



EBERLINE
SERVICES

March 28, 2005

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



Reference: **P.O. #630**
Eberline Services R5-02-110-7247, SDG H3026

Dear Mr. Trent:

Enclosed is the data report for one solid sample designated under SAF No. F04-019 received at Eberline Services on February 11, 2005. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

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1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H3026 was composed of one solid (soil) sample designated under SAF No. F04-019 with a Project Designation of: 200-MW-1 Characterization Sampling and Analysis-Waste Management.

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

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.5 Iodine-129 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Thorium Analyses

The relative percent difference in the duplicate Th-230 result (0.38 pCi/g) and original result (0.067 pCi/g, less than sample MDA) was 140%, greater than the 3σ protocol limit of 130%, however both results were less than the RDL of 1.0 pCi/g.

Case Narrative Certification Statement

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



Melissa C. Mannion
Senior Program Manager



Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3026

SDG 7247
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H3026

SUMMARY DATA SECTION

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Prepared by



Reviewed by

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-TOC</u>
Version <u>3.06</u>
Report date <u>03/28/05</u>

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3026

SDG 7247
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H3026

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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SAMPLE DELIVERY GROUP H3026

SDG 7247
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H3026

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

REPORT GUIDES

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

SDG 7247
 Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H3026

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB		CHAIN OF CUSTODY	COLLECTED
				SAMPLE ID	SAF NO		
B1B3R3	2216-T-33; 12.5ft-15ft	SOLID		R502110-01	F04-019	F04-019-008	02/02/05 13:00
Method Blank		SOLID		R502110-03	F04-019		
Lab Control Sample		SOLID		R502110-02	F04-019		
Duplicate (R502110-01)	2216-T-33; 12.5ft-15ft	SOLID		R502110-04	F04-019		02/02/05 13:00
Spike (R502110-01)	2216-T-33; 12.5ft-15ft	SOLID		R502110-05	F04-019		02/02/05 13:00

SAMPLE SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

SDG 7247
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H3026

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7247	F04-019-008	B1B3R3	SOLID	94.9	103 g		02/14/05 12	R502110-01		7247-001
		Method Blank	SOLID					R502110-03		7247-003
		Lab Control Sample	SOLID					R502110-02		7247-002
		Duplicate (R502110-01)	SOLID	94.9	103 g		02/14/05 12	R502110-04		7247-004
		Spike (R502110-01)	SOLID	94.9	103 g		02/14/05 12	R502110-05		7247-005

QC SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

SDG 7247
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3026

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS
Alpha Spectroscopy										
TH	SOLID	Thorium, Isotopic in Solids	7113-189	5.0	1			1	1	1/1
Beta Counting										
TC	SOLID	Technetium 99 in Solids	7113-189	10.0	1			1	1	1/1
Gamma Spectroscopy										
I	SOLID	Iodine 129 in Solids	7113-189	10.0	1			1	1	1/1
Liquid Scintillation Counting										
C	SOLID	Carbon 14 in Solids	7113-189	10.0	1			1	1	1/1
H	SOLID	Tritium in Solids	7113-189	10.0	1			1	1	1/1 1/1 X
NI_L	SOLID	Nickel 63 in Solids	7113-189	10.0	1			1	1	1/1

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

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

SDG 7247
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H3026

WORK SUMMARY

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED	SUF-							
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
B1B3R3		R502110-01	7247-001	C		03/19/05	03/21/05	MWT	Carbon 14 in Solids	
2216-T-33; 12.5ft-15ft	SOLID	02/02/05	7247-001	H		03/22/05	03/25/05	MWT	Tritium in Solids	
F04-019-008	F04-019	02/14/05	7247-001	I		03/23/05	03/24/05	MWT	Iodine 129 in Solids	
			7247-001	NI_L		03/01/05	03/04/05	MWT	Nickel 63 in Solids	
			7247-001	TC		03/12/05	03/21/05	MWT	Technetium 99 in Solids	
			7247-001	TH		03/01/05	03/14/05	MWT	Thorium, Isotopic in Solids	
Method Blank		R502110-03	7247-003	C		03/19/05	03/21/05	MWT	Carbon 14 in Solids	
	SOLID		7247-003	H		03/22/05	03/25/05	MWT	Tritium in Solids	
	F04-019		7247-003	I		03/23/05	03/24/05	MWT	Iodine 129 in Solids	
			7247-003	NI_L		03/01/05	03/04/05	MWT	Nickel 63 in Solids	
			7247-003	TC		03/12/05	03/21/05	MWT	Technetium 99 in Solids	
			7247-003	TH		03/01/05	03/14/05	MWT	Thorium, Isotopic in Solids	
Lab Control Sample		R502110-02	7247-002	C		03/19/05	03/21/05	MWT	Carbon 14 in Solids	
	SOLID		7247-002	H		03/22/05	03/25/05	MWT	Tritium in Solids	
	F04-019		7247-002	I		03/23/05	03/24/05	MWT	Iodine 129 in Solids	
			7247-002	NI_L		03/01/05	03/04/05	MWT	Nickel 63 in Solids	
			7247-002	TC		03/12/05	03/21/05	MWT	Technetium 99 in Solids	
			7247-002	TH		03/01/05	03/14/05	MWT	Thorium, Isotopic in Solids	
Duplicate (R502110-01)		R502110-04	7247-004	C		03/19/05	03/21/05	MWT	Carbon 14 in Solids	
2216-T-33; 12.5ft-15ft	SOLID	02/02/05	7247-004	H		03/22/05	03/25/05	MWT	Tritium in Solids	
F04-019		02/14/05	7247-004	I		03/24/05	03/24/05	MWT	Iodine 129 in Solids	
			7247-004	NI_L		03/01/05	03/04/05	MWT	Nickel 63 in Solids	
			7247-004	TC		03/15/05	03/21/05	MWT	Technetium 99 in Solids	
			7247-004	TH		03/11/05	03/14/05	MWT	Thorium, Isotopic in Solids	
Spike (R502110-01)		R502110-05	7247-005	H		03/22/05	03/25/05	MWT	Tritium in Solids	
2216-T-33; 12.5ft-15ft	SOLID	02/02/05								
F04-019		02/14/05								

WORK SUMMARY

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SAMPLE DELIVERY GROUP H3026

SDG 7247
 Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
 Contract No. 630
 Case no SDG H3026

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL	
C	F04-019	Carbon 14 in Solids	C14_COX_LSC	1			1	1	1	4	
H	F04-019	Tritium in Solids	906.0_H3_LSC	1			1	1	1	5	
I	F04-019	Iodine 129 in Solids	I129_SEP_LEPS_GS	1			1	1	1	4	
NI_L	F04-019	Nickel 63 in Solids	NI63_LSC	1			1	1	1	4	
TC	F04-019	Technetium 99 in Solids	TC99_TR_SEP_LSC	1			1	1	1	4	
TH	F04-019	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	1			1	1	1	4	
TOTALS				6			6	6	6	1	25

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3026

R502110-03

Method Blank

METHOD BLANK

SDG <u>7247</u>	Client/Case no <u>Hanford</u>	SDG <u>H3026</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502110-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7247-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F04-019</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.071	0.31	0.53	400	U	H
Carbon 14	14762-75-5	-0.992	2.7	4.7	50	U	C
Nickel 63	13981-37-8	-0.824	1.7	2.9	30	U	NI_L
Technetium 99	14133-76-7	0.162	0.15	0.52	15	U	TC
Thorium 228	14274-82-9	<u>-0.032</u>	0.013	0.061	1.0	U	TH
Thorium 230	14269-63-7	<u>-0.101</u>	0.088	0.20	1.0	U	TH
Thorium 232	TH-232	-0.025	0.025	0.078	1.0	U	TH
Iodine 129	15046-84-1	-0.200	0.86	2.0	2.0	U	I

200-MW-1 Charac.Samp.& Analys-WstMan

QC-BLANK #51981

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

R502110-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7247</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> <u>SDG H3026</u> Contract No. <u>630</u>
Lab sample id <u>R502110-02</u> Dept sample id <u>7247-002</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>F04-019</u>

ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ LMTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST	pCi/g	pCi/g	%	(TOTAL)	LIMITS
Tritium	15.4	0.75	0.54	400	H	15.7	0.63	98	83-117	80-120
Carbon 14	2040	41	10	50	C	2130	85	96	84-116	80-120
Nickel 63	212	6.8	3.6	30	NI_L	226	9.0	94	84-116	80-120
Technetium 99	106	2.6	0.58	15	TC	109	4.4	97	84-116	80-120
Thorium 230	40.9	1.8	0.20	1.0	TH	42.0	1.7	97	89-111	80-120
Iodine 129	132	1.6	<u>2.1</u>	2.0	I	116	4.6	114	82-118	80-120

200-MW-1 Charac.Samp.& Analys-WstMan

QC-LCS #51980

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

R502110-04

B1B3R3

DUPLICATE

SDG <u>7247</u>		Client/Case no <u>Hanford</u>	SDG <u>H3026</u>
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
DUPLICATE	ORIGINAL		
Lab sample id <u>R502110-04</u>	Lab sample id <u>R502110-01</u>	Client sample id <u>B1B3R3</u>	
Dept sample id <u>7247-004</u>	Dept sample id <u>7247-001</u>	Location/Matrix <u>2216-T-33; 12.5ft-15ft</u>	<u>SOLID</u>
	Received <u>02/14/05</u>	Collected/Weight <u>02/02/05 13:00</u>	<u>103 g</u>
% solids <u>94.9</u>	% solids <u>94.9</u>	Custody/SAF No <u>F04-019-008</u>	<u>F04-019</u>

ANALYTE	DUPLICATE		MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
	pCi/g	2σ ERR (COUNT)					pCi/g	2σ ERR (COUNT)					
Tritium	0.127	0.29	0.49	400	U	H	0.061	0.29	0.50	U	-		
Carbon 14	0.666	2.6	4.3	50	U	C	0.266	2.7	4.6	U	-		
Nickel 63	33.6	3.0	3.3	30		NI_L	34.9	2.9	3.2		4	28	
Technetium 99	3.10	1.7	4.1	15	U	TC	0.412	0.21	0.62	U	-		
Thorium 228	0.670	0.14	0.047	1.0		TH	0.830	0.15	0.082		21	42	
Thorium 230	0.380	0.15	0.21	1.0		TH	0.067	0.12	0.22	U	140	130	
Thorium 232	0.530	0.12	0.058	1.0		TH	0.470	0.11	0.058		12	50	
Iodine 129	0.027	0.73	1.6	2.0	U	I	-0.397	0.57	1.3	U	-		

200-MW-1 Charac.Samp. & Analys-WstMan

QC-DUP#1 51982

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Form <u>DVD-DUP</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

R502110-05

B1B3R3

MATRIX SPIKE

SDG <u>7247</u>	Client/Case no <u>Hanford</u>	<u>SDG H3026</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
MATRIX SPIKE	ORIGINAL	
Lab sample id <u>R502110-05</u>	Lab sample id <u>R502110-01</u>	Client sample id <u>B1B3R3</u>
Dept sample id <u>7247-005</u>	Dept sample id <u>7247-001</u>	Location/Matrix <u>2216-T-33; 12.5ft-15ft</u> <u>SOLID</u>
	Received <u>02/14/05</u>	Collected/Weight <u>02/02/05 13:00</u> <u>103 g</u>
% solids <u>94.9</u>	% solids <u>94.9</u>	Custody/SAF No <u>F04-019-008</u> <u>F04-019</u>

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC 3σ % (TOTAL)	LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	70.1	3.0	1.1	400	X H	77.0	3.1	0.061	0.29	91	84-116	60-140

200-MW-1 Charac.Samp.& Analys-WstMan

QC-MS#1 51983

MATRIX SPIKES

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3026

R502110-01

B1B3R3

DATA SHEET

SDG <u>7247</u>	Client/Case no <u>Hanford</u>	SDG <u>H3026</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R502110-01</u>	Client sample id <u>B1B3R3</u>	
Dept sample id <u>7247-001</u>	Location/Matrix <u>2216-T-33; 12.5ft-15ft</u>	<u>SOLID</u>
Received <u>02/14/05</u>	Collected/Weight <u>02/02/05 13:00</u>	<u>103 g</u>
% solids <u>94.9</u>	Custody/SAF No <u>F04-019-008</u>	<u>F04-019</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.061	0.29	0.50	400	U	H
Carbon 14	14762-75-5	0.266	2.7	4.6	50	U	C
Nickel 63	13981-37-8	34.9	2.9	3.2	30		NI_L
Technetium 99	14133-76-7	0.412	0.21	0.62	15	U	TC
Thorium 228	14274-82-9	0.830	0.15	0.082	1.0		TH
Thorium 230	14269-63-7	0.067	0.12	0.22	1.0	U	TH
Thorium 232	TH-232	0.470	0.11	0.058	1.0		TH
Iodine 129	15046-84-1	-0.397	0.57	1.3	2.0	U	I

200-MW-1 Charac.Samp.& Analys-WstMan

DATA SHEETS

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

Test TH Matrix SOLID
 SDG 7247
 Contact Melissa C. Mannion

METHOD SUMMARY
 THORIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H3026

RESULTS

LAB RAW SUF-
 CLIENT SAMPLE ID SAMPLE ID TEST FIX PLANCHET Thorium 230

Preparation batch 7113-189

B1B3R3	R502110-01		7247-001	U
BLK (QC ID=51981)	R502110-03		7247-003	U
LCS (QC ID=51980)	R502110-02		7247-002	ok
Duplicate (R502110-01)	R502110-04		7247-004	OUT

Nominal values and limits from method RDLs (pCi/g) 1.0
 200-MW-1 Charac.Samp.& Analys-WstMan

METHOD PERFORMANCE

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

Preparation batch 7113-189 2σ prep error 5.0 % Reference Lab Notebook 7113 pg. 189

B1B3R3	R502110-01		0.22	0.250				79	1127			27	03/01/05	03/01	SS-031
BLK (QC ID=51981)	R502110-03		0.20	0.250				77	1127				03/01/05	03/01	SS-036
LCS (QC ID=51980)	R502110-02		0.20	0.250				72	1128				03/01/05	03/01	SS-032
Duplicate (R502110-01) (QC ID=51982)	R502110-04		0.21	0.250				89	984			37	03/01/05	03/11	SS-031

Nominal values and limits from method 1.0 0.250 20-105 150 180

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
CP-060	Soil Preparation, rev 7	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5	
CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 9	

AVERAGES ± 2 SD	MDA	<u>0.21</u> ± <u>0.019</u>
FOR 4 SAMPLES	YIELD	<u>79</u> ± <u>14</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

Test TC Matrix SOLID
 SDG 7247
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H3026

METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS
 BETA COUNTING

RESULTS

	LAB	RAW	SUF-		Techneium
CLIENT SAMPLE ID	SAMPLE ID	TEST	FIX	PLANCHET	99

Preparation batch 7113-189

B1B3R3	R502110-01			7247-001	U
BLK (QC ID=51981)	R502110-03			7247-003	U
LCS (QC ID=51980)	R502110-02			7247-002	ok
Duplicate (R502110-01)	R502110-04			7247-004	- U

Nominal values and limits from method RDLs (pCi/g) 15
 200-MW-1 Charac.Samp.& Analys-WstMan

METHOD PERFORMANCE

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

Preparation batch 7113-189 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 189

B1B3R3	R502110-01			0.62	1.00			82		50			38	03/09/05	03/12	GRB-228
BLK (QC ID=51981)	R502110-03			0.52	1.00			98		50				03/09/05	03/12	GRB-230
LCS (QC ID=51980)	R502110-02			0.58	1.00			94		50				03/09/05	03/12	GRB-229
Duplicate (R502110-01)	R502110-04			4.1	1.00			<u>12</u>		50			41	03/09/05	03/15	GRB-228
	(QC ID=51982)															

Nominal values and limits from method 15 1.00 20-105 50 180

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA	<u>1.5</u>	±	<u>3.5</u>
FOR 4 SAMPLES	YIELD	<u>72</u>	±	<u>80</u>

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

Test I Matrix SOLID
 SDG 7247
 Contact Melissa C. Mannion

METHOD SUMMARY

IODINE 129 IN SOLIDS
 GAMMA SPECTROSCOPY

Client Hanford
 Contract No. 630
 Contract SDG H3026

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Iodine 129
Preparation batch 7113-189					
B1B3R3	R502110-01			7247-001	U
BLK (QC ID=51981)	R502110-03			7247-003	U
LCS (QC ID=51980)	R502110-02			7247-002	ok
Duplicate (R502110-01)	R502110-04			7247-004	- U
Nominal values and limits from method					
200-MW-1 Charac.Samp.& Analys-WstMan				RDLs (pCi/g)	2.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7113-189 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 189																
B1B3R3	R502110-01			1.3	1.00			51		861			49	03/19/05	03/23	XSPEC-004
BLK (QC ID=51981)	R502110-03			2.0	1.00			82		861				03/19/05	03/23	XSPEC-016
LCS (QC ID=51980)	R502110-02			<u>2.1</u>	1.00			74		861				03/19/05	03/23	XSPEC-002
Duplicate (R502110-01)	R502110-04			1.6	1.00			43		614			50	03/19/05	03/24	XSPEC-004
(QC ID=51982)																
Nominal values and limits from method				2.0	1.00			20-105		300				180		

PROCEDURES REFERENCE I129_SEP_LEPS_GS
 CP-061 Determination of Moisture Content in Solid Samples rev 3
 CP-024 Iodine-129, Sample Dissolution, rev 5
 CP-530 Iodine-129 Purification, rev 1

AVERAGES ± 2 SD MDA 1.8 ± 0.74
 FOR 4 SAMPLES YIELD 62 ± 37

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3026

Test C Matrix SOLID
 SDG 7247
 Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOLIDS
 LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H3026

RESULTS

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

Preparation batch 7113-189

B1B3R3	R502110-01	7247-001	U
BLK (QC ID=51981)	R502110-03	7247-003	U
LCS (QC ID=51980)	R502110-02	7247-002	ok
Duplicate (R502110-01)	R502110-04	7247-004	- U

Nominal values and limits from method RDLs (pCi/g) 50
 200-MW-1 Charac.Samp.& Analys-WstMan

METHOD PERFORMANCE

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

Preparation batch 7113-189 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 189

B1B3R3	R502110-01	4.6	0.310	100	50	45	03/18/05	03/19	LSC-004
BLK (QC ID=51981)	R502110-03	4.7	0.300	100	50	03/18/05	03/19	LSC-004	
LCS (QC ID=51980)	R502110-02	10	0.300	100	<u>10</u>	03/18/05	03/19	LSC-004	
Duplicate (R502110-01)	R502110-04	4.3	0.321	100	50	45	03/18/05	03/19	LSC-004
(QC ID=51982)									

Nominal values and limits from method 50 0.300 25 180

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

AVERAGES ± 2 SD	MDA <u>5.9</u> ± <u>5.5</u>
FOR 4 SAMPLES	YIELD <u>100</u> ± <u>0</u>

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SAMPLE DELIVERY GROUP H3026

Test H Matrix SOLID
 SDG 7247
 Contact Melissa C. Mannion

METHOD SUMMARY
 TRITIUM IN SOLIDS
 LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H3026

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Tritium
Preparation batch 7113-189				
B1B3R3	R502110-01		7247-001	U
BLK (QC ID=51981)	R502110-03		7247-003	U
LCS (QC ID=51980)	R502110-02		7247-002	ok
Duplicate (R502110-01)	R502110-04		7247-004	- U
Spike (R502110-01)	R502110-05		7247-005	ok X

Nominal values and limits from method RDLs (pCi/g) 400
 200-MW-1 Charac.Samp.& Analys-WstMan

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7113-189 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 189																
B1B3R3	R502110-01		0.50	15.4				34		50		48	03/21/05	03/22		LSC-004
BLK (QC ID=51981)	R502110-03		0.53	15.0				33		50			03/21/05	03/22		LSC-004
LCS (QC ID=51980)	R502110-02		0.54	15.0				33		46			03/21/05	03/22		LSC-004
Duplicate (R502110-01)	R502110-04		0.49	15.4				35		50		48	03/21/05	03/22		LSC-004
	(QC ID=51982)															
Spike (R502110-01)	R502110-05		1.1	15.4				34		<u>11</u>		48	03/21/05	03/22		LSC-004
	(QC ID=51983)															

Nominal values and limits from method 400 15.0 25 180

PROCEDURES REFERENCE 906.0_H3_LSC
 CP-218 Tritium in Soil Samples by Azeotropic Distillation, rev 3

AVERAGES ± 2 SD MDA 0.63 ± 0.52
 FOR 5 SAMPLES YIELD 34 ± 2

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SAMPLE DELIVERY GROUP H3026

Test NI L Matrix SOLID
 SDG 7247
 Contact Melissa C. Mannion

METHOD SUMMARY
 NICKEL 63 IN SOLIDS
 LIQUID SCINTILLATION COUNTING

Client Hanford
 Contract No. 630
 Contract SDG H3026

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Nickel 63
Preparation batch 7113-189				
B1B3R3	R502110-01		7247-001	34.9
BLK (QC ID=51981)	R502110-03		7247-003	U
LCS (QC ID=51980)	R502110-02		7247-002	ok
Duplicate (R502110-01)	R502110-04		7247-004	ok
Nominal values and limits from method				
200-MW-1 Charac.Samp. & Analys-WstMan			RDLs (pCi/g)	30

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7113-189 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 189																
B1B3R3	R502110-01		3.2	0.500				89		50		27	03/01/05	03/01		LSC-004
BLK (QC ID=51981)	R502110-03		2.9	0.500				97		50			03/01/05	03/01		LSC-004
LCS (QC ID=51980)	R502110-02		3.6	0.500				97		33			03/01/05	03/01		LSC-004
Duplicate (R502110-01)	R502110-04		3.3	0.500				86		50		27	03/01/05	03/01		LSC-004
(QC ID=51982)																
Nominal values and limits from method			30	0.500				30-105		25			180			

PROCEDURES	REFERENCE	NI63_LSC
CP-060	Soil Preparation, rev 7	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5	
CP-280	Nickel-63 Purification, rev 3	

AVERAGES ± 2 SD	MDA	<u>3.2</u>	±	<u>0.58</u>
FOR 4 SAMPLES	YIELD	<u>92</u>	±	<u>11</u>

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SAMPLE DELIVERY GROUP H3026

SDG 7247

Contact Melissa C. Mannion

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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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SDG 7247
Contact Melissa C. Mannion

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PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

These qualifiers should be reviewed as follows:

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

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

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SDG 7247
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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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SDG 7247
Contact Melissa C. Mannion

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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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 Contact Melissa C. Mannion

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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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D A T A S H E E T

- * 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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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3026

SDG 7247
Contact Melissa C. Mannion

REPORT GUIDE

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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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- * 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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FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F04-019-008	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Hughes/Wiberg		COMPANY CONTACT TRENT, SJ		TELEPHONE NO. 373-5869	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8N
SAMPLING LOCATION 216-T-33; 12.5ft - 15ft		PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Waste Management			SAF NO. F04-019		DATA TURNAROUND 45 Days / 45 Days
ICE CHEST NO. GMP-03-016		FIELD LOGBOOK NO. HNF-N-386 1	COA 119144ES10	METHOD OF SHIPMENT Federal Express			
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. See PTR 14850			BILL OF LADING/AIR BILL NO. See PTR 14850		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool 4C	None			
		TYPE OF CONTAINER	aG	aG			
		NO. OF CONTAINER(S)	1	1			
		VOLUME	120ml	60ml			
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B1B3R2	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS			
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B1B3R3	SOIL	2-2-05	1300		X		
CHAIN OF POSSESSION				SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. (1)NO2/NO3 - 353.2; Oil & Grease - 415.1; Chromium Hex - 7196; (2)Iodine-129; Carbon-14; Nickel-63; Technetium-99; Isotopic Thorium (Thorium-228, Thorium-232) Tritium - H3;			
JSAPE/ASR	2-2-05 1450	MO-026 / REC. #3	2-2-05 1450				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
MP-DU KJ 3	2/1/05 0955	M.H. Bucher	2/1/05 0955				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
M.H. Bucher	2/1/05 0955	FED EX					
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
FED EX	2/1/05	Z/LO	2/1/05 10500				
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	



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client Floor-Hanford City Richland State WA

Date/Time received 2/11/05 10:00 CoC No. F04-019-008
Sample B1B3A3

Container I.D. No. GRP-03-016 Requested TAT (Days) 45 P.O. Received Yes No

INSPECTION

- 1. Custody seals on shipping container intact? Yes No N/A
- 2. Custody seals on shipping container dated & signed? Yes No N/A
- 3. Custody seals on sample containers intact? Yes No N/A
- 4. Custody seals on sample containers dated & signed? Yes No N/A
- 5. Packing material is: Wet Dry
- 6. Number of samples in shipping container: 1 Sample Matrix Soil
- 7. Number of containers per sample: 1 (Or see CoC)
- 8. Samples are in correct container Yes No
- 9. Paperwork agrees with samples? Yes No
- 10. Samples have: Tape Hazard labels Rad labels Appropriate sample labels
- 11. Samples are: In good condition Leaking Broken Container Missing
- 12. Samples are: Preserved Not preserved pH Preservative
- 13. Describe any anomalies:

14. Was P.M. notified of any anomalies? Yes No Date

15. Inspected by Z/Ly Date: 2/11/05 Time: 10:00

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

Ion Chamber Ser. No. Calibration date

Alpha Meter Ser. No. Calibration date

Beta/Gamma Meter Ser. No. Calibration date