0079341

SAF-RC-108
100-H Remaining Sites Burial Grounds – Other Solid Quick Turn
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 11/19/08
NITIAL/DATE

COMMENTS:

SDG K1383 **SAF-RC-108**

X Rad only Chem only Rad & Chem

X Complete Partial

Waste Site: 118-H-1 Burial Ground (1 filter from 118-H-5)

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
2030 Wright Avenue
Richmond, California 94804-3849
Phone (510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
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November 18, 2008

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

Reference: **P.O. #S00W235A00**
Eberline Services R8-10-077-7225, SDG K1383

Dear Ms. Kessner:

Enclosed is the data report for one solid (other solid) sample designated under SAF No. RC-108 received at Eberline Services on October 10, 2008. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

MCM/jag

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1383 was composed of one solid (other solid) sample designated under SAF No. RC-108 with a Project Designation of: 100-H Remaining Sites Burial Grounds-Other Solid Quick Turn.

Aliquots were taken on a per sample basis; results are reported in pCi/sample.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on November 18, 2008.

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 Strontium-90 Analysis

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analysis

No problems were encountered during the course of the analyses.

2.6 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses.

2.7 Isotopic Uranium Analysis

No 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 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 Mannion

Melissa C. Mannion
Senior Program Manager

11/19/8

Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP K1383

SDG	7225
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. S00W235A00
Case no	SDG_K1383

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

Prepared by

Melissa Mannion

Reviewed by

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

SDG 7225
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1383

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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/18/08

SDG 7225
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG_K1383

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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

LAB SAMPLE SUMMARY

SDG 7225
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1383

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R810077-01	J17K71	118-H-1 burial ground	OTHER		RC-108	RC-108-002	10/07/08 14:45
R810077-02	Lab Control Sample		OTHER		RC-108		
R810077-03	Method Blank		OTHER		RC-108		
R810077-04	Duplicate (R810077-01)	118-H-1 burial ground	OTHER		RC-108		10/07/08 14:45
R810077-05	Duplicate (R810077-01)	118-H-1 burial ground	OTHER		RC-108		10/07/08 14:45

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SDG 7225
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP K1383

QC SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1383

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7225	RC-108-002	J17K71	OTHER	100.0	32.85 g		10/10/08	3	R810077-01	7225-001
		Method Blank	OTHER						R810077-03	7225-003
		Lab Control Sample	OTHER						R810077-02	7225-002
		Duplicate (R810077-01)	OTHER	100.0	32.85 g		10/10/08	3	R810077-04	7225-004
		Duplicate (R810077-01)	OTHER	100.0	32.85 g		10/10/08	3	R810077-05	7225-005

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

PREP BATCH SUMMARY

SDG 7225
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1383

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
PU	OTHER	Plutonium, Isotopic in Solids	6169-150	8.0	1			1	1	1/1		
TH	OTHER	Thorium, Isotopic in Solids	6169-150	8.0	1			1	1	1/1		
U	OTHER	Uranium, Isotopic in Solids	6169-150	8.0	1			1	1	1/1		
Beta Counting												
SR	OTHER	Total Strontium in Solids	6169-150	10.4	1			1	1	1/1		
TC	OTHER	Technetium 99 in Solids	6169-150	13.2	1			1	1	1/1		
Gamma Spectroscopy												
GAM	OTHER	Gamma Scan	6169-150	7.0	1			1	1	1/1		
Liquid Scintillation Counting												
C	OTHER	Carbon 14 in Solids	6169-150	10.0	1			1	1	1/1		
H	OTHER	Tritium in Solids	6169-150	10.0	1			1	1	1/1		
NI_L	OTHER	Nickel 63 in Solids	6169-150	11.2	1			1	1	1/1		

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

LAB WORK SUMMARY

SDG 7225
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1383

LAB SAMPLE / COLLECTED / RECEIVED	CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R810077-01	J17K71			7225-001	C		11/11/08	11/18/08	BW	Carbon 14 in Solids
10/07/08	118-H-1 burial ground		OTHER	7225-001	GAM		10/29/08	10/30/08	BW	Gamma Scan
10/10/08	RC-108-002	RC-108		7225-001	H		11/12/08	11/17/08	BW	Tritium in Solids
				7225-001	NI_L		11/14/08	11/18/08	BW	Nickel 63 in Solids
				7225-001	PU		11/14/08	11/18/08	BW	Plutonium, Isotopic in Solids
				7225-001	SR		11/06/08	11/11/08	BW	Total Strontium in Solids
				7225-001	TC		11/11/08	11/13/08	BW	Technetium 99 in Solids
				7225-001	TH		11/12/08	11/12/08	BW	Thorium, Isotopic in Solids
				7225-001	U		10/28/08	10/29/08	BW	Uranium, Isotopic in Solids
R810077-02	Lab Control Sample			7225-002	C		11/12/08	11/18/08	BW	Carbon 14 in Solids
			OTHER	7225-002	GAM		10/29/08	10/30/08	BW	Gamma Scan
		RC-108		7225-002	H		11/12/08	11/17/08	BW	Tritium in Solids
				7225-002	NI_L		11/14/08	11/18/08	BW	Nickel 63 in Solids
				7225-002	PU		11/14/08	11/18/08	BW	Plutonium, Isotopic in Solids
				7225-002	SR		11/06/08	11/11/08	BW	Total Strontium in Solids
				7225-002	TC		11/10/08	11/13/08	BW	Technetium 99 in Solids
				7225-002	TH		11/04/08	11/12/08	BW	Thorium, Isotopic in Solids
				7225-002	U		10/28/08	10/29/08	BW	Uranium, Isotopic in Solids
R810077-03	Method Blank			7225-003	C		11/11/08	11/18/08	BW	Carbon 14 in Solids
			OTHER	7225-003	GAM		10/29/08	10/30/08	BW	Gamma Scan
		RC-108		7225-003	H		11/12/08	11/17/08	BW	Tritium in Solids
				7225-003	NI_L		11/14/08	11/18/08	BW	Nickel 63 in Solids
				7225-003	PU		11/14/08	11/18/08	BW	Plutonium, Isotopic in Solids
				7225-003	SR		11/06/08	11/11/08	BW	Total Strontium in Solids
				7225-003	TC		11/12/08	11/13/08	BW	Technetium 99 in Solids
				7225-003	TH		11/04/08	11/12/08	BW	Thorium, Isotopic in Solids
				7225-003	U		10/28/08	10/29/08	BW	Uranium, Isotopic in Solids
R810077-04	Duplicate (R810077-01)			7225-004	C		11/11/08	11/18/08	BW	Carbon 14 in Solids
10/07/08	118-H-1 burial ground		OTHER	7225-004	H		11/12/08	11/17/08	BW	Tritium in Solids
10/10/08		RC-108		7225-004	NI_L		11/14/08	11/18/08	BW	Nickel 63 in Solids
				7225-004	PU		11/14/08	11/18/08	BW	Plutonium, Isotopic in Solids
				7225-004	SR		11/06/08	11/11/08	BW	Total Strontium in Solids
				7225-004	TC		11/10/08	11/13/08	BW	Technetium 99 in Solids
				7225-004	TH		11/12/08	11/12/08	BW	Thorium, Isotopic in Solids
				7225-004	U		10/28/08	10/29/08	BW	Uranium, Isotopic in Solids

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

SDG 7225
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1383

LAB SAMPLE / COLLECTED / RECEIVED	CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R810077-05	Duplicate (R810077-01)			7225-005	GAM		10/29/08	10/30/08	BW	Gamma Scan
10/07/08	118-H-1 burial ground		OTHER							
10/10/08		RC-108								

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
C	RC-108	Carbon 14 in Solids	C14_COX_LSC	1			1	1	1	4
GAM	RC-108	Gamma Scan	GAMMA_GS	1			1	1	1	4
H	RC-108	Tritium in Solids	TRITIUM_COX_LSC	1			1	1	1	4
NI_L	RC-108	Nickel 63 in Solids	NI63_LSC	1			1	1	1	4
PU	RC-108	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
SR	RC-108	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TC	RC-108	Technetium 99 in Solids	TC99_TR_SEP_GPC	1			1	1	1	4
TH	RC-108	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	1			1	1	1	4
U	RC-108	Uranium, Isotopic in Solids	UISO_PLATE_AEA	1			1	1	1	4
TOTALS				9			9	9	9	36

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

7225-003 **Method Blank**

METHOD BLANK

SDG	7225	Client/Case no	Hanford SDG_K1383
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R810077-03	Client sample id	Method Blank
Dept sample id	7225-003	Material/Matrix	OTHER
		SAF No	RC-108

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI-FIERS	TEST
Tritium	10028-17-8	-397	500	882	400	U	H
Carbon 14	14762-75-5	33.4	400	669	50.0	U	C
Nickel 63	13981-37-8	-75.0	94	164	30.0	U	NI_L
Total Strontium	SR-RAD	-0.622	3.2	6.65	1.00	U	SR
Technetium 99	14133-76-7	9.19	17	34.3	15.0	U	TC
Thorium 228	14274-82-9	1.50	6.0	11.5		U	TH
Thorium 230	14269-63-7	4.49	4.5	5.72	1.00	U	TH
Thorium 232	TH-232	0	1.5	5.72	1.00	U	TH
Uranium 233/234	U-233/234	0	2.6	10.1	1.00	U	U
Uranium 235	15117-96-1	0	3.2	12.3	1.00	U	U
Uranium 238	U-238	0	2.6	10.1	1.00	U	U
Plutonium 238	13981-16-3	-2.60	2.6	12.5	1.00	U	PU
Plutonium 239/240	PU-239/240	0	2.6	9.96	1.00	U	PU
Potassium 40	13966-00-2	U		197		U	GAM
Cobalt 60	10198-40-0	U		18.1	0.050	U	GAM
Cesium 137	10045-97-3	U		14.8	0.100	U	GAM
Radium 226	13982-63-3	U		30.3	0.100	U	GAM
Radium 228	15262-20-1	U		66.5	0.200	U	GAM
Europium 152	14683-23-9	U		37.5	0.100	U	GAM
Europium 154	15585-10-1	U		49.0	0.100	U	GAM
Europium 155	14391-16-3	U		24.6	0.100	U	GAM
Thorium 228	14274-82-9	U		22.3		U	GAM
Thorium 232	TH-232	U		66.5		U	GAM
Uranium 235	15117-96-1	U		51.4		U	GAM
Uranium 238	U-238	U		1940		U	GAM
Americium 241	14596-10-2	U		13.4		U	GAM
Silver 108m	14391-65-2	U		11.6		U	GAM
Barium 133	13981-41-4	U		16.3		U	GAM
Niobium 94	14681-63-1	U		14.1		U	GAM

100HRemainSitesBurialGrnd-OS Quick

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/08

7225-003 **Method Blank**

BLANK, cont.

SDG	7225	Client/Case no	Hanford SDG K1383
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R810077-03	Client sample id	Method Blank
Dept sample id	7225-003	Material/Matrix	OTHER
		SAF No	RC-108

QC-BLANK #67880

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

7225-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7225 | Client/Case no Hanford | SDG K1383

Contact Melissa C. Mannion | Contract No. S00W235A00

Lab sample id R810077-02 | Client sample id Lab Control Sample

Dept sample id 7225-002 | Material/Matrix | OTHER

SAF No RC-108

ANALYTE	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI-FIERS	TEST	ADDED pCi/smpl	2σ ERR pCi/smpl	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	114000	2400	932	400		H	120000	4800	95	84-116	80-120
Carbon 14	350000	3100	692	50.0		C	319000	13000	110	82-118	80-120
Nickel 63	10200	280	155	30.0		NI_L	11000	440	93	83-117	80-120
Total Strontium	325	17	6.93	1.00		SR	308	12	106	81-119	80-120
Technetium 99	10100	170	34.7	15.0		TC	10900	440	93	81-119	80-120
Thorium 230	1050	130	10.1	1.00		TH	945	38	111	75-125	80-120
Uranium 233/234	899	92	39.8	1.00		U	929	37	97	80-120	80-120
Uranium 235	678	75	9.46	1.00		U	755	30	90	81-119	80-120
Uranium 238	987	98	38.3	1.00		U	1010	40	98	80-120	80-120
Plutonium 238	1120	110	15.8	1.00		PU	1170	47	96	81-119	80-120
Plutonium 239/240	1340	120	9.00	1.00		PU	1320	53	102	81-119	80-120
Cobalt 60	1000	46	30.0	0.050		GAM	981	39	102	86-114	80-120
Cesium 137	1190	38	29.0	0.100		GAM	1110	44	107	86-114	80-120

100HRemainSitesBurialGrnd-OS Quick

QC-LCS #67879

Lab id EBRLNE

Protocol Hanford1

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

7225-004 J17K71

DUPLICATE

SDG 7225 Client/Case no Hanford SDG K1383

Contact Melissa C. Mannion Contract No. S00W235A00

DUPLICATE		ORIGINAL			
Lab sample id	R810077-04	Lab sample id	R810077-01	Client sample id	J17K71
Dept sample id	7225-004	Dept sample id	7225-001	Location/Matrix	118-H-1 burial qround OTHER
		Received	10/10/08	Collected/Weight	10/07/08 14:45 32.85 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-108-002 RC-108

ANALYTE	DUPLICATE pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI-FIERS	TEST	ORIGINAL pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	QUALI-FIERS	RPD %	3σ TOT	DER σ
Tritium	-259	490	864	400	U	H	11.4	490	838	U	-		0.8
Carbon 14	110	390	647	50.0	U	C	178	380	637	U	-		0.2
Nickel 63	143	73	116	30.0		NI_L	113	70	111		23	121	0.6
Total Strontium	23.7	5.8	7.24	1.00		SR	19.2	5.7	7.74		21	61	1.0
Technetium 99	4.64	10	24.5	15.0	U	TC	3.14	10	28.6	U	-		0.2
Thorium 228	12.1	11	16.6		U	TH	10.8	8.2	10.3		11	180	0.2
Thorium 230	17.1	14	13.1	1.00		TH	9.31	8.1	10.2	U	59	185	1.0
Thorium 232	10.3	10	13.1	1.00	U	TH	5.32	5.4	10.2	U	-		0.9
Uranium 233/234	9.43	5.8	5.55	1.00		U	8.51	4.7	5.92		10	126	0.2
Uranium 235	2.63	3.5	6.72	1.00	U	U	0	1.9	7.16	U	-		1.3
Uranium 238	6.52	4.4	5.55	1.00		U	6.19	4.7	5.92		5	153	0.1
Plutonium 238	-0.890	5.3	11.0	1.00	U	PU	-0.932	5.6	11.5	U	-		0
Plutonium 239/240	7.12	5.4	6.80	1.00		PU	6.52	5.6	7.12	U	9	172	0.2

100HRemainSitesBurialGrnd-OS Quick

QC-DUP#1 67881

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

7225-005 J17K71

DUPLICATE

SDG 7225		Client/Case no Hanford	SDG K1383
Contact Melissa C. Mannion		Contract No. S00W235A00	
DUPLICATE	**ORIGINAL**		
Lab sample id R810077-05	Lab sample id R810077-01	Client sample id J17K71	
Dept sample id 7225-005	Dept sample id 7225-001	Location/Matrix 118-H-1 burial ground	OTHER
	Received 10/10/08	Collected/Weight 10/07/08 14:45	32.85 g
% solids 100.0	% solids 100.0	Custody/SAF No RC-108-002	RC-108

ANALYTE	DUPLICATE pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI-FIERS	TEST	ORIGINAL pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	QUALI-FIERS	RPD %	3σ TOT	DER σ
Potassium 40	U		835		U	GAM	U		835	U	-		0
Cobalt 60	32.1	30	37.3	0.050	U	GAM	40.6	25	24.3		23	162	0.4
Cesium 137	59.1	32	36.8	0.100		GAM	48.6	33	37.2		20	129	0.5
Radium 226	U		78.5	0.100	U	GAM	U		62.8	U	-		0.3
Radium 228	U		184	0.200	U	GAM	U		133	U	-		0.4
Europium 152	U		166	0.100	U	GAM	U		164	U	-		0
Europium 154	U		110	0.100	U	GAM	U		83.6	U	-		0.4
Europium 155	U		104	0.100	U	GAM	U		83.1	U	-		0.3
Thorium 228	U		73.7		U	GAM	U		50.9	U	-		0.5
Thorium 232	U		184		U	GAM	U		133	U	-		0.4
Uranium 235	U		171		U	GAM	U		114	U	-		0.6
Uranium 238	U		4210		U	GAM	U		3840	U	-		0.1
Americium 241	U		91.6		U	GAM	U		78.3	U	-		0.2
Silver 108m	U		29.0		U	GAM	U		23.3	U	-		0.3
Barium 133	U		43.4		U	GAM	U		36.1	U	-		0.3
Niobium 94	U		32.1		U	GAM	U		24.1	U	-		0.4

100HRemainSitesBurialGrnd-OS Quick

QC-DUP#1 67918

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

7225-001 J17K71

DATA SHEET

SDG	7225	Client/Case no	Hanford SDG K1383
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R810077-01	Client sample id	J17K71
Dept sample id	7225-001	Location/Matrix	118-H-1 burial ground OTHER
Received	10/10/08	Collected/Weight	10/07/08 14:45 32.85 g
% solids	100.0	Custody/SAF No	RC-108-002 RC-108

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI-FIERS	TEST
Tritium	10028-17-8	11.4	490	838	400	U	H
Carbon 14	14762-75-5	178	380	637	50.0	U	C
Nickel 63	13981-37-8	113	70	111	30.0		NI_L
Total Strontium	SR-RAD	19.2	5.7	7.74	1.00		SR
Technetium 99	14133-76-7	3.14	10	28.6	15.0	U	TC
Thorium 228	14274-82-9	10.8	8.2	10.3			TH
Thorium 230	14269-63-7	9.31	8.1	10.2	1.00	U	TH
Thorium 232	TH-232	5.32	5.4	10.2	1.00	U	TH
Uranium 233/234	U-233/234	8.51	4.7	5.92	1.00		U
Uranium 235	15117-96-1	0	1.9	7.16	1.00	U	U
Uranium 238	U-238	6.19	4.7	5.92	1.00		U
Plutonium 238	13981-16-3	-0.932	5.6	11.5	1.00	U	PU
Plutonium 239/240	PU-239/240	6.52	5.6	7.12	1.00	U	PU
Potassium 40	13966-00-2	U		835		U	GAM
Cobalt 60	10198-40-0	40.6	25	24.3	0.050		GAM
Cesium 137	10045-97-3	48.6	33	37.2	0.100		GAM
Radium 226	13982-63-3	U		62.8	0.100	U	GAM
Radium 228	15262-20-1	U		133	0.200	U	GAM
Europium 152	14683-23-9	U		164	0.100	U	GAM
Europium 154	15585-10-1	U		83.6	0.100	U	GAM
Europium 155	14391-16-3	U		83.1	0.100	U	GAM
Thorium 228	14274-82-9	U		50.9		U	GAM
Thorium 232	TH-232	U		133		U	GAM
Uranium 235	15117-96-1	U		114		U	GAM
Uranium 238	U-238	U		3840		U	GAM
Americium 241	14596-10-2	U		78.3		U	GAM
Silver 108m	14391-65-2	U		23.3		U	GAM
Barium 133	13981-41-4	U		36.1		U	GAM

100HRemainSitesBurialGrnd-OS Quick

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/08

SDG	7225	Client/Case no	Hanford SDG K1383
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R810077-01	Client sample id	J17K71
Dept sample id	7225-001	Location/Matrix	118-H-1 burial ground OTHER
Received	10/10/08	Collected/Weight	10/07/08 14:45 32.85 g
% solids	100.0	Custody/SAF No	RC-108-002 RC-108

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI-FIERS	TEST
Niobium 94	14681-63-1	U		24.1		U	GAM

100HRemainSitesBurialGrnd-OS Quick

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

Test PU Matrix OTHER
SDG 7225
Contact Melissa C. Mannion

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1383

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240
Preparation batch 6169-150						
R810077-01			7225-001	J17K71	U	6.52 U
R810077-02			7225-002	Lab Control Sample	ok	ok
R810077-03			7225-003	Method Blank	U	U
R810077-04			7225-004	Duplicate (R810077-01)	- U	ok
Nominal values and limits from method 100HRemainSitesBurialGrnd-OS Quick				RDLs (pCi/smpl)	1.00	1.00

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/smpl	ALIQ sample	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6169-150 2σ prep error 8.0 % Reference Lab Notebook #6169, pg. 150																
R810077-01			J17K71	11.5	0.0152			75		109			38	11/14/08	11/14	SS-035
R810077-02			Lab Control Sample	15.8	0.0100			88		109				11/14/08	11/14	SS-036
R810077-03			Method Blank	12.5	0.0100			80		109				11/14/08	11/14	SS-037
R810077-04			Duplicate (R810077-01)	11.0	0.0152			76		109			38	11/14/08	11/14	SS-038
Nominal values and limits from method				1.00	0.0100			20-105		100	100		180			

PROCEDURES	REFERENCE	
	PUISO_PLATE_AEA	
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 12

AVERAGES ± 2 SD FOR 4 SAMPLES			
	MDA	12.7	± 4.32
	YIELD	80	± 12

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

Test TH Matrix OTHER
SDG 7225
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1383

RESULTS

LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 230
Preparation batch 6169-150					
R810077-01			7225-001	J17K71	9.31 U
R810077-02			7225-002	Lab Control Sample	ok
R810077-03			7225-003	Method Blank	4.49 U
R810077-04			7225-004	Duplicate (R810077-01)	ok
Nominal values and limits from method				RDLs (pCi/smpl)	1.00
100HRemainSitesBurialGrnd-OS Quick					

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MAX MDA pCi/smpl	ALIQ sample	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 6169-150			2σ prep error 8.0 %	Reference Lab Notebook #6169, pg. 150												
R810077-01			J17K71	10.2	0.0152			47		150			36	11/03/08	11/12	SS-031
R810077-02			Lab Control Sample	10.1	0.0100			46		234				11/03/08	11/04	SS-042
R810077-03			Method Blank	5.72	0.0100			65		233				11/03/08	11/04	SS-061
R810077-04			Duplicate (R810077-01)	13.1	0.0152			35		150			36	11/03/08	11/12	SS-032
Nominal values and limits from method				1.00	0.0100			20-105		150			180			

PROCEDURES	REFERENCE	
	THISO_IE_PLATE_AEA	
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 12

AVERAGES ± 2 SD FOR 4 SAMPLES			
	MDA	9.78	± 6.09
	YIELD	48	± 25

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

Test U Matrix OTHER
SDG 7225
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1383

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1+3	2σ	2+3	2σ
Preparation batch 6169-150											
R810077-01			7225-001	J17K71	8.51	U	6.19	137	129	0	31
R810077-02			7225-002	Lab Control Sample	ok	ok	ok				
R810077-03			7225-003	Method Blank	U	U	U				
R810077-04			7225-004	Duplicate (R810077-01)	ok	- U	ok	145	132	40	60
Nominal values and limits from method				RDLs (pCi/smpl)	1.00	1.00	1.00	100		4	
100HRemainSitesBurialGrnd-OS Quick								Averages 141		20	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/smpl	ALIQ sample	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6169-150 2σ prep error 8.0 % Reference Lab Notebook #6169, pg. 150																
R810077-01			J17K71	7.16	0.0152			91		108			21	10/28/08	10/28	SS-035
R810077-02			Lab Control Sample	39.8	0.0100			102		108				10/28/08	10/28	SS-036
R810077-03			Method Blank	12.3	0.0100			78		108				10/28/08	10/28	SS-037
R810077-04			Duplicate (R810077-01)	6.72	0.0152			92		108			21	10/28/08	10/28	SS-038
Nominal values and limits from method				1.00	0.0100			20-105		100	100		180			

PROCEDURES

REFERENCE	UISO_PLATE_AEA	
SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5	
CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 12	

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 16.5 ± 31.5
YIELD 91 ± 20

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

Test SR Matrix OTHER
SDG 7225
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1383

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium
Preparation batch 6169-150					
R810077-01			7225-001	J17K71	19.2
R810077-02			7225-002	Lab Control Sample	ok
R810077-03			7225-003	Method Blank	U
R810077-04			7225-004	Duplicate (R810077-01)	ok
Nominal values and limits from method				RDLs (pCi/smpl)	1.00

100HRemainSitesBurialGrnd-OS Quick

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6169-150			2σ prep error 10.4 %	Reference Lab Notebook #6169, pg. 150												
R810077-01			J17K71	7.74	0.0304			84	100				30	11/06/08	11/06	GRB-221
R810077-02			Lab Control Sample	6.93	0.0300			90	100					11/06/08	11/06	GRB-222
R810077-03			Method Blank	6.65	0.0300			97	100					11/06/08	11/06	GRB-223
R810077-04			Duplicate (R810077-01)	7.24	0.0304			86	100				30	11/06/08	11/06	GRB-224
Nominal values and limits from method				1.00	0.0300			30-105	100				180			

PROCEDURES
REFERENCE SRTOT_SEP_PRECIP_GPC
SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
CP-383 Strontium in Dissolved Solid of < 5.0g Aliquot, rev 1

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 7.14 ± 0.934
YIELD 89 ± 11

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

Test TC Matrix OTHER
SDG 7225
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1383

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Technetium 99	
Preparation batch 6169-150						
R810077-01			7225-001	J17K71	U	
R810077-02			7225-002	Lab Control Sample	ok	
R810077-03			7225-003	Method Blank	U	
R810077-04			7225-004	Duplicate (R810077-01)	-	U
Nominal values and limits from method 100HRemainSitesBurialGrnd-OS Quick				RDLs (pCi/smpl)	15.0	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6169-150 2σ prep error 13.2 % Reference Lab Notebook #6169, pg. 150																
R810077-01			J17K71	28.6	0.0152			89	100				35	11/07/08	11/11	GRB-225
R810077-02			Lab Control Sample	34.7	0.0100			100	100					11/07/08	11/10	GRB-203
R810077-03			Method Blank	34.3	0.0100			101	100					11/07/08	11/12	GRB-222
R810077-04			Duplicate (R810077-01)	24.5	0.0152			93	100				34	11/07/08	11/10	GRB-203
Nominal values and limits from method				15.0	0.0100			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 12

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	30.5	±	9.78
	YIELD	96	±	11

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

Test GAM Matrix OTHER
SDG 7225
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1383

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137
Preparation batch 6169-150							
R810077-01			7225-001	J17K71	40.6		48.6
R810077-02			7225-002	Lab Control Sample	ok		ok
R810077-03			7225-003	Method Blank	U		U
R810077-05			7225-005	Duplicate (R810077-01)	ok	U	ok
Nominal values and limits from method				RDLs (pCi/smpl)	0.050		0.100

100HRemainSitesBurialGrnd-OS Quick

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6169-150			2σ prep error 7.0 %	Reference Lab Notebook #6169, pg. 150												
R810077-01			J17K71	7610	0.210					215			22	10/28/08	10/29	JR,02,00
R810077-02			Lab Control Sample	30.0	0.209					915				10/28/08	10/29	JR,08,00
R810077-03			Method Blank	4020	0.209					915				10/28/08	10/29	JR,07,00
R810077-05			Duplicate (R810077-01)	9470	0.210					126			22	10/28/08	10/29	JR,02,00
Nominal values and limits from method				0.050	0.209					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 5280 ± 8340
YIELD _____ ± _____

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

Test C Matrix OTHER
SDG 7225
Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1383

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Carbon 14	
Preparation batch 6169-150						
R810077-01			7225-001	J17K71	178	U
R810077-02			7225-002	Lab Control Sample	ok	
R810077-03			7225-003	Method Blank	U	
R810077-04			7225-004	Duplicate (R810077-01)	-	U
Nominal values and limits from method				RDLs (pCi/smpl)	50.0	
100HRemainSitesBurialGrnd-OS Quick						

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6169-150			2σ prep error 10.0 %	Reference Lab Notebook #6169, pg. 150												
R810077-01			J17K71	637	0.0021			100		50			35	11/11/08	11/11	LSC-004
R810077-02			Lab Control Sample	692	0.0020			100		50				11/11/08	11/12	LSC-004
R810077-03			Method Blank	669	0.0020			100		50				11/11/08	11/11	LSC-004
R810077-04			Duplicate (R810077-01)	647	0.0021			100		50			35	11/11/08	11/11	LSC-004
Nominal values and limits from method				50.0	0.0020					10			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 661 ± 48.9
YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

Test H Matrix OTHER
SDG 7225
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1383

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
Preparation batch 6169-150						
R810077-01			7225-001	J17K71	U	
R810077-02			7225-002	Lab Control Sample	ok	
R810077-03			7225-003	Method Blank	U	
R810077-04			7225-004	Duplicate (R810077-01)	-	U
Nominal values and limits from method				RDLs (pCi/smpl) 400		
100HRemainSitesBurialGrnd-OS Quick						

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ sample	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6169-150			2σ prep error 10.0 %	Reference Lab Notebook #6169, pg. 150												
R810077-01			J17K71	838	0.0021			100		50			36	11/11/08	11/12	LSC-004
R810077-02			Lab Control Sample	932	0.0020			100		50				11/11/08	11/12	LSC-004
R810077-03			Method Blank	882	0.0020			100		50				11/11/08	11/12	LSC-004
R810077-04			Duplicate (R810077-01)	864	0.0021			100		50			36	11/11/08	11/12	LSC-004
Nominal values and limits from method				400	0.0020					25			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 879 ± 79.4
YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

Test NI L Matrix OTHER
SDG 7225
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1383

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Nickel 63
Preparation batch 6169-150					
R810077-01			7225-001	J17K71	113
R810077-02			7225-002	Lab Control Sample	ok
R810077-03			7225-003	Method Blank	U
R810077-04			7225-004	Duplicate (R810077-01)	ok
Nominal values and limits from method				RDLs (pCi/smpl)	30.0
100HRemainSitesBurialGrnd-OS Quick					

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/smpl	ALIQ smpl	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6169-150			2σ prep error 11.2 %	Reference Lab Notebook #6169, pg. 150												
R810077-01			J17K71	111	0.0152			84		50			38	11/13/08	11/14	LSC-004
R810077-02			Lab Control Sample	155	0.0100			92		50				11/13/08	11/14	LSC-004
R810077-03			Method Blank	164	0.0100			90		50				11/13/08	11/14	LSC-004
R810077-04			Duplicate (R810077-01)	116	0.0152			84		50			38	11/13/08	11/14	LSC-004
Nominal values and limits from method				30.0	0.0100			30-105		25			180			

PROCEDURES
REFERENCE NI63_LSC
SPP-071 Soil Dissolution, > 1.0g Aliquot, rev 5
CP-280 Nickel-63 Purification, rev 3

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 136 ± 53.8
YIELD 88 ± 8

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 11/18/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1383

SDG 7225
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1383

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/18/08

SDG 7225
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1383

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

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

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SDG 7225
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Client Hanford
Contract No. S00W235A00
Case no SDG_K1383

WORK SUMMARY

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

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

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

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

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

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

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

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GUIDE, cont.

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Contract No. S00W235A00
Case no SDG_K1383

DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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GUIDE, cont.

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Contract No. S00W235A00
Case no SDG_K1383

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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Contract No. S00W235A00
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LAB CONTROL SAMPLE

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

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

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

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

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

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

  2. The error of ADDED.

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

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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GUIDE, cont.

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DUPLICATE

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

* The RPD is underlined if it is greater than either limit.

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

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

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

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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MATRIX SPIKE

for the recovery.

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

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

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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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.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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GUIDE, cont.

Client Hanford
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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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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.

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-108-002	Page 1 of 1
Collector: Garret Taysom	Company Contact: Doug Bowers	Telephone No.: 509 531-0701	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: 24hr RCF 45 day
Project Designation: 100-H Remaining Sites Burial Grounds - Other Solid Quick	Sampling Location: 118-H-1 burial ground (1 filter from 118-H-5) K1383 (7125)		SAF No.: RC-108	
Ice Chest No.: DECTA-1	Field Logbook No.: EL 1627	COA: R118H12000	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A090015		Bill of Lading/Air Bill No.: SEE OSR	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Samples have been stored in Rad con source locker and sample time will reflect when they were turned over to Project Analytical Lead. These sir samples will be ashed and composited.

Preservation	None	None										
Type of Container	Poly Bag	Poly Bag										
No. of Container(s)	1	X0	10 15									
Volume	1000mL	1000mL										

SAMPLE ANALYSIS	See item (1) in Special Instructions.	RCF GEA Shipping Screen	RCF								
Sample No.	Matrix *	Sample Date	Sample Time									
J17K71	OTHER SOLID	10-7-08	1445	X	X	20850						

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Garret Taysom / [illegible]	1445 10-7-08	Doug Bowers / Doug Bowers	10-7-08/1445
Doug Bowers / Doug Bowers	10-7-08/1630	RF 14 1060 Bldg	10-7-08/1630
RF 14 1060 Bldg / J.E. Bernhard	1025 10-8-08	J.E. Bernhard	1025 10-8-08
J.E. Bernhard	1038 10-8-08	[illegible]	1038 10/8/08
[illegible]	1315 10/8/08 Rel	J.E. Bernhard	1315 10-8-08
J.E. Bernhard via [illegible]	1015 10-9-08	FED EX	

SPECIAL INSTRUCTIONS

Run RAD screen then forward to Eberline for GEA. Ba-133, C-14, H3, Ni-63, Niobium-94, sio Pu, Iso U, Sr-90, Tc-99, iso Thorium.

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133, Niobium-94, Radium-226, Silver-108 metastable}

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By: FED EX	[illegible] 10/10/08	09:00	Title	Date Time
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By		Date Time

WCH-EE-011

EBERLINE

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

10/10/08

Client: W.C. HANFORD City RICHLAND State WA

Date/Time received 10/10/08 09:50 CoC No. RC-108-002

Container I.D. No. DELTA-1 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1	Custody seals on shipping container intact?	Yes [X]	No [ ]	N/A [ ]
2	Custody seals on shipping container dated & signed?	Yes [X]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [X]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [X]	No [ ]	N/A [ ]
5.	Packing material is:	Wet [ ]	Dry [X]	
6	Number of samples in shipping container: 1	Sample Matrix: X SOIL		
7.	Number of containers per sample: 1	(Or see CoC _____)		
8.	Samples are in correct container	Yes [X]	No [ ]	
9.	Paperwork agrees with samples?	Yes [X]	No [ ]	
10	Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ]	Appropriate sample labels [X]		
11.	Samples are: In good condition [X] 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 _____	Date: 10/10/08	Time: _____	

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
J17K71	<60						

Ion Chamber Ser. No _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 100482 Calibration date 10 Jul 08