-05		7094-005	Method Blank	U
805145-06		7094-006	Duplicate (R805145-01)	ok
Nominal values and limits from method				RDLs (pCi/g) 0.120
16-B55 Supplemental Characterization				

METHOD PERFORMANCE

AB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EPF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
AMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
reparation batch 6152-106			2σ prep error 10.4 %			Reference	Lab Notebook #6152	pg.	106						
805145-01		B1VDT5	<u>2.29</u>	0.100			73		400			28	06/09/08	06/09	GRB-225
805145-02		B1VDT9	<u>0.236</u>	1.00			88		400			27	06/09/08	06/09	GRB-226
805145-03		B1VDV5	<u>0.186</u>	1.00			88		400			27	06/09/08	06/09	GRB-227
805145-04		Lab Control Sample	<u>2.05</u>	0.100			76		400				06/09/08	06/09	GRB-230
805145-05		Method Blank	<u>2.01</u>	0.100			75		400				06/09/08	06/09	GRB-228
805145-06		Duplicate (R805145-01)	<u>2.38</u>	0.100			70		400			28	06/09/08	06/09	GRB-229
Nominal values and limits from method			0.120	0.100			30-105		100						180

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
 SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
 CP-381 Strontium in Solids, rev 1

AVERAGES ± 2 SD MDA 1.53 ± 2.06
 FOR 6 SAMPLES YIELD 78 ± 16

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

Test TC Matrix SOLID
 SDG 7094
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS
 BETA COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H3738

RESULTS

AB	RAW	SUF-	Technetium	
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	99
reparation batch 6152-106				
805145-01		7094-001	B1VDT5	U
805145-02		7094-002	B1VDT9	U
805145-03		7094-003	B1VDV5	U
805145-04		7094-004	Lab Control Sample	ok
805145-05		7094-005	Method Blank	U
805145-06		7094-006	Duplicate (R805145-01)	- U

nominal values and limits from method RDLs (pCi/g) 12.0
 16-B55 SupplementalCharacterization

METHOD PERFORMANCE

AB	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
reparation batch 6152-106 2σ prep error 13.2 % Reference Lab Notebook #6152 pg. 106															
805145-01		B1VDT5	1.84	0.200			96	100	28	06/05/08	06/09	GRB-228			
805145-02		B1VDT9	0.374	1.00			104	100	28	06/05/08	06/10	GRB-201			
805145-03		B1VDV5	0.349	1.00			100	100	28	06/05/08	06/10	GRB-202			
805145-04		Lab Control Sample	1.95	0.200			98	100		06/05/08	06/09	GRB-231			
805145-05		Method Blank	2.08	0.200			83	100		06/05/08	06/10	GRB-203			
805145-06		Duplicate (R805145-01)	1.66	0.200			94	150	28	06/05/08	06/09	GRB-201			

nominal values and limits from method 12.0 0.200 20-105 50 180

PROCEDURES	REFERENCE	TC99_TR_SEP_GPC
SPP-062	Sample Aliquoting, rev 0	
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	<u>1.38</u>	±	<u>1.59</u>
FOR 6 SAMPLES	YIELD	<u>96</u>	±	<u>14</u>

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

Test GAM Matrix SOLID
 SDG 7094
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H3738

RESULTS

AB RAW SUF-
 AMPL ID TEST FIX PLANCHET CLIENT SAMPLE ID Cobalt 60 Cesium 137

reparation batch 6152-106

805145-01	7094-001	B1VDT5	U	7300
805145-02	7094-002	B1VDT9	U	U
805145-03	7094-003	B1VDV5	U	U
805145-04	7094-004	Lab Control Sample	ok	ok
805145-05	7094-005	Method Blank	U	U
805145-06	7094-006	Duplicate (R805145-01)	- U	ok

nominal values and limits from method RDLs (pCi/g) 0.050 0.100
 16-B55 SupplementalCharacterization

METHOD PERFORMANCE

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

reparation batch 6152-106 2σ prep error 7.0 % Reference Lab Notebook #6152 pg. 106

805145-01	B1VDT5	<u>486</u>	247	104	23	05/29/08	06/04	JR,05,00
805145-02	B1VDT9	<u>8.35</u>	656	120	22	05/29/08	06/04	MB,06,00
805145-03	B1VDV5	<u>6.11</u>	629	120	22	05/29/08	06/04	MB,07,00
805145-04	Lab Control Sample	<u>0.051</u>	246	120		05/29/08	06/04	MB,08,00
805145-05	Method Blank	<u>9.24</u>	246	102		05/29/08	06/04	01,01,00
805145-06	Duplicate (R805145-01)	<u>420</u>	247	141	24	05/29/08	06/05	JR,05,00

nominal values and limits from method 0.050 246 100 180

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

AVERAGES ± 2 SD MDA 155 ± 464
 FOR 6 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Test H Matrix SOLID
SDG 7094
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H3738

RESULTS

AB	RAW	SUF-	AMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Tritium
reparation batch 6152-106							
			805145-01		7094-001	B1VDT5	U
			805145-02		7094-002	B1VDT9	U
			805145-03		7094-003	B1VDV5	U
			805145-04		7094-004	Lab Control Sample	ok
			805145-05		7094-005	Method Blank	U
			805145-06		7094-006	Duplicate (R805145-01)	- U

nominal values and limits from method RDLs (pCi/g) 400
16-B55 Supplemental Characterization

METHOD PERFORMANCE

AB	RAW	SUF-	AMPLE ID	TEST FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
reparation batch 6152-106 2σ prep error 10.0 % Reference Lab Notebook #6152 pg. 106																	
			805145-01		B1VDT5	2.85	0.438			100	100	24	06/03/08	06/05	LSC-005		
			805145-02		B1VDT9	3.00	0.422			100	100	23	06/03/08	06/05	LSC-005		
			805145-03		B1VDV5	2.92	0.430			100	100	23	06/03/08	06/05	LSC-005		
			805145-04		Lab Control Sample	6.04	0.400			100	23		06/03/08	06/05	LSC-005		
			805145-05		Method Blank	3.13	0.400			100	100		06/03/08	06/05	LSC-005		
			805145-06		Duplicate (R805145-01)	2.85	0.440			100	100	24	06/03/08	06/05	LSC-005		

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 3.46 ± 2.53
FOR 6 SAMPLES YIELD 100 ± 0

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3728

Test NI L Matrix SOLID
 SDG 7094
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H3738

RESULTS

AB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63
reparation batch 6152-106				
805145-01		7094-001	B1VDT5	U
805145-02		7094-002	B1VDT9	U
805145-03		7094-003	B1VDV5	U
805145-04		7094-004	Lab Control Sample	ok
805145-05		7094-005	Method Blank	U
805145-06		7094-006	Duplicate (R805145-01)	- U

nominal values and limits from method RDLs (pCi/g) 30.0
 16-B55 Supplemental Characterization

METHOD PERFORMANCE

AB	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
reparation batch 6152-106			2σ prep error 11.2 %		Reference Lab Notebook #6152		pg. 106								
805145-01		B1VDT5	15.1	0.100			97		50		32	06/10/08	06/13	LSC-004	
805145-02		B1VDT9	3.30	0.500			90		50		31	06/10/08	06/13	LSC-004	
805145-03		B1VDV5	3.22	0.500			92		50		31	06/10/08	06/13	LSC-004	
805145-04		Lab Control Sample	14.7	0.100			99		50			06/10/08	06/13	LSC-004	
805145-05		Method Blank	15.3	0.100			97		50			06/10/08	06/13	LSC-004	
805145-06		Duplicate (R805145-01)	15.4	0.100			96		50		32	06/10/08	06/13	LSC-004	

nominal values and limits from method 30.0 0.100 30-105 25 180

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

AVERAGES ± 2 SD MDA 11.2 ± 12.3
 FOR 6 SAMPLES YIELD 95 ± 7

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H3738

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

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3738

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 plachets 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 plachet 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.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 28

Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

00000032

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H3738

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.

REPORT GUIDES

Page 3

SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3738

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

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

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SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3738

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.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 31

Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3738

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

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3738

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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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

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SAMPLE DELIVERY GROUP H3728

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Case no SDG H3738

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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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
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Report date 06/19/08

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SAMPLE DELIVERY GROUP H3728

SDG 7094
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Case no SDG H3738

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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Protocol Fluor
Version Ver 1.0
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Version 3.06
Report date 06/19/08

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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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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

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SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

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Client Hanford
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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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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

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Client Hanford
Contract No. 630
Case no SDG H3738

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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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
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SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

GUIDE, cont.

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Contract No. 630
Case no SDG H3738

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

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

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SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H3738

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

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SUMMARY DATA SECTION

Page 40

Lab id EBRLNE
Protocol Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

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SAMPLE DELIVERY GROUP H3728

SDG 7094
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H3738

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 Fluor
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/19/08

00000044

Fluor Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F08-031-173	PAGE 1 OF 1	
COLLECTOR NCO Sampler <i>Kauze, Rusane, McIntyre</i>		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR WIDRIG, DL	PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days	
SAMPLING LOCATION C6743, I-004		PROJECT DESIGNATION 216-B-55 Supplemental Characterization <i>H3738 (7094)</i>			SAF NO. F08-031	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>GRP-08-02</i>		FIELD LOGBOOK NO. <i>HNF-N-583-1</i>		ACTUAL SAMPLE DEPTH <i>27.5'-30'</i>	COA 123055J278	METHOD OF SHIPMENT FEDERAL EXPRESS		
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. SEE PTR			BILL OF LADING/AIR BILL NO. SEE PTR			
MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=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	Square Bottle - Poly				
			NO. OF CONTAINER(S)	1				
			VOLUME	500mL				
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B1VDT6 or B1TFM2		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS				
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B1VDT9	SOIL	5-13-08	0735					
CHAIN OF POSSESSION				SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS		
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	** Lionville is the primary laboratory for Chrome VI and anions analyses. ** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ** Analytical batch QC must be run on a sample associated with this SAF. (1)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} Gamma Spec - Add-on {Niobium-94, Radium-226, Radium-228} Isotopic Uranium; Neptunium-237; Strontium-89,90 -- Total Sr; Isotopic Plutonium; Americium-241 {Americium-241} Tritium - H3; Technetium-99 {Technetium-99} Nickel-63; Isotopic Thorium {Thorium-232}		
<i>AR McIntyre / 02/04/08</i>		<i>5-13-08 0830</i>	<i>B-55 site Ref</i>		<i>5-13-08 0830</i>			
<i>B-55 site Ref</i>		<i>5/14/08 1100</i>	<i>AR McIntyre / 02/04/08</i>		<i>5/14/08 1100</i>			
<i>AR McIntyre / 02/04/08</i>		<i>5/14/08 1230</i>	<i>MO-745 REF #</i>		<i>5/14/08 1230</i>			
<i>MO 745 REF #</i>		<i>5/15/08 11:00</i>	<i>DW Bushman / Bushman</i>		<i>5/15/08 11:00</i>			
<i>DW Bushman / Bushman</i>		<i>5/15/08 13:00</i>	<i>FED EX</i>					
<i>FED EX</i>			<i>FED EX</i>		<i>05/16/08 09:30</i>			
LABORATORY SECTION	RECEIVED BY		TITLE		DATE/TIME			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD		DISPOSED BY		DATE/TIME			

COLLECTOR NCO Sampler <i>Karin, Rosam, McIntyre</i>	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR WIDRIG, DL	PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION C6743, I-005	PROJECT DESIGNATION 216-B-55 Supplemental Characterization <i>H3738 (7094)</i>		SAF NO. F08-031	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>GRP-08-02</i>	FIELD LOGBOOK NO. <i>P 2</i> <i>HNF-N-583-1</i>	ACTUAL SAMPLE DEPTH <i>47.8' - 50.3'</i>	COA 123055J278	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Eberline Services	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR		

MATRIX* A=Air DL=Drum 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	Square Bottle - Poly																		
		NO. OF CONTAINER(S)	1																		
		VOLUME	500mL																		
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B1VDV2 or B1TFM6	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS																		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME																		
B1VDV5	SOIL	5-13-08	1000	✓	✓																

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
<i>ARM McIntyre/Widrig</i>	<i>5-13-08 1045</i>	<i>B-55 site Ref</i>	<i>5-13-08 1045</i>	** TestAmerica St Louis is the primary lab for all chemical analyses with the exception of Anions by method 300.0 ** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ** Analytical batch QC must be run on a sample associated with this SAF. (1)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} Gamma Spec - Add-on {Niobium-94, Radium-226, Radium-228} Isotopic Uranium; Neptunium-237; Strontium-89,90 -- Total Sr; Isotopic Plutonium; Americium-241 {Americium-241} Tritium - H3; Technetium-99 {Technetium-99} Nickel-63; Isotopic Thorium {Thorium-232}	
<i>B-55 site Ref</i>	<i>5/14/08 1100</i>	<i>ARM McIntyre/Widrig</i>	<i>5/14/08 1100</i>		
<i>ARM McIntyre/Widrig</i>	<i>5/14/08 1230</i>	<i>MO 745 Ref #9</i>	<i>5/14/08 1230</i>		
<i>MO 745 Ref #9</i>	<i>5/15/08 1100</i>	<i>Don Barber/Dobbe</i>	<i>5/15/08 1100</i>		
<i>Don Barber/Dobbe</i>	<i>5/15/08 1300</i>	<i>FED Ex</i>			
<i>FED Ex</i>		<i>Mary</i>	<i>05/16/08 09:30</i>		

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

JK 5/16/08

Client: FLUOR HANFORD City RICHMOND State WA
 Date/Time received 05/16/08 09:30 AM CoC No. FOX-031-167, 173, 181
 Container I.D. No. GRP 08-02 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: 3 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 MFW Date: 05/16/08 Time: 10:45

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
BIVDT5	13,000						
OTHERS	< 60						

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. 113722 Calibration date 13 SEP 08