

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 11/11/08
INITIAL/DATE

COMMENTS:

SDG K1407

SAF-RC-108

Rad only

Chem only

Rad & Chem

Complete

Partial

Waste Site: 118-H-1, Trench D vacuum drum

RECEIVED
NOV 24 2008
EDMC



EBERLINE SERVICES

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Richmond, California 94804-3849
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November 6, 2008

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

Reference: **P.O. #S00W235A00**
Eberline Services R8-10-195-7732, SDG K1407

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 22, 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 C. Mannion
Senior Program Manager

MCM/jag

Enclosure: Data Package



1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1407 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 5, 2008.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Tritium Analysis

No problems were encountered during the course of the analyses.

2.3 Carbon-14 Analysis

No problems were encountered during the course of the analyses.

2.4 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.7 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 K1407

SDG 7732
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG_K1407

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

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Prepared by


Melissa Mannion

Reviewed by

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 11/06/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1407

SDG 7732
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1407

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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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1407

SDG 7732
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1407

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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Protocol Hanford1
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

SDG 7732
 Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1407

LAB						CHAIN OF	
SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CUSTODY	COLLECTED
R810195-01	J17R75	118-H-1 trench Dvacuum	OTHER		RC-113	RC-108-004	10/14/08 09:20
R810195-02	Lab Control Sample		OTHER		RC-113		
R810195-03	Method Blank		OTHER		RC-113		
R810195-04	Duplicate (R810195-01)	118-H-1 trench Dvacuum	OTHER		RC-113		10/14/08 09:20
R810195-05	Duplicate (R810195-01)	118-H-1 trench Dvacuum	OTHER		RC-113		10/14/08 09:20

Lab id EBRLNE
 Protocol Hanford1
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

SDG 7732
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1407

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7732	RC-108-004	J17R75	OTHER		0.18 g		10/22/08 8	R810195-01	7732-001
		Method Blank	OTHER					R810195-03	7732-003
		Lab Control Sample	OTHER					R810195-02	7732-002
		Duplicate (R810195-01)	OTHER		0.18 g		10/22/08 8	R810195-04	7732-004
		Duplicate (R810195-01)	OTHER		0.18 g		10/22/08 8	R810195-05	7732-005

QC SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

SDG 7732
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1407

TEST	MATRIX	METHOD	PREPARATION ERROR			PLANCHETS ANALYZED			QUALI-PIERS
			BATCH	2σ %	CLIENT MORE	RE BLANK	LCS	DUP/ORIG MS/ORIG	
Alpha Spectroscopy									
PU	OTHER	Plutonium, Isotopic in Solids	6169-176	8.0	1		1	1	1/1
U	OTHER	Uranium, Isotopic in Solids	6169-176	8.0	1		1	1	1/1
Gas Proportional Counting									
93A	OTHER	Gross Alpha	6169-176	20.6	1		1	1	1/1
93B	OTHER	Gross Beta	6169-176	11.0	1		1	1	1/1
Gamma Spectroscopy									
GAM	OTHER	Gamma Scan	6169-176	7.0	1		1	1	1/1
Liquid Scintillation Counting									
C	OTHER	Carbon 14 in Solids	6169-176	10.0	1		1	1	1/1
H	OTHER	Tritium in Solids	6169-176	10.0	1		1	1	1/1
NI_L	OTHER	Nickel 63 in Solids	6169-176	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.

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

SDG 7732
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1407

LAB WORK SUMMARY

LAB SAMPLE	CLIENT SAMPLE ID					SUF-					
COLLECTED	LOCATION	MATRIX				FIX	ANALYZED	REVIEWED	BY	METHOD	
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST							
R810195-01	J17R75		7732-001	93A/93			10/29/08	10/29/08	BW	Gross Alpha	
10/14/08	118-H-1 trench	Dvacuum	OTHER	7732-001	93B/93		10/29/08	10/29/08	BW	Gross Beta	
10/22/08	RC-108-004	RC-113		7732-001	C		10/29/08	11/03/08	BW	Carbon 14 in Solids	
				7732-001	GAM		10/29/08	10/29/08	BW	Gamma Scan	
				7732-001	H		10/30/08	11/03/08	BW	Tritium in Solids	
				7732-001	NI_L		10/29/08	11/03/08	BW	Nickel 63 in Solids	
				7732-001	PU		10/30/08	10/30/08	BW	Plutonium, Isotopic in Solids	
				7732-001	U		10/28/08	10/29/08	BW	Uranium, Isotopic in Solids	
R810195-02	Lab Control Sample		7732-002	93A/93			10/28/08	10/29/08	BW	Gross Alpha	
		OTHER	7732-002	93B/93			10/28/08	10/29/08	BW	Gross Beta	
		RC-113	7732-002	C			10/30/08	11/03/08	BW	Carbon 14 in Solids	
			7732-002	GAM			10/29/08	10/29/08	BW	Gamma Scan	
			7732-002	H			10/30/08	11/03/08	BW	Tritium in Solids	
			7732-002	NI_L			10/29/08	11/03/08	BW	Nickel 63 in Solids	
			7732-002	PU			10/30/08	10/30/08	BW	Plutonium, Isotopic in Solids	
			7732-002	U			10/28/08	10/29/08	BW	Uranium, Isotopic in Solids	
R810195-03	Method Blank		7732-003	93A/93			10/28/08	10/29/08	BW	Gross Alpha	
		OTHER	7732-003	93B/93			10/28/08	10/29/08	BW	Gross Beta	
		RC-113	7732-003	C			10/29/08	11/03/08	BW	Carbon 14 in Solids	
			7732-003	GAM			10/29/08	10/29/08	BW	Gamma Scan	
			7732-003	H			10/30/08	11/03/08	BW	Tritium in Solids	
			7732-003	NI_L			10/29/08	11/03/08	BW	Nickel 63 in Solids	
			7732-003	PU			10/30/08	10/30/08	BW	Plutonium, Isotopic in Solids	
			7732-003	U			10/28/08	10/29/08	BW	Uranium, Isotopic in Solids	
R810195-04	Duplicate (R810195-01)		7732-004	93A/93			10/28/08	10/29/08	BW	Gross Alpha	
10/14/08	118-H-1 trench	Dvacuum	OTHER	7732-004	93B/93		10/28/08	10/29/08	BW	Gross Beta	
10/22/08		RC-113		7732-004	C		10/29/08	11/03/08	BW	Carbon 14 in Solids	
				7732-004	H		10/30/08	11/03/08	BW	Tritium in Solids	
				7732-004	NI_L		10/29/08	11/03/08	BW	Nickel 63 in Solids	
				7732-004	PU		10/30/08	10/30/08	BW	Plutonium, Isotopic in Solids	
				7732-004	U		10/28/08	10/29/08	BW	Uranium, Isotopic in Solids	
R810195-05	Duplicate (R810195-01)		7732-005	GAM			10/29/08	10/29/08	BW	Gamma Scan	
10/14/08	118-H-1 trench	Dvacuum	OTHER								
10/22/08		RC-113									

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Protocol Hanford1
Version Ver 1.0
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

SDG 7732
 Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1407

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	RC-113	Gross Alpha	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	RC-113	Gross Beta	900.0_ALPHABETA_GPC	1			1	1	1	4
C	RC-113	Carbon 14 in Solids	C14_COX_LSC	1			1	1	1	4
GAM	RC-113	Gamma Scan	GAMMA_GS	1			1	1	1	4
H	RC-113	Tritium in Solids	TRITIUM_COX_LSC	1			1	1	1	4
NI_L	RC-113	Nickel 63 in Solids	NI63_LSC	1			1	1	1	4
PU	RC-113	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
U	RC-113	Uranium, Isotopic in Solids	UIISO_PLATE_AEA	1			1	1	1	4
TOTALS				8			8	8	8	32

WORK SUMMARY

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1407

7732-003

Method Blank

METHOD BLANK

SDG <u>7732</u>	Client/Case no <u>Hanford</u>	SDG <u>K1407</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R810195-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7732-003</u>	Material/Matrix <u>OTHER</u>	
	SAF No <u>RC-113</u>	

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-2.80	6.2	<u>14.7</u>	10.0	U	93A
Gross Beta	12587-47-2	2.01	6.4	<u>10.8</u>	15.0	U	93B
Tritium	10028-17-8	47.8	110	<u>192</u>	400	U	H
Carbon 14	14762-75-5	-4.16	81	<u>138</u>	50.0	U	C
Nickel 63	13981-37-8	0.835	8.7	<u>14.7</u>	30.0	U	NI_L
Uranium 233/234	U-233/234	0	0.26	<u>1.01</u>	1.00	U	U
Uranium 235	15117-96-1	0.160	0.32	<u>1.23</u>	1.00	U	U
Uranium 238	U-238	0	0.26	<u>1.01</u>	1.00	U	U
Plutonium 238	13981-16-3	0.162	0.65	<u>1.24</u>	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.32	<u>1.24</u>	1.00	U	PU
Potassium 40	13966-00-2	U		<u>611</u>		U	GAM
Cobalt 60	10198-40-0	U		<u>57.6</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>47.4</u>	0.100	U	GAM
Radium 226	13982-63-3	U		<u>103</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>189</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>118</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>147</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>86.7</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		<u>69.2</u>		U	GAM
Thorium 232	TH-232	U		<u>189</u>		U	GAM
Uranium 235	15117-96-1	U		<u>164</u>		U	GAM
Uranium 238	U-238	U		<u>5560</u>		U	GAM
Americium 241	14596-10-2	U		<u>50.5</u>		U	GAM
Silver 108m	14391-65-2	U		<u>35.5</u>		U	GAM
Barium 133	13981-41-4	U		<u>49.6</u>		U	GAM
Niobium 94	14681-63-1	U		<u>45.6</u>		U	GAM

100-H RemainingSitesBurialGrounds-OS

METHOD BLANKS

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1407

7732-003

Method Blank

BLANK, cont.

SDG <u>7732</u>	Client/Case no <u>Hanford</u>	<u>SDG K1407</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. S00W235A00</u>	
Lab sample id <u>R810195-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7732-003</u>	Material/Matrix _____	<u>OTHER</u>
	SAF No <u>RC-113</u>	

QC-BLANK #67788

Lab id <u>EBRLNE</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

7732-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7732</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> <u>SDG K1407</u> Contract No. <u>S00W235A00</u>
Lab sample id <u>R810195-02</u> Dept sample id <u>7732-002</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>OTHER</u> SAF No <u>RC-113</u>

ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ LMTS	PROTOCOL
	pCi/smpl	(COUNT)	pCi/smpl	pCi/smpl	FIERS TEST	pCi/smpl	pCi/smpl	%	(TOTAL)	LIMITS
Gross Alpha	235	40	<u>34.4</u>	10.0	93A	224	9.0	105	58-142	70-130
Gross Beta	230	16	<u>11.7</u>	15.0	93B	222	8.9	104	79-121	70-130
Tritium	22800	530	<u>182</u>	400	H	24000	960	95	84-116	80-120
Carbon 14	64400	1300	<u>325</u>	50.0	C	63800	2600	101	83-117	80-120
Nickel 63	1220	30	<u>15.2</u>	30.0	NI_L	1320	53	92	83-117	80-120
Uranium 233/234	101	12	<u>4.94</u>	1.00	U	96.6	3.9	105	77-123	80-120
Uranium 235	76.4	9.5	<u>1.28</u>	1.00	U	78.5	3.1	97	78-122	80-120
Uranium 238	109	12	<u>4.76</u>	1.00	U	105	4.2	104	78-122	80-120
Plutonium 238	117	13	<u>1.68</u>	1.00	PU	128	5.1	91	80-120	80-120
Plutonium 239/240	133	15	<u>1.34</u>	1.00	PU	145	5.8	92	80-120	80-120
Cobalt 60	2380	140	<u>85.5</u>	0.050	GAM	2390	96	100	85-115	80-120
Cesium 137	3040	130	<u>90.4</u>	0.100	GAM	2780	110	109	85-115	80-120

100-H RemainingSitesBurialGrounds-OS

QC-LCS #67787

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

7732-004

J17R75

DUPLICATE

SDG <u>7732</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R810195-04</u> Dept sample id <u>7732-004</u>	Client/Case no <u>Hanford</u> SDG <u>K1407</u> Contract No. <u>S00W235A00</u> ORIGINAL Lab sample id <u>R810195-01</u> Dept sample id <u>7732-001</u> Received <u>10/22/08</u> Client sample id <u>J17R75</u> Location/Matrix <u>118-H-1 trench Dvacuum</u> <u>OTHER</u> Collected/Weight <u>10/14/08 09:20</u> <u>0.18 g</u> Custody/SAF No <u>RC-108-004</u> <u>RC-113</u>
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ANALYTE	DUPLICATE		MDA	RDL	QUALI-	ORIGINAL	ORIGINAL		MDA	QUALI-	RPD	3σ	DER
	pCi/smpl	2σ ERR					pCi/smpl	2σ ERR					
Gross Alpha	12.0	5.9	5.66	10.0		93A	13.2	6.3	6.52		10	112	0.3
Gross Beta	91.2	11	10.8	15.0		93B	91.8	12	14.2		1	35	0.1
Tritium	108	62	97.6	400		H	146	70	108		30	112	0.8
Carbon 14	150	46	<u>70.4</u>	50.0		C	163	52	<u>79.5</u>		8	70	0.4
Nickel 63	23.9	9.8	15.1	30.0		NI_L	20.1	9.6	15.0		17	97	0.5
Uranium 233/234	0	0.33	<u>1.26</u>	1.00	U	U	0.135	0.27	<u>1.03</u>	U	-		0.6
Uranium 235	0.200	0.40	<u>1.53</u>	1.00	U	U	0.163	0.33	<u>1.25</u>	U	-		0.1
Uranium 238	0	0.33	<u>1.26</u>	1.00	U	U	0	0.27	<u>1.03</u>	U	-		0
Plutonium 238	2.17	1.3	<u>1.28</u>	1.00		PU	2.46	1.5	<u>1.39</u>		13	130	0.3
Plutonium 239/240	1.17	1.0	<u>1.28</u>	1.00	U	PU	2.17	1.2	<u>1.11</u>		60	141	1.3

100-H RemainingSitesBurialGrounds-OS

QC-DUP#1 67789

Lab id <u>EBRLINE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>11/06/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

7732-005

J17R75

DUPLICATE

SDG <u>7732</u>	Client/Case no <u>Hanford</u>	SDG <u>K1407</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. S00W235A00</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R810195-05</u>	Lab sample id <u>R810195-01</u>	Client sample id <u>J17R75</u>
Dept sample id <u>7732-005</u>	Dept sample id <u>7732-001</u>	Location/Matrix <u>118-H-1 trench Dvacuum OTHER</u>
	Received <u>10/22/08</u>	Collected/Weight <u>10/14/08 09:20 0.18 g</u>
		Custody/SAF No <u>RC-108-004 RC-113</u>

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	DER	
	pCi/smpl	(COUNT)	pCi/smpl	pCi/smpl	FIERS		TEST	pCi/smpl	(COUNT)	pCi/smpl	FIERS	%	TOT
Potassium 40	U		1860		U	GAM	U	1550	U	-		0.3	
Cobalt 60	U		<u>72.8</u>	0.050	U	GAM	U	<u>54.1</u>	U	-		0.4	
Cesium 137	U		<u>79.5</u>	0.100	U	GAM	118	55	<u>60.5</u>		39	148	0.8
Radium 226	U		<u>154</u>	0.100	U	GAM	U	<u>124</u>	U	-		0.3	
Radium 228	U		<u>356</u>	0.200	U	GAM	U	<u>265</u>	U	-		0.4	
Europium 152	U		<u>198</u>	0.100	U	GAM	U	<u>167</u>	U	-		0.2	
Europium 154	U		<u>212</u>	0.100	U	GAM	U	<u>169</u>	U	-		0.3	
Europium 155	U		<u>167</u>	0.100	U	GAM	U	<u>122</u>	U	-		0.4	
Thorium 228	U		112		U	GAM	U	83.8	U	-		0.4	
Thorium 232	U		356		U	GAM	U	265	U	-		0.4	
Uranium 235	U		259		U	GAM	U	204	U	-		0.3	
Uranium 238	U		8110		U	GAM	U	6630	U	-		0.3	
Americium 241	U		256		U	GAM	U	192	U	-		0.4	
Silver 108m	U		59.4		U	GAM	U	48.8	U	-		0.3	
Barium 133	U		86.9		U	GAM	U	62.4	U	-		0.5	
Niobium 94	U		59.1		U	GAM	U	50.1	U	-		0.2	

100-H RemainingSitesBurialGrounds-OS

Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>11/06/08</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1407

7732-001

J17R75

DATA SHEET

SDG <u>7732</u>	Client/Case no <u>Hanford</u>	SDG <u>K1407</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R810195-01</u>	Client sample id <u>J17R75</u>	
Dept sample id <u>7732-001</u>	Location/Matrix <u>118-H-1 trench Dvacuum</u>	<u>OTHER</u>
Received <u>10/22/08</u>	Collected/Weight <u>10/14/08 09:20</u>	<u>0.18 g</u>
	Custody/SAF No <u>RC-108-004</u>	<u>RC-113</u>

ANALYTE	CAS NO	RESULT pCi/smpl	2σ ERR (COUNT)	MDA pCi/smpl	RDL pCi/smpl	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	13.2	6.3	6.52	10.0		93A
Gross Beta	12587-47-2	91.8	12	14.2	15.0		93B
Tritium	10028-17-8	146	70	108	400		H
Carbon 14	14762-75-5	163	52	<u>79.5</u>	50.0		C
Nickel 63	13981-37-8	20.1	9.6	15.0	30.0		NI_L
Uranium 233/234	U-233/234	0.135	0.27	<u>1.03</u>	1.00	U	U
Uranium 235	15117-96-1	0.163	0.33	<u>1.25</u>	1.00	U	U
Uranium 238	U-238	0	0.27	<u>1.03</u>	1.00	U	U
Plutonium 238	13981-16-3	2.46	1.5	<u>1.39</u>	1.00		PU
Plutonium 239/240	PU-239/240	2.17	1.2	<u>1.11</u>	1.00		PU
Potassium 40	13966-00-2	U		1550		U	GAM
Cobalt 60	10198-40-0	U		<u>54.1</u>	0.050	U	GAM
Cesium 137	10045-97-3	118	55	<u>60.5</u>	0.100		GAM
Radium 226	13982-63-3	U		<u>124</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>265</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>167</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>169</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>122</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		83.8		U	GAM
Thorium 232	TH-232	U		265		U	GAM
Uranium 235	15117-96-1	U		204		U	GAM
Uranium 238	U-238	U		6630		U	GAM
Americium 241	14596-10-2	U		192		U	GAM
Silver 108m	14391-65-2	U		48.8		U	GAM
Barium 133	13981-41-4	U		62.4		U	GAM
Niobium 94	14681-63-1	U		50.1		U	GAM

100-H RemainingSitesBurialGrounds-OS

DATA SHEETS

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>11/06/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

Test PU Matrix OTHER
 SDG 7732
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1407

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

RESULTS

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

Preparation batch 6169-176

R810195-01	7732-001	J17R75		2.46	2.17
R810195-02	7732-002	Lab Control Sample		ok	ok
R810195-03	7732-003	Method Blank		U	U
R810195-04	7732-004	Duplicate (R810195-01)		ok	ok U

Nominal values and limits from method RDLs (pCi/smpl) 1.00 1.00
 100-H RemainingSitesBurialGrounds-OS

METHOD PERFORMANCE

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

Preparation batch 6169-176 2σ prep error 8.0 % Reference Lab Notebook #6169, pg. 176

R810195-01	J17R75		<u>1.39</u>	0.100			77		101			16	10/30/08	10/30	SS-027	
R810195-02	Lab Control Sample		<u>1.68</u>	0.100			72		101				10/30/08	10/30	SS-028	
R810195-03	Method Blank		<u>1.24</u>	0.100			84		103				10/30/08	10/30	SS-031	
R810195-04	Duplicate (R810195-01)		<u>1.28</u>	0.100			82		103				16	10/30/08	10/30	SS-034

Nominal values and limits from method 1.00 0.100 20-105 100 100 180

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

AVERAGES ± 2 SD	MDA <u>1.40</u> ± <u>0.397</u>
FOR 4 SAMPLES	YIELD <u>79</u> ± <u>11</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
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Report date <u>11/06/08</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

Test U Matrix OTHER
 SDG 7732
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1407

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

RESULTS

LAB	RAW	SUF-		1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	233/234	235	238	1+3	2σ	2+3	2σ

Preparation batch 6169-176

R810195-01		7732-001	J17R75	U	U	U				
R810195-02		7732-002	Lab Control Sample	ok	ok	ok				
R810195-03		7732-003	Method Blank	U	U	U				
R810195-04		7732-004	Duplicate (R810195-01)	- U	- U	- U				

Nominal values and limits from method	RDLs (pCi/smpl)	1.00	1.00	1.00	100	4
100-H Remaining Sites Burial Grounds - OS					Averages	

METHOD PERFORMANCE

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

Preparation batch 6169-176 2σ prep error 8.0 % Reference Lab Notebook #6169, pg. 176

R810195-01		J17R75		<u>1.25</u>	0.100			77	109				14	10/28/08	10/28	SS-027
R810195-02		Lab Control Sample		<u>4.94</u>	0.100			85	110					10/28/08	10/28	SS-028
R810195-03		Method Blank		<u>1.23</u>	0.100			82	110					10/28/08	10/28	SS-033
R810195-04		Duplicate (R810195-01)		<u>1.53</u>	0.100			77	110				14	10/28/08	10/28	SS-034

Nominal values and limits from method	1.00	0.100	20-105	100	100	180
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PROCEDURES	REFERENCE	UIISO_PLATE_AEA
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7	
CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 12	

AVERAGES ± 2 SD	MDA	<u>2.24</u> ± <u>3.61</u>
FOR 4 SAMPLES	YIELD	<u>80</u> ± <u>8</u>

METHOD SUMMARIES

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Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

Test 93A Matrix OTHER
 SDG 7732
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1407

LAB METHOD SUMMARY

GROSS ALPHA

GAS PROPORTIONAL COUNTING

RESULTS

LAB RAW SUP-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Gross Alpha

Preparation batch 6169-176

R810195-01	93	7732-001	J17R75	13.2
R810195-02	93	7732-002	Lab Control Sample	ok
R810195-03	93	7732-003	Method Blank	U
R810195-04	93	7732-004	Duplicate (R810195-01)	ok

Nominal values and limits from method RDLs (pCi/smpl) 10.0
 100-H RemainingSitesBurialGrounds-OS

METHOD PERFORMANCE

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

Preparation batch 6169-176 2σ prep error 20.6 % Reference Lab Notebook #6169, pg. 176

R810195-01	93	J17R75	6.52	0.0500	8	100	15	10/28/08	10/29	GRB-114
R810195-02	93	Lab Control Sample	<u>34.4</u>	0.0500	60	100		10/28/08	10/28	GRB-110
R810195-03	93	Method Blank	<u>14.7</u>	0.0500	61	100		10/28/08	10/28	GRB-111
R810195-04	93	Duplicate (R810195-01)	5.66	0.0500	8	100	14	10/28/08	10/28	GRB-112

Nominal values and limits from method 10.0 0.0500 5-250 100 180

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

AVERAGES ± 2 SD MDA 15.3 ± 26.7
 FOR 4 SAMPLES RESIDUE 34 ± 61

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLINE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

Test 93B Matrix OTHER
 SDG 7732
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1407

LAB METHOD SUMMARY

GROSS BETA

GAS PROPORTIONAL COUNTING

RESULTS

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID		Gross Beta
Preparation batch 6169-176					
R810195-01	93	7732-001	J17R75		91.8
R810195-02	93	7732-002	Lab Control Sample		ok
R810195-03	93	7732-003	Method Blank		U
R810195-04	93	7732-004	Duplicate (R810195-01)		ok

Nominal values and limits from method RDLs (pCi/smpl) 15.0
 100-H RemainingSitesBurialGrounds-OS

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	RESID	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/smpl	sample	FAC	TION	mg	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6169-176			2σ prep error 11.0 %			Reference Lab Notebook #6169, pg. 176									
R810195-01	93	J17R75	14.2	0.0500			8		100			15	10/28/08	10/29	GRB-114
R810195-02	93	Lab Control Sample	11.7	0.0500			60		100				10/28/08	10/28	GRB-110
R810195-03	93	Method Blank	10.8	0.0500			61		100				10/28/08	10/28	GRB-111
R810195-04	93	Duplicate (R810195-01)	10.8	0.0500			8		100			14	10/28/08	10/28	GRB-112

Nominal values and limits from method 15.0 0.0500 5-250 100 180

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

AVERAGES ± 2 SD MDA 11.9 ± 3.21
 FOR 4 SAMPLES RESIDUE 34 ± 61

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

Test GAM Matrix OTHER
 SDG 7732
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1407

LAB METHOD SUMMARY

GAMMA SCAN
 GAMMA SPECTROSCOPY

RESULTS

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

Preparation batch 6169-176

R810195-01	7732-001	J17R75	U	118
R810195-02	7732-002	Lab Control Sample	ok	ok
R810195-03	7732-003	Method Blank	U	U
R810195-05	7732-005	Duplicate (R810195-01)	- U	ok U

Nominal values and limits from method RDLs (pCi/smpl) 0.050 0.100
 100-H RemainingSitesBurialGrounds-OS

METHOD PERFORMANCE

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

Preparation batch 6169-176 2σ prep error 7.0 % Reference Lab Notebook #6169, pg. 176

R810195-01	J17R75	<u>16800</u>	0.187	175	15	10/28/08	10/29	JR,08,00
R810195-02	Lab Control Sample	<u>85.5</u>	0.100	403		10/28/08	10/29	JR,01,00
R810195-03	Method Blank	<u>13100</u>	0.100	403		10/28/08	10/29	JR,07,00
R810195-05	Duplicate (R810195-01)	<u>19800</u>	0.187	125	15	10/28/08	10/29	JR,08,00

Nominal values and limits from method 0.050 0.100 100 180

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

AVERAGES ± 2 SD MDA 12400 ± 17400
 FOR 4 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

Test C Matrix OTHER
 SDG 7732
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOLIDS
 LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1407

RESULTS

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

Preparation batch 6169-176

R810195-01	7732-001	J17R75	163
R810195-02	7732-002	Lab Control Sample	ok
R810195-03	7732-003	Method Blank	U
R810195-04	7732-004	Duplicate (R810195-01)	ok

Nominal values and limits from method RDLs (pCi/smpl) 50.0
 100-H RemainingSitesBurialGrounds-OS

METHOD PERFORMANCE

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

Preparation batch 6169-176 2σ prep error 10.0 % Reference Lab Notebook #6169, pg. 176

R810195-01	J17R75	<u>79.5</u>	0.0173	100	50	15	10/29/08	10/29	LSC-006
R810195-02	Lab Control Sample	<u>325</u>	0.0100	100	10		10/29/08	10/30	LSC-006
R810195-03	Method Blank	<u>138</u>	0.0100	100	50		10/29/08	10/29	LSC-006
R810195-04	Duplicate (R810195-01)	<u>70.4</u>	0.0193	100	50	15	10/29/08	10/29	LSC-006

Nominal values and limits from method 50.0 0.0100 10 180

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

AVERAGES ± 2 SD MDA 153 ± 237
 FOR 4 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

Test H Matrix OTHER
 SDG 7732
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1407

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Tritium
Preparation batch 6169-176				
R810195-01		7732-001	J17R75	146
R810195-02		7732-002	Lab Control Sample	ok
R810195-03		7732-003	Method Blank	U
R810195-04		7732-004	Duplicate (R810195-01)	ok

Nominal values and limits from method RDLs (pCi/smpl) 400
 100-H RemainingSitesBurialGrounds-OS

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/smpl	sample	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6169-176			2σ prep error 10.0 %			Reference Lab Notebook #6169, pg. 176									
R810195-01		J17R75	108	0.0173			100		50			16	10/29/08	10/30	LSC-006
R810195-02		Lab Control Sample	182	0.0100			100		50				10/29/08	10/30	LSC-006
R810195-03		Method Blank	192	0.0100			100		50				10/29/08	10/30	LSC-006
R810195-04		Duplicate (R810195-01)	97.6	0.0193			100		50			16	10/29/08	10/30	LSC-006

Nominal values and limits from method 400 0.0100 25 180

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

AVERAGES ± 2 SD MDA 145 ± 97.9
 FOR 4 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1407

Test NI L Matrix OTHER
 SDG 7732
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1407

RESULTS

LAB RAW SUF-
 SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 6169-176

R810195-01	7732-001	J17R75	20.1
R810195-02	7732-002	Lab Control Sample	ok
R810195-03	7732-003	Method Blank	U
R810195-04	7732-004	Duplicate (R810195-01)	ok

Nominal values and limits from method RDLs (pCi/smpl) 30.0
 100-H RemainingSitesBurialGrounds-OS

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/smpl	smpl	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 6169-176			2σ prep error 11.2 % Reference Lab Notebook #6169, pg. 176												
R810195-01		J17R75	15.0	0.100			99	50			15	10/28/08	10/29	LSC-004	
R810195-02		Lab Control Sample	15.2	0.100			98	50				10/28/08	10/29	LSC-004	
R810195-03		Method Blank	14.7	0.100			100	50				10/28/08	10/29	LSC-004	
R810195-04		Duplicate (R810195-01)	15.1	0.100			98	50			15	10/28/08	10/29	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 15.0 ± 0.432
 FOR 4 SAMPLES YIELD 99 ± 2

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol Hanford1
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 11/06/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1407

SDG 7732
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1407

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/06/08

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SAMPLE DELIVERY GROUP K1407

SDG 7732
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. S00W235A00
 Case no SDG_K1407

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

These qualifiers should be reviewed as follows:

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

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

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WORK SUMMARY

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

The following notes apply to this report:

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

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Client Hanford

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DATA SHEET

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

The following notes apply to this report:

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

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

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

The following qualifiers are defined by the DVD system:

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

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DATA SHEET

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

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
 - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
 - H Similar to 'L' except the recovery was high.
 - P The RESULT is 'preliminary'.
 - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
 - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

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

The following values are underlined to indicate possible problems:

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

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DATA SHEET

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

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

This value reported for this limit is at most 999.

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

1. A fixed percentage specified in the protocol.

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DUPLICATE

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

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

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

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

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

2. The error of ADDED.

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

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

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MATRIX SPIKE

for the recovery.

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

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

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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

MDAs are underlined if greater than the printed RDL.

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

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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-108-004		Page 1 of 1		
Collector <i>M. Groff / K. Eliason</i>		Company Contact Doug Bowers		Telephone No. 509 531-0701		Project Coordinator KESSNER, JH		Price Code <i>3E</i>		Data Turnaround <i>19 day</i>		
Project Designation 100-H Remaining Sites Burial Grounds - Other Solid Quick		Sampling Location 118-H-1 trench Dvacuum drum		<i>K1407 (7732)</i>		SAF No. RC-108						
Ice Chest No. <i>GWS-132</i>		Field Logbook No. EL 1627		COA R118H12000		Method of Shipment Fed Ex						
Shipped To BERLINE SERVICES LIONVILLE		Offsite Property No. <i>A090021</i>				Bill of Lading/Air Bill No. <i>SEE OSPC</i>						
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage <i>Use RCF request for analysis for shipping screen.</i>			Preservation	None	None	None	None	None	None	None	None	
			Type of Container	G/P	Poly Bag	Poly Bag	Poly Bag	Poly Bag	Poly Bag	Poly Bag	Poly Bag	Poly Bag
			No. of Container(s)	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
			Volume	60mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	100mL
SAMPLE ANALYSIS			See item (1) in Special Instructions.	See item (2) in Special Instructions.	Carbon-14; Tritium - H3	Nickel-63	Isotopic Plutonium	Isotopic Uranium	Gross Alpha; Gross Beta	GEA Shipping Screen		
			Sample No.	Matrix *	Sample Date	Sample Time						
J17R75	OTHER SOLID	10/14/08	0920	X	X	X	X	X	X			
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From <i>K. Eliason/RW</i>		Date/Time <i>10-21-08 0820</i>		Received By/Stored In <i>J.E. Bernhard</i>		Date/Time <i>10-21-08</i>		<p>Sample is a rad con air filter previously sent to RCF to be counted on a request for analysis. Forward to Eberline for analysis. Sample date/time will reflect when it was turned over to shipping personal. Report Thorium information off of GEA.</p> <p>(1) ICP Metals - 6010 (Client List) ; Aluminum, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV)</p> <p>(2) 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)</p> <p>Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.</p>				<p>S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other</p>
Relinquished By/Removed From <i>J.E. Bernhard</i>		Date/Time <i>10-21-08</i>		Received By/Stored In <i>FED EX</i>		Date/Time						
Relinquished By/Removed From <i>FED EX</i>		Date/Time		Received By/Stored In <i>FED EX</i>		Date/Time <i>10/22/08 09:00</i>						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
LABORATORY SECTION	Received By			Title			Date/Time					
FINAL SAMPLE DISPOSITION	Disposal Method			Disposed By			Date/Time					

Client: W.C. HANFORD City: RICHLAND State: WA
 Date/Time received: 10/22/08 19:00 CDC No.: RC-108-009
 Container I.D. No.: GWS-132 Requested TAT (Days): 15 P.O. Received Yes [] No []

INSPECTION

- 1 Custody seals on shipping container intact? Yes No [] N/A []
- 2 Custody seals on shipping container dated & signed? Yes No [] N/A []
- 3 Custody seals on sample containers intact? Yes No [] N/A []
- 4 Custody seals on sample containers dated & signed? Yes No [] N/A []
- 5 Packing material is Wet [] Dry
- 6 Number of samples in shipping container: 1 Sample Matrix: SOLID
- 7 Number of containers per sample: 2 (Or see CDC _____)
- 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 [] in _____ Preservative _____
- 13 Describe any anomalies: _____

14 Was F.M. notified of any anomalies? Yes [] No [] Date: _____
 15 Inspected by: JFW Date: 10/22/08 Time: 10:00

Customer Sample No.	Beta/Gamma CDR	Ion Chamber mR/hr	WIDE	Customer Sample No.	Beta/Gamma CDR	Ion Chamber mR/hr	WIDE
J17R75	460						

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. 100482 Calibration date 10/22/08 10-JUL-08