

SAF-B00-056
100-NR-1 TSD Sites R. A.
Sampling - Water
FINAL DATA PACKAGE

FAX RESULTS TO:

Rick Kerkow 373-1395 N/A
INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Rick Kerkow N/A
INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Rick Kerkow X5-60 BF 2/20/03
INITIAL/DATE
Jeanette Duncan BF 2/20/03
INITIAL/DATE

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

SDG H2033 SAF-B00-056
Rad only Chem only X Rad & Chem
X Complete Partial

Waste Site: 100-NR-1 Decon Pad Sump 8

RECEIVED
APR 28 2003
EDMC



EBERLINE

SERVICES

February 15, 2003

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

Reference: **P.O. #630**
Eberline Services R3-01-001-7748, SDG H2033

Dear Ms. Kessner:

Enclosed is the data report for one water sample designated under SAF No. B00-056 received at Eberline Services on January 2, 2003. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

FEB 2003

Analytical Services
2030 Wright Avenue
P.O. Box 4041
Richmond, California 94804-0041
(510) 235-2633 Fax (510) 235-0431
Toll Free (800) 841-5481
www.eberlineservices.com

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2033 was composed of one water sample designated under SAF No. B00-056 with a Project Designation of: 100-NR-1 TSD Sites R.A. Sampling – Water.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on January 7, 8, and 30, 2003 and results were also e-mailed to BHI on January 13, 2003.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

Sample J00F44 was analyzed three times for total strontium. The total strontium results for the first and third analysis are reported herein and the results for the second total strontium analysis are reported below:

<u>Sample</u>	<u>Result ± 2σ (count) Error</u>	<u>MDA</u>	<u>Note</u>
J00F44 (7748-1A1)	84.1 ± 4.37 pCi/L	1.75	
QC-LCS #43586	23.9 ± 1.18 pCi/sample	0.449	113% Recovery
QC-Blank #43587	0.046 ± 0.143 pCi/sample	0.287	< MDA
QC-Dup 1A1 #43588	84.8 ± 4.54 pCi/L	1.98	RPD = 1%

The second total strontium analysis was a regular reanalysis of the original sample (requested by BHI on January 8, 2003). The remaining sample for the third analysis was filtered through an 8-micron filter (requested by BHI on January 20, 2003). The sample ID was changed at BHI's instruction for the third analysis. The sample ID is J00F44-A. All analyses were performed as full protocol.

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion
Melissa C. Mannion
Program Manager

2/15/3
Date



Melissa Mannion

01/13/2003 03:09
PM

To: JHKessne@mail.bhi-erc.com

cc:

Subject: Sample J00F44 - Total Sr Reanalysis - H2033

Hi Joan:

Please find the result for the reanalysis of sample J00F44 for Total Strontium below:

<u>Sample</u>	<u>Result +/- 2sigma (count)</u>	<u>MDA</u>	
J00F44	84.1 +/- 4.37 pCi/L	1.75	
LCS	23.9 +/- 1.18 pCi/smpl		0.449 113% Recovery
Method Blank	0.046 +/- 0.143 pCi/smpl		0.287 <MDA
Dup. of J00F44	84.8 +/- 4.54 pCi/L		1.98 RPD = 1%

The RPD between the original Total Sr result and the reanalysis result is 4%.

If you have any questions or comments please e-mail or call.

Regards,
Melissa Mannion
Program Manager
Eberline Services
2030 Wright Ave.
Richmond, CA 94804-0040
(510) 235-2633 Ext. 264
Fax: (510) 235-0438

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2033

SDG 7748
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2033

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

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lak id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 02/15/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2033

SDG 7748
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG_H2033

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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Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 02/15/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2033

SDG 7748

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2033

GUIDE, cont.

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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SUMMARY DATA SECTION

Page 2

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/15/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2033

SDG 7748
 Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2033

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J00F44	116-N-1 Decon Pad Sump 8	WATER		R301001-01	B00-056	B00-056-043	12/30/02 10:40
J00F44-A	116-N-1 Decon Pad Sump 8	WATER		R301001-08	B00-056	B00-056-043	12/30/02 10:40
Method Blank		WATER		R301001-03	B00-056		
Method Blank		WATER		R301001-10	B00-056		
Lab Control Sample		WATER		R301001-02	B00-056		
Lab Control Sample		WATER		R301001-09	B00-056		
Duplicate (R301001-01)	116-N-1 Decon Pad Sump 8	WATER		R301001-04	B00-056		12/30/02 10:40
Duplicate (R301001-08)	116-N-1 Decon Pad Sump 8	WATER		R301001-11	B00-056		12/30/02 10:40

SAMPLE SUMMARY

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Lab id EBRLNE
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 Version Ver 1.0
 Form DVD-CS
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2033

SDG 7748
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H2033

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID	
7748	800-056-043	J00F44	WATER		1.0 L		01/02/03	3	R301001-01	7748-001	
		J00F44-A	WATER				01/02/03	3	R301001-08	7748-008	
		Method Blank	WATER						R301001-03	7748-003	
		Method Blank	WATER						R301001-10	7748-010	
		Lab Control Sample	WATER						R301001-02	7748-002	
		Lab Control Sample	WATER						R301001-09	7748-009	
		Duplicate (R301001-01)	WATER			1.0 L		01/02/03	3	R301001-04	7748-004
		Duplicate (R301001-08)	WATER					01/02/03	3	R301001-11	7748-011

Lab id EBRLNE
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 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 02/15/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2033

SDG 7748
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2033

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS
			BATCH	2σ %	CLIENT	MORE	RE BLANK	LCS	
Beta Counting									
SR	WATER	Total Strontium in Water	7032-144	10.0	2		2	2	2/2
Gas Proportional Counting									
93A	WATER	Gross Alpha in Water	7032-144	20.0	1		1	1	1/1
93B	WATER	Gross Beta in Water	7032-144	15.0	1		1	1	1/1
Gamma Scan									
GAM	WATER	Gamma Emitters	7032-144	15.0	1		1	1	1/1

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

Lab no EBRLNE
Protocol Hanford
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Form DVD-PBS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2033

WORK SUMMARY

SDG 7748
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2033

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	SUF-	ANALYZED	REVIEWED	BY	METHOD	
CUSTODY	SAF No	RECEIVED			FIX					
J00F44		R301001-01	7748-001	93A/93		01/07/03	01/07/03	MCM	Gross Alpha in Water	
116-N-1 Decon Pad Sump 8	WATER	12/30/02	7748-001	93B/93		01/07/03	01/07/03	MCM	Gross Beta in Water	
B00-056-043	B00-056	01/02/03	7748-001	GAM		01/08/03	01/08/03	MCM	Gamma Emitters	
			7748-001	SR		01/06/03	01/07/03	MCM	Total Strontium in Water	
J00F44-A		R301001-08	7748-008	SR		01/24/03	01/30/03	MCM	Total Strontium in Water	
116-N-1 Decon Pad Sump 8	WATER	12/30/02								
B00-056-043	B00-056	01/02/03								
Method Blank		R301001-03	7748-003	93A/93		01/07/03	01/07/03	MCM	Gross Alpha in Water	
	WATER		7748-003	93B/93		01/07/03	01/07/03	MCM	Gross Beta in Water	
	B00-056		7748-003	GAM		01/07/03	01/08/03	MCM	Gamma Emitters	
			7748-003	SR		01/06/03	01/07/03	MCM	Total Strontium in Water	
Method Blank		R301001-10	7748-010	SR		01/24/03	01/30/03	MCM	Total Strontium in Water	
	WATER									
	B00-056									
Lab Control Sample		R301001-02	7748-002	93A/93		01/07/03	01/07/03	MCM	Gross Alpha in Water	
	WATER		7748-002	93B/93		01/07/03	01/07/03	MCM	Gross Beta in Water	
	B00-056		7748-002	GAM		01/07/03	01/08/03	MCM	Gamma Emitters	
			7748-002	SR		01/06/03	01/07/03	MCM	Total Strontium in Water	
Lab Control Sample		R301001-09	7748-009	SR		01/24/03	01/30/03	MCM	Total Strontium in Water	
	WATER									
	B00-056									
Duplicate (R301001-01)		R301001-04	7748-004	93A/93		01/07/03	01/07/03	MCM	Gross Alpha in Water	
116-N-1 Decon Pad Sump 8	WATER	12/30/02	7748-004	93B/93		01/07/03	01/07/03	MCM	Gross Beta in Water	
B00-056		01/02/03	7748-004	GAM		01/07/03	01/08/03	MCM	Gamma Emitters	
			7748-004	SR		01/06/03	01/07/03	MCM	Total Strontium in Water	
Duplicate (R301001-08)		R301001-11	7748-011	SR		01/24/03	01/30/03	MCM	Total Strontium in Water	
116-N-1 Decon Pad Sump 8	WATER	12/30/02								
B00-056		01/02/03								

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2033

SDG 7748
 Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
 Contract No. 630
 Case no SDG H2033

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B00-056	Gross Alpha in Water	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	B00-056	Gross Beta in Water	900.0_ALPHABETA_GPC	1			1	1	1	4
GAM	B00-056	Gamma Emitters	GAMMA_GS	1			1	1	1	4
SR	B00-056	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	2			2	2	2	8
TOTALS				5			5	5	5	20

WORK SUMMARY

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2033

R301001-03

Method Blank

METHOD BLANK

SDG <u>7748</u>	Client/Case no <u>Hanford</u>	<u>SDG H2033</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R301001-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7748-003</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>B00-056</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.093	1.1	2.4	3.0	U	93A
Gross Beta	12587-47-2	0.626	3.3	<u>5.7</u>	4.0	U	93B
Total Strontium	SR-RAD	-0.681	0.95	<u>2.2</u>	2.0	U	SR
Potassium 40	13966-00-2	U		200		U	GAM
Cobalt 60	10198-40-0	U		13	25	U	GAM
Cesium 137	10045-97-3	U		11	15	U	GAM
Radium 226	13982-63-3	U		19		U	GAM
Radium 228	15262-20-1	U		46		U	GAM
Europium 152	14683-23-9	U		28	50	U	GAM
Europium 154	15585-10-1	U		32	50	U	GAM
Europium 155	14391-16-3	U		26	50	U	GAM
Thorium 228	14274-82-9	U		15		U	GAM
Thorium 232	TH-232	U		46		U	GAM
Uranium 235	15117-96-1	U		43		U	GAM
Uranium 238	U-238	U		1200		U	GAM
Americium 241	14596-10-2	U		37		U	GAM

100-NR-1 TSD Sites R.A. Sampling-H2O

QC-BLANK 43524

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
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METHOD BLANKS

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2033

R301001-10

Method Blank

METHOD BLANK

SDG <u>7748</u>	Client/Case no <u>Hanford</u>	SDG <u>H2033</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R301001-10</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7748-010</u>	Material/Matrix _____	<u>WATER</u>
	SAF No <u>B00-056</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.734	0.99	<u>2.2</u>	2.0	U	SR

100-NR-1 TSD Sites R.A. Sampling-H2O

QC-BLANK 43672

METHOD BLANKS

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Protocol <u>Hanford</u>
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Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/15/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2033

R301001-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7748</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> <u>SDG H2033</u> Contract <u>No. 630</u>
Lab sample id <u>R301001-02</u> Dept sample id <u>7748-002</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>WATER</u> SAF No <u>B00-056</u>

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	194	15	<u>3.3</u>	3.0		93A	200	8.0	97	68-132	70-130
Gross Beta	204	11	<u>6.8</u>	4.0		93B	212	8.5	96	76-124	70-130
Total Strontium	161	7.5	<u>2.6</u>	2.0		SR	141	5.6	114	80-120	80-120
Cobalt 60	399	22	11	25		GAM	358	14	112	73-127	80-120
Cesium 137	489	22	<u>16</u>	15		GAM	468	19	104	75-125	80-120

100-NR-1 TSD Sites R.A. Sampling-H2O

QC-LCS 43523

LAB CONTROL SAMPLES

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>02/15/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2033

R301001-04

J00F44

DUPLICATE

SDG <u>7748</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R301001-04</u> Dept sample id <u>7748-004</u>	ORIGINAL Lab sample id <u>R301001-01</u> Dept sample id <u>7748-001</u> Received <u>01/02/03</u>	Client/Case no <u>Hanford</u> SDG <u>H2033</u> Contract No. <u>630</u> Client sample id <u>J00F44</u> Location/Matrix <u>116-N-1 Decon Pad Sump 8 WATER</u> Collected/Volume <u>12/30/02 10:40</u> <u>1.0 L</u> Custody/SAF No <u>B00-056-043</u> <u>B00-056</u>
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ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	5.63	3.2	2.7	3.0		93A	5.62	3.3	2.8		0	130	
Gross Beta	176	9.5	<u>6.5</u>	4.0		93B	191	9.7	<u>5.4</u>		8	34	
Total Strontium	93.1	5.7	<u>2.8</u>	2.0		SR	87.6	5.4	<u>2.5</u>		6	25	
Potassium 40	U		76		U	GAM	U		290	U	-		
Cobalt 60	12.6	7.5	7.4	25		GAM	14.1	11	12		11	153	
Cesium 137	24.6	7.9	7.7	15		GAM	21.0	14	<u>17</u>		16	110	
Radium 226	U		13		U	GAM	U		28	U	-		
Radium 228	U		29		U	GAM	U		67	U	-		
Europium 152	U		17	50	U	GAM	U		40	U	-		
Europium 154	U		22	50	U	GAM	U		46	U	-		
Europium 155	U		14	50	U	GAM	U		41	U	-		
Thorium 228	U		8.9		U	GAM	U		22	U	-		
Thorium 232	U		29		U	GAM	U		67	U	-		
Uranium 235	U		22		U	GAM	U		62	U	-		
Uranium 238	U		850		U	GAM	U		1900	U	-		
Americium 241	U		21		U	GAM	U		93	U	-		

100-NR-1 TSD Sites R.A. Sampling-H20

QC-DUP#1 43525

Note: Sample pH - 6.0

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>02/15/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2033

R301001-11

J00F44-A

DUPLICATE

SDG <u>7748</u>	Client/Case no <u>Hanford</u>	<u>SDG H2033</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R301001-11</u>	Lab sample id <u>R301001-08</u>	Client sample id <u>J00F44-A</u>
Dept sample id <u>7748-011</u>	Dept sample id <u>7748-008</u>	Location/Matrix <u>116-N-1 Decon Pad Sump B WATER</u>
	Received <u>01/02/03</u>	Collected <u>12/30/02 10:40</u>
		Custody/SAF No <u>B00-056-043</u> <u>B00-056</u>

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Strontium	79.6	4.6	1.9	2.0		SR	82.0	4.7	<u>2.1</u>		3	24	

100-NR-1 TSD Sites R.A. Sampling-H2O

QC-DUP#8 43673

Note: Sample was filtered (8-micron).

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2033

R301001-01

J00F44

DATA SHEET

SDG <u>7748</u>	Client/Case no <u>Hanford</u>	SDG <u>H2033</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R301001-01</u>	Client sample id <u>J00F44</u>	
Dept sample id <u>7748-001</u>	Location/Matrix <u>116-N-1 Decon Pad Sump 8 WATER</u>	
Received <u>01/02/03</u>	Collected/Volume <u>12/30/02 10:40</u> <u>1.0 L</u>	
	Custody/SAF No <u>B00-056-043</u> <u>B00-056</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	5.62	3.3	2.8	3.0		93A
Gross Beta	12587-47-2	191	9.7	<u>5.4</u>	4.0		93B
Total Strontium	SR-RAD	87.6	5.4	<u>2.5</u>	2.0		SR
Potassium 40	13966-00-2	U		290		U	GAM
Cobalt 60	10198-40-0	14.1	11	12	25		GAM
Cesium 137	10045-97-3	21.0	14	<u>17</u>	15		GAM
Radium 226	13982-63-3	U		28		U	GAM
Radium 228	15262-20-1	U		67		U	GAM
Europium 152	14683-23-9	U		40	50	U	GAM
Europium 154	15585-10-1	U		46	50	U	GAM
Europium 155	14391-16-3	U		41	50	U	GAM
Thorium 228	14274-82-9	U		22		U	GAM
Thorium 232	TH-232	U		67		U	GAM
Uranium 235	15117-96-1	U		62		U	GAM
Uranium 238	U-238	U		1900		U	GAM
Americium 241	14596-10-2	U		93		U	GAM

100-NR-1 TSD Sites R.A. Sampling-H2O

Note: Sample pH - 6.0

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/15/03</u>

DATA SHEETS

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP H2033

R301001-08

J00F44-A

DATA SHEET

SDG <u>7748</u>	Client/Case no <u>Hanford</u>	SDG <u>H2033</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R301001-08</u>	Client sample id <u>J00F44-A</u>	
Dept sample id <u>7748-008</u>	Location/Matrix <u>116-N-1 Decon Pad Sump 8 WATER</u>	
Received <u>01/02/03</u>	Collected <u>12/30/02 10:40</u>	
	Custody/SAF No <u>B00-056-043</u> <u>B00-056</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Total Strontium	SR-RAD	82.0	4.7	<u>2.1</u>	2.0		SR

100-NR-1 TSD Sites R.A. Sampling-H2O

Note: Sample was filtered (8-micron).

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/15/03</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2033

Test SR Matrix WATER
SDG 7748
Contact Melissa C. Mannion

METHOD SUMMARY
TOTAL STRONTIUM IN WATER
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2033

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7032-144					
J00F44	R301001-01			7748-001	87.6
J00F44-A	R301001-08			7748-008	82.0
BLK (QC ID=43524)	R301001-03			7748-003	U
BLK (QC ID=43672)	R301001-10			7748-010	U
LCS (QC ID=43523)	R301001-02			7748-002	ok
LCS (QC ID=43671)	R301001-09			7748-009	ok
Duplicate (R301001-01)	R301001-04			7748-004	ok
Duplicate (R301001-08)	R301001-11			7748-011	ok
Nominal values and limits from method		RDIs (pCi/L)		2.0	
100-NR-1 TSD Sites R.A. Sampling-H20					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7032-144 2σ prep error 10.0 % Reference Lab Notebook 7024 pg. 144															
J00F44	R301001-01			<u>2.5</u>	0.150			77		100			7	01/06/03	01/06 GRB-201
J00F44-A	R301001-08			<u>2.1</u>	0.110			82		100			25	01/23/03	01/24 GRB-221
BLK (QC ID=43524)	R301001-03			<u>2.2</u>	0.150			82		100				01/06/03	01/06 GRB-203
BLK (QC ID=43672)	R301001-10			<u>2.2</u>	0.110			79		100				01/23/03	01/24 GRB-219
LCS (QC ID=43523)	R301001-02			<u>2.6</u>	0.150			71		100				01/06/03	01/06 GRB-202
LCS (QC ID=43671)	R301001-09			<u>2.0</u>	0.110			85		300				01/23/03	01/24 GRB-230
Duplicate (R301001-01)	R301001-04			<u>2.8</u>	0.150			73		100			7	01/06/03	01/06 GRB-208
	(QC ID=43525)														
Duplicate (R301001-08)	R301001-11			<u>1.9</u>	0.110			82		100			25	01/23/03	01/24 GRB-222
	(QC ID=43673)														
Nominal values and limits from method				2.0	0.110					100			180		

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-501 Strontium in Water Samples, rev 4

AVERAGES ± 2 SD MDA 2.3 ± 0.63
FOR 8 SAMPLES YIELD 79 ± 10

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2033

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Test 93A Matrix WATER
SDG 7748
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2033

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Alpha
Preparation batch 7032-144					
J00F44	R301001-01	93		7748-001	5.62
BLK (QC ID=43524)	R301001-03	93		7748-003	U
LCS (QC ID=43523)	R301001-02	93		7748-002	ok
Duplicate (R301001-01)	R301001-04	93		7748-004	ok
Nominal values and limits from method		RDLs (pCi/L)		3.0	
100-NR-1 TSD Sites R.A. Sampling-H2O					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7032-144 2σ prep error 20.0 % Reference Lab Notebook 7024 pg. 144																
J00F44	R301001-01	93		2.8	0.100			14		100			8	01/06/03	01/07	GRB-109
BLK (QC ID=43524)	R301001-03	93		2.4	0.100			21		100				01/06/03	01/07	GRB-111
LCS (QC ID=43523)	R301001-02	93		<u>3.3</u>	0.100			20		100				01/06/03	01/07	GRB-110
Duplicate (R301001-01)	R301001-04	93		2.7	0.100			12		100			8	01/06/03	01/07	GRB-112
(QC ID=43525)																
Nominal values and limits from method				3.0	0.100			5-250		100			180			

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 5

AVERAGES ± 2 SD MDA 2.8 ± 0.75
FOR 4 SAMPLES RESIDUE 17 ± 9

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2033

METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Test 93B Matrix WATER
SDG 7748
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2033

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Beta
Preparation batch 7032-144					
J00F44	R301001-01	93		7748-001	191
BLK (QC ID=43524)	R301001-03	93		7748-003	U
LCS (QC ID=43523)	R301001-02	93		7748-002	ok
Duplicate (R301001-01)	R301001-04	93		7748-004	ok

Nominal values and limits from method RDLs (pCi/L) 4.0
100-NR-1 TSD Sites R.A. Sampling-H20

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7032-144 2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 144																
J00F44	R301001-01	93		<u>5.4</u>	0.100			14		100			8	01/06/03	01/07	GRB-109
BLK (QC ID=43524)	R301001-03	93		<u>5.7</u>	0.100			21		100				01/06/03	01/07	GRB-111
LCS (QC ID=43523)	R301001-02	93		<u>6.8</u>	0.100			20		100				01/06/03	01/07	GRB-110
Duplicate (R301001-01)	R301001-04	93		<u>6.5</u>	0.100			12		100			8	01/06/03	01/07	GRB-112
	(QC ID=43525)															

Nominal values and limits from method 4.0 0.100 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 5

AVERAGES ± 2 SD MDA 6.1 ± 1.3
FOR 4 SAMPLES RESIDUE 17 ± 9

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/03

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SAMPLE DELIVERY GROUP H2033

METHOD SUMMARY

GAMMA EMITTERS
GAMMA SCAN

Test GAM Matrix WATER
SDG 7748
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2033

RESULTS

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

Preparation batch 7032-144

J00F44	R301001-01			7748-001	14.1	21.0
BLK (QC ID=43524)	R301001-03			7748-003	U	U
LCS (QC ID=43523)	R301001-02			7748-002	ok	ok
Duplicate (R301001-01)	R301001-04			7748-004	ok	ok

Nominal values and limits from method 100-NR-1 TSD Sites R.A. Sampling-H2O

RDLs (pCi/L)	25	15
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METHOD PERFORMANCE

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

Preparation batch 7032-144 2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 144

J00F44	R301001-01			<u>75</u>	0.500					298			9	01/03/03	01/08	MB,05,00
BLK (QC ID=43524)	R301001-03			<u>48</u>	0.500					749				01/03/03	01/07	01,03,00
LCS (QC ID=43523)	R301001-02			<u>16</u>	0.500					749				01/03/03	01/07	MB,05,00
Duplicate (R301001-01) (QC ID=43525)	R301001-04			<u>26</u>	0.500					749			8	01/03/03	01/07	01,04,00

Nominal values and limits from method

MDA	0.500	100	180
-----	-------	-----	-----

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

AVERAGES ± 2 SD MDA 41 ± 52
FOR 4 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

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Lab ID EBRLNE
Protocol Hanford
Version Ver 1.0
form DVD-CMS
Version 3.06
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SAMPLE DELIVERY GROUP H2033

SDG 7748
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2033

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 Hanford
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 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. 630
 Case no SDG H2033

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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 Contract No. 630
 Case no SDG H2033

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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 Protocol Hanford
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SDG 7748
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- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

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SDG 7748
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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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 Contact Melissa C. Mannion

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Client Hanford
 Contract No. 630
 Case no SDG_H2033

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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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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- * 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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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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Collector R.B. Kerkow	Company Contact R.B. Kerkow	Telephone No. 372-2187	Project Coordinator KESSNER, JH		Price Code 7A	Data Turnaround ASAP	
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Water		Sampling Location 116-N-1, Decon Pad Sump (8)	H2033 (7748)		SAF No. B00-056	Air Quality <input type="checkbox"/>	
Ice Chest No. ERC.99.005	Field Logbook No. EL-1524-3	COA R1301N2600	Method of Shipment FED EX				
Shipped To TMA/REGRA RK 12/30/02		Offsite Property No. A030 078	Bill of Lading/Air Bill No. SEE OSPC				
POSSIBLE SAMPLE HAZARDS/REMARKS <i>Potentially Radioactive</i>			Preservation NONE UNOS sample RK 12/30/02				
Special Handling and/or Storage <i>None</i>			Type of Container P				
			No. of Container(s) 1				
			Volume 1L				
SAMPLE ANALYSIS				See item (1) in Special Instructions.			TIED:
Sample No.	Matrix *	Sample Date	Sample Time				
J00F44	WATER	12-30-02	1040	X			J00F43
CHAIN OF POSSESSION				Sign/Print Names	SPECIAL INSTRUCTIONS		
Relinquished By/Removed From RB KERKOW/RB Kerkow	Date/Time 12/30/02	Received By/Stored In REF 1A RB Kerkow	Date/Time 12/30/02	Lab COA: R1301N2600			
Relinquished By/Removed From REF 1A	Date/Time 12/31/02 0900	Received By/Stored In SJ GALE/Adh	Date/Time 12/31/02 0900	(1) Gross Alpha; Gross Beta; Gamma Spectroscopy(Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Isotopic Plutonium Americium-241, Strontium-89,90 -- Total Sr; Nickel-63; Isotopic Uranium RK 12/30/02			
Relinquished By/Removed From SJ GALE/Adh	Date/Time 12/31/02 0900	Received By/Stored In FED EX	Date/Time	DELETE: ISOTOPIC Pu, Am 241, URANIUM.			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time 1000 1-2-03	ADD: PH TEST RK 12/30/02			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Personnel not available to relinquish samples from the 3728 Ref# 1A on 12/31/02			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
LABORATORY SECTION	Receiver's Title	Title				Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time	

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BHI Date/Time received 1000 1-2-03

CoC No. B00-056-013

Container I.D. No. ERC-99-005 Requested TAT (Days) 7 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [] No [] N/A []

2. Custody seals on shipping container dated & signed? Yes [] No [] N/A []

3. Custody seals on sample containers intact? Yes [] No [] N/A []

4. Custody seals on sample containers dated & signed? Yes [] No [] N/A []

5. Packing material is: Wet [] Dry []

6. Number of samples in shipping container: 1

7. Number of containers per sample: 1 (Or see CoC)

8. Paperwork agrees with samples? Yes [] No []

9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []

10. Samples are: In good condition [] Leaking [] Broken Container [] Missing []

11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [] No [] Date _____

14. Received by [Signature] Date: 1-2-03 Time: _____

Customer Sample No.	cpm	mr/hr	wipe	Customer Sample No.	cpm	mr/hr	wipe

Ion Chamber Ser. No. _____ Calibration date _____

Alpha meter Ser. No. _____ Calibration date _____

Survey Meter Ser. No. _____ Calibration date _____