



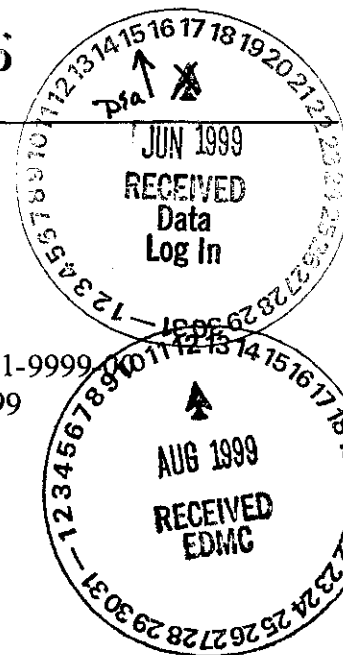
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0051536

**Recra LabNet Philadelphia
Analytical Report**

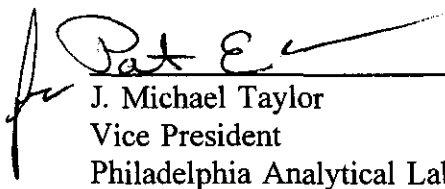
Client : TNU-HANFORD B99-002
RFW# : 9905L041
SDG# : H0409
SAF# : B99-002

W.O. # : 10985-001-001-9999
Date Received: 05-21-99



INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 10 soil samples.
2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blank for Chromium VI was within method criteria.
6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.
7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

6-9-99
Date

njpl05-041

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

WET CHEMISTRY

METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
%Ash	__ D2216-80		
%Moisture	__ D2216-80		ILMO4.0 (e)
%Solids			ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __ by coupon __ by pH		__ 1110 (mod) __ 9045	
Cyanide, Total		__ 9010	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87 (mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1 (mod)
pH, Soil		__ 9045B	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: Chromium VI

Method: SW 3060A/7196A

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

RFW 21-21L-034/D-06/96

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INORGANICS DATA SUMMARY REPORT 05/28/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	BOVFL1	% Solids	96.8	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-002	BOVFL2	% Solids	95.7	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
-003	BOVFL3	% Solids	95.5	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
-004	BOVFL4	% Solids	96.8	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-005	BOVFL5	% Solids	95.9	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
-006	BOVFL6	% Solids	95.3	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
-007	BOVFM3	% Solids	97.8	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-008	BOVFM4	% Solids	97.2	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-009	BOVFM5	% Solids	97.2	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-010	BOVFM6	% Solids	100	%	0.01	1.0
		Chromium VI	1.3	MG/KG	0.40	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/28/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	99LVI042-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

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INORGANICS ACCURACY REPORT 05/28/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-----	-----	-----	-----	-----	-----	-----	-----
-010	B0VFM6	Soluble Chromium VI	5.5	1.3	4.0	104.5	1.0
		Insoluble Chromium VI	1350	1.3	1160	115.8	100
BLANK10	99LVI042-MB1	Soluble Chromium VI	3.7	0.40u	4.0	92.1	1.0
		Insoluble Chromium VI	1300	0.40u	1160	111.8	100

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INORGANICS PRECISION REPORT 05/28/99

CLIENT: TNU-HANFORD 899-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-010REP	80VFM6	% Solids	100	99.9	0.070	1.0
		Chromium VI	1.3	1.4	7.3	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-002

DATE RECEIVED: 05/21/99

RFW LOT # :9905L041

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0VFL1						
% SOLIDS	001	S	99L*S075	05/18/99	05/24/99	05/25/99
CHROMIUM VI	001	S	99LVI042	05/18/99	05/25/99	05/25/99
B0VFL2						
% SOLIDS	002	S	99L*S075	05/18/99	05/24/99	05/25/99
CHROMIUM VI	002	S	99LVI042	05/18/99	05/25/99	05/25/99
B0VFL3						
% SOLIDS	003	S	99L*S075	05/18/99	05/24/99	05/25/99
CHROMIUM VI	003	S	99LVI042	05/18/99	05/25/99	05/25/99
B0VFL4						
% SOLIDS	004	S	99L*S075	05/18/99	05/24/99	05/25/99
CHROMIUM VI	004	S	99LVI042	05/18/99	05/25/99	05/25/99
B0VFL5						
% SOLIDS	005	S	99L*S075	05/18/99	05/24/99	05/25/99
CHROMIUM VI	005	S	99LVI042	05/18/99	05/25/99	05/25/99
B0VFL6						
% SOLIDS	006	S	99L*S075	05/18/99	05/24/99	05/25/99
CHROMIUM VI	006	S	99LVI042	05/18/99	05/25/99	05/25/99
B0VFM3						
% SOLIDS	007	S	99L*S075	05/18/99	05/24/99	05/25/99
CHROMIUM VI	007	S	99LVI042	05/18/99	05/25/99	05/25/99
B0VFM4						
% SOLIDS	008	S	99L*S075	05/18/99	05/24/99	05/25/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-002

DATE RECEIVED: 05/21/99

RFW LOT # :9905L041

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	008	S	99LVI042	05/18/99	05/25/99	05/25/99
B0VFM5						
% SOLIDS	009	S	99L&S075	05/18/99	05/24/99	05/25/99
CHROMIUM VI	009	S	99LVI042	05/18/99	05/25/99	05/25/99
B0VFM6						
% SOLIDS	010	S	99L&S075	05/18/99	05/24/99	05/25/99
% SOLIDS	010 REP	S	99L&S075	05/18/99	05/24/99	05/25/99
CHROMIUM VI	010	S	99LVI042	05/18/99	05/25/99	05/25/99
CHROMIUM VI	010 REP	S	99LVI042	05/18/99	05/25/99	05/25/99
CHROMIUM VI	010 MS	S	99LVI042	05/18/99	05/25/99	05/25/99
CHROMIUM VI	010 MSD	S	99LVI042	05/18/99	05/25/99	05/25/99

LAB QC:

CHROMIUM VI	MB1	S	99LVI042	N/A	05/25/99	05/25/99
CHROMIUM VI	MB1 BS	S	99LVI042	N/A	05/25/99	05/25/99
CHROMIUM VI	MB1 BSD	S	99LVI042	N/A	05/25/99	05/25/99

ALL

Custody Transfer Record/Lab Work Request



RECRA
LabNet

010

Page 1 of 1

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B99-002-105		Page 1 of 1		
Collector Fahlberg/Kerkow		Company Contact R Coffman		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code		Data Turnaround 15 Days	
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100 B/C Overburden "A"		SAF No. B99-002							
Ice Chest No. SML 136		Field Logbook No. EL 1327-3		Method of Shipment FED EX							
Shipped To RECRA RF 5/18/99		Offsite Property No. A 990145		Bill of Lading/Air Bill No. 4235 7952 6242							
				COA R116B4 2Fφφ							

POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage	Preservation	None	None	Cool 4C	None	None					
	Type of Container	P	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
	Volume	20mL	60mL	125mL	250mL	1000mL					

SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.				
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Sample No.	Matrix *	Sample Date	Sample Time								
31 B0VFL1	Soil	5/18/99	0850			X	X				tie to B0V939
02 B0VFL2	Soil	5/18/99	0915			X	X				B0V948
03 B0VFL3	Soil	5/18/99	0940			X	X				B0V950
04 B0VFL4	Soil	5/18/99	1000			X	X				B0V956

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By R. Fahlberg	Date/Time 5.18.99	(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 - Total Sr; Nickel-63 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238) 6.2 COLLECTOR UNAVAILABLE TO SIGN COC	Soil Water Vapor Other Solid Other Liquid
Received By TRK #1-C	Date/Time 5.18.99		
Relinquished By RF 1-C	Date/Time 5/20/99 1045		
Received By SI GALE H/DR	Date/Time 5/20/99 1045		
Relinquished By SI GALE H/DR	Date/Time 5/20/99 1045		
Received By FED EX	Date/Time 5/21/99 0930		
Relinquished By FED EX	Date/Time 5/21/99 0930		

LABORATORY SECTION	Received By BM	Disposal Method	Disposed By	Date/Time
FINAL SAMPLE DISPOSITION				

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-002-106 Page 2 of 2	
Collector Fahlberg/Kerkow		Company Contact R Coffman		Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100 B/C Overburden - A - B - R.F. 5-13-99			SAF No. B99-002	Data Turnaround 15 Days
Ice Chest No. SML 136		Field Logbook No. EL 1327-3			Method of Shipment Fed Ex	
Shipped To FMA/RECRA RF 5/18/99		Offsite Property No. A990145			Bill of Lading/Air Bill No. 4235 7952 6242	
					COA R16B12 ZF220	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	Cool 4C	None	None						
	Type of Container	P	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1	1						
Special Handling and/or Storage	Volume	20mL	60mL	125mL	250mL	1000mL						
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions						
Sample No.	Matrix *	Sample Date	Sample Time									
BOVFL5	Soil	5/18/99	1020			X	X					100% BCOV 964
BOVFL6	Soil	5/18/99	1040			X	X					BCOV 962

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By R. Fahlberg	Date/Time 5-18-99 1615	Received By Ref. #1-C	Date/Time 5-18-99 1615	(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 - Total Sr; Nickel-63 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238) COLLECTOR UNAVAILABLE TO SIGN COC		Soil Water Vapor Other Solid Other Liquid
Relinquished By REF 1-C	Date/Time 5/20/99 1045	Received By S. GALE	Date/Time 5/20/99 1045			
Relinquished By S. GALE	Date/Time 5/20/99 1045	Received By FED EX	Date/Time			
Relinquished By Fed Ex	Date/Time 5/21/99 0930	Received By B. M. J.	Date/Time 5/21/99 0930			
LABORATORY SECTION	Received By	Title		Date/Time		
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time		

010

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B99-002-108		Page 1 of 1		
Collector Fahlberg/Kerkow		Company Contact R Coffman		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code		Data Turnaround 15 Days	
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100 B/C Overburden "B"		SAF No. B99-002							
Ice Chest No. SMC 136		Field Logbook No. EL 1327-3		Method of Shipment Fed Ex							
Shipped To TMA/RECRA TRF 5/18/99		Offsite Property No. A990145		Bill of Lading/Air Bill No. 4235 7952 6242							
				COA		R16C2A 2F00					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	Cool 4C	None	None				
	Type of Container	P	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1	1				
	Special Handling and/or Storage	Volume	20mL	60mL	125mL	250mL	1000mL			

SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.				
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Sample No.	Matrix *	Sample Date	Sample Time							
BOVFM3	Soil	5/18/99	1240			X	X			Info BOV975
BOVFM4	Soil	5/18/99	1300			X	X			BOV984
BOVFM5	Soil	5/18/99	1300			X	X			" BOV984
BOVFM6	Soil	5/18/99	0815			X	X			---

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By K. Feller / R. Fahlberg	Date/Time 5/18/99	Received By VREF # 1-C	Date/Time 5/18/99
Relinquished By REF 1-C 52099	Date/Time 1095	Received By SIOALC 4/ALC	Date/Time 52099 1095
Relinquished By JGME 52099	Date/Time 1045	Received By FED EX	Date/Time
Relinquished By JEO EX	Date/Time 5/21/99 0930	Received By JBM Miller	Date/Time 5/21/99 0930

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time



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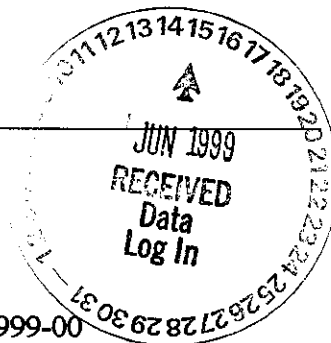
Virtual Laboratories Everywhere

**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-002
RFW# : 9905L041
SDG/SAF# : H0409/B99-002

W.O.# : 10985-001-001-9999-00

Date Received: 05-21-99



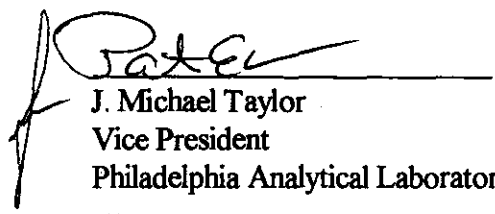
METALS CASE NARRATIVE

1. This narrative covers the analyses of 10 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the control limits of 90-110% (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 25 pages.

16 JUN 1999

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory
mld/m05-041

6-4-99
Date



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Recra Lot#: 9905L041

Leaching Procedure: 1310 1311 1312 Other: _____

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A 3050A 3051 200.7 SS17
Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Antimony	<u>6010B</u> <u>7041</u> ⁵	<u>200.7</u> <u>204.2</u>			<u>99</u>
Arsenic	<u>6010B</u> <u>7060A</u> ⁵	<u>200.7</u> <u>206.2</u>	<u>3113B</u>		<u>99</u>
Barium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Beryllium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Bismuth	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Boron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Cadmium	<u>6010B</u> <u>7131A</u> ⁵	<u>200.7</u> <u>213.2</u>			<u>99</u>
Calcium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Chromium	<u>6010B</u> <u>7191</u> ⁵	<u>200.7</u> <u>218.2</u>			<u>SS17</u>
Cobalt	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Copper	<u>6010B</u> <u>7211</u> ⁵	<u>200.7</u> <u>220.2</u>			<u>99</u>
Iron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Lead	<u>6010B</u> <u>7421</u> ⁵	<u>200.7</u> <u>239.2</u>	<u>3113B</u>		<u>99</u>
Lithium	<u>6010B</u> <u>7430</u> ⁴	<u>200.7</u>		<u>1620</u>	<u>99</u>
Magnesium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Manganese	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Mercury	<u>7470A</u> ³ <u>7471A</u> ³	<u>245.1</u> ² <u>245.5</u> ²			<u>99</u>
Molybdenum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Nickel	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Potassium	<u>6010B</u> <u>7610</u> ⁴	<u>200.7</u> <u>258.1</u> ⁴			<u>99</u>
Rare Earths	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Selenium	<u>6010B</u> <u>7740</u> ⁵	<u>200.7</u> <u>270.2</u>	<u>3113B</u>		<u>99</u>
Silicon	<u>6010B</u> ¹	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silica	<u>6010B</u>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silver	<u>6010B</u> <u>7761</u> ⁵	<u>200.7</u> <u>272.2</u>			<u>99</u>
Sodium	<u>6010B</u> <u>7770</u> ⁴	<u>200.7</u> <u>273.1</u> ⁴			<u>99</u>
Strontium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Thallium	<u>6010B</u> <u>7841</u> ⁵	<u>200.7</u> <u>279.2</u> <u>200.9</u>			<u>99</u>
Tin	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Titanium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Uranium	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Vanadium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zinc	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zirconium	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 06/04/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B0VFL1	Chromium, Total	8.4	MG/KG	0.31	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.8	MG/KG	3.7	1.0
-002	B0VFL2	Chromium, Total	7.8	MG/KG	0.34	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	3.9 u	MG/KG	3.9	1.0
-003	B0VFL3	Chromium, Total	8.6	MG/KG	0.32	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	5.9	MG/KG	3.7	1.0
-004	B0VFL4	Chromium, Total	9.1	MG/KG	0.34	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.3	MG/KG	3.9	1.0
-005	B0VFL5	Chromium, Total	8.9	MG/KG	0.34	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.0 u	MG/KG	4.0	1.0
-006	B0VFL6	Chromium, Total	8.9	MG/KG	0.33	1.0
		Mercury, Total	0.05	MG/KG	0.02	1.0
		Lead, Total	4.5	MG/KG	3.8	1.0
-007	B0VFM3	Chromium, Total	8.5	MG/KG	0.35	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	5.2	MG/KG	4.1	1.0
-008	B0VFM4	Chromium, Total	7.8	MG/KG	0.30	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.9	MG/KG	3.4	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 06/04/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
-009	B0VFM5	Chromium, Total	9.3	MG/KG	0.36	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.6	MG/KG	4:1	1.0
-010	B0VFM6	Chromium, Total	0.33 u	MG/KG	0.33	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.9 u	MG/KG	3.9	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/04/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK1	99L0348-MB1	Chromium, Total	0.35 u	MG/KG	0.35	1.0
		Lead, Total	4.1 u	MG/KG	4.1	1.0
BLANK1	99C0156-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recre LabNet - Lionville

INORGANICS ACCURACY REPORT 06/04/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B0VFL1	Chromium, Total	26.0	8.4	18.3	96.2	1.0
		Mercury, Total	0.19	0.02u	0.17	109.9	1.0
		Lead, Total	46.2	3.8	45.7	92.8	1.0

Recre LabNet - Lionville

INORGANICS PRECISION REPORT 06/04/99

CLIENT: TNU-HANFORD B99-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE	RPD	
*****	*****	*****	*****	*****	*****	*****
-001REP	B0VFL1	Chromium, Total	8.4	9.0	6.9	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Lead, Total	3.8	3.7 u	NC 200	1.0

Corrections
10/6/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/04/99

CLIENT: TMU-HANFORD B99-002

RECRA LOT #: 9905L041

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
*****	*****	*****	*****	*****	*****	*****
LCS1	99L0348-LC1	Chromium, LCS	46.9	50.0	MG/KG	93.8
		Lead, LCS	229	250	MG/KG	91.5
LCS1	99C0156-LC1	Mercury, LCS	1.0	1.0	MG/KG	104.9

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-002

DATE RECEIVED: 05/21/99

RFW LOT # :9905L041

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOVFL1						
CHROMIUM, TOTAL	001	S	99L0348	05/18/99	05/25/99	05/29/99
CHROMIUM, TOTAL	001 REP	S	99L0348	05/18/99	05/25/99	05/29/99
CHROMIUM, TOTAL	001 MS	S	99L0348	05/18/99	05/25/99	05/29/99
MERCURY, TOTAL	001	S	99C0156	05/18/99	05/27/99	05/27/99
MERCURY, TOTAL	001 REP	S	99C0156	05/18/99	05/27/99	05/27/99
MERCURY, TOTAL	001 MS	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	001	S	99L0348	05/18/99	05/25/99	05/29/99
LEAD, TOTAL	001 REP	S	99L0348	05/18/99	05/25/99	05/29/99
LEAD, TOTAL	001 MS	S	99L0348	05/18/99	05/25/99	05/29/99
BOVFL2						
CHROMIUM, TOTAL	002	S	99L0348	05/18/99	05/25/99	05/29/99
MERCURY, TOTAL	002	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	002	S	99L0348	05/18/99	05/25/99	05/29/99
BOVFL3						
CHROMIUM, TOTAL	003	S	99L0348	05/18/99	05/25/99	05/29/99
MERCURY, TOTAL	003	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	003	S	99L0348	05/18/99	05/25/99	05/29/99
BOVFL4						
CHROMIUM, TOTAL	004	S	99L0348	05/18/99	05/25/99	05/29/99
MERCURY, TOTAL	004	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	004	S	99L0348	05/18/99	05/25/99	05/29/99
BOVFL5						
CHROMIUM, TOTAL	005	S	99L0348	05/18/99	05/25/99	05/29/99
MERCURY, TOTAL	005	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	005	S	99L0348	05/18/99	05/25/99	05/29/99
BOVFL6						
CHROMIUM, TOTAL	006	S	99L0348	05/18/99	05/25/99	05/29/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-002

DATE RECEIVED: 05/21/99

RFW LOT # :9905L041

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	006	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	006	S	99L0348	05/18/99	05/25/99	05/29/99
B0VFM3						
CHROMIUM, TOTAL	007	S	99L0348	05/18/99	05/25/99	05/29/99
MERCURY, TOTAL	007	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	007	S	99L0348	05/18/99	05/25/99	05/29/99
B0VFM4						
CHROMIUM, TOTAL	008	S	99L0348	05/18/99	05/25/99	05/29/99
MERCURY, TOTAL	008	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	008	S	99L0348	05/18/99	05/25/99	05/29/99
B0VFM5						
CHROMIUM, TOTAL	009	S	99L0348	05/18/99	05/25/99	05/29/99
MERCURY, TOTAL	009	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	009	S	99L0348	05/18/99	05/25/99	05/29/99
B0VFM6						
CHROMIUM, TOTAL	010	S	99L0348	05/18/99	05/25/99	05/29/99
MERCURY, TOTAL	010	S	99C0156	05/18/99	05/27/99	05/27/99
LEAD, TOTAL	010	S	99L0348	05/18/99	05/25/99	05/29/99

LAB QC:

CHROMIUM LABORATORY	LC1 BS	S	99L0348	N/A	05/25/99	05/29/99
CHROMIUM, TOTAL	MB1	S	99L0348	N/A	05/25/99	05/29/99
MERCURY LABORATORY	LC1 BS	S	99C0156	N/A	05/27/99	05/27/99
MERCURY, TOTAL	MB1	S	99C0156	N/A	05/27/99	05/27/99
LEAD LABORATORY	LC1 BS	S	99L0348	N/A	05/25/99	05/29/99
LEAD, TOTAL	MB1	S	99L0348	N/A	05/25/99	05/29/99

9905L041

ALL Custody Transfer Record/Lab Work Request

[illegible]

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-002-105		Page 1 of 1	
Collector Fahlberg/Kerkow		Company Contact R Coffman		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code	
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100 B/C Overburden "A"		SAF No. B99-002		Data Turnaround 15 Days			
Ice Chest No. SML 136		Field Logbook No. EL 1327-3		Method of Shipment FED EX					
Shipped To TRC/RECRA REF 5/18/99		Offsite Property No. A 990145		Bill of Lading/Air Bill No. 4235 7952 6242					
				COA R116B4 2Fφφ					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	Cool 4C	None	None						
	Type of Container	P	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1	1						
	Volume	20mL	60mL	125mL	250mL	1000mL						
Special Handling and/or Storage												
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time									
01 BOVFL1	Soil	5/18/99	0850			X	X					tie to BOV939
02 BOVFL2	Soil	5/18/99	0915			X	X					BOV948
03 BOVFL3	Soil	5/18/99	0940			X	X					BOV950
04 BOVFL4	Soil	5/18/99	1000			X	X					BOV956

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By R. Fahlberg	Date/Time 5-18-99 1615	Received By TRC #1-C	Date/Time 5-18-99 1615	(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 - Total Sr; Nickel-63 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238) 6.2 COLLECTOR UNAVAILABLE TO SIGN COC				Soil Water Vapor Other Solid Other Liquid	
Relinquished By REF 1-C	Date/Time 5/20/99 1045	Received By 316ALC/BL	Date/Time 5/20/99 1045						
Relinquished By WAGNER/BL	Date/Time 5/20/99 1045	Received By FED EX	Date/Time						
Relinquished By FED EX	Date/Time 5/21/99 0930	Received By WAGNER/BL	Date/Time 5/21/99 0930						
LABORATORY SECTION	Received By	Title						Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time			

014

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-002-106		Page 1 of 1		
Collector Fahlberg/Kerkow		Company Contact R Coffin		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code	Data Turnaround 15 Days
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100 B/C Overburden "A" "B" R.F. 5-13-99		SAF No. B99-002					
Ice Chest No. SML 136		Field Logbook No. EL 1327-3		Method of Shipment Fed Ex					
Shipped To FMA/RECRA R.F. 5/18/99		Offsite Property No. A990145		Bill of Lading/Air Bill No. 4235 7952 6242					
				COA R16B12 ZF&P					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	Cool 4C	None	None						
	Type of Container	P	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1	1						
Special Handling and/or Storage	Volume	20mL	60mL	125mL	250mL	1000mL						
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time									
BOVFL5	Soil	5/18/99	1020			X	X					Final BOV 964
BOVFL6	Soil	5/18/99	1040			X	X					BOV 964

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By R. Fahlberg	Date/Time 5-18-99	Received By Ref. #1-C	Date/Time 5-18-99	(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 - Total Sr; Nickel-63 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238) COLLECTOR UNAVAILABLE TO SIGN COC				Soil Water Vapor Other Solid Other Liquid	
Relinquished By REF 1-C	Date/Time 52099 1045	Received By SIOGAL/HLL	Date/Time 52099 1045						
Relinquished By SIOGAL/HLL	Date/Time 52099 1045	Received By FED EX	Date/Time						
Relinquished By Fed Ex	Date/Time 5/21/99 0930	Received By B. Mully	Date/Time 5/21/99 0930						
LABORATORY SECTION	Received By	Title						Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time			

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B99-002-108		Page 1 of 1		
Collector Fahlberg/Kerkow		Company Contact R Coffman		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code		Data Turnaround 15 Days	
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100 B/C Overburden "B"		SAF No. B99-002							
Ice Chest No. SML 136		Field Logbook No. EL 1327-3		Method of Shipment Fed Ex							
Shipped To FMA/RECRA TRF 5/18/99		Offsite Property No. A990145		Bill of Lading/Air Bill No. 4235 7952 6242							
				COA R16C2A 2F00							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	Cool 4C	None	None				
	Type of Container	P	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1	1				
Special Handling and/or Storage	Volume	20mL	60mL	125mL	250mL	1000mL				

SAMPLE ANALYSIS				Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW- 846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.			
-----------------	--	--	--	---------------	---	------------------------	--	---	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time							
007 BOVFM3	Soil	5/18/99	1240			X	X			Field B9V975
008 BOVFM4	Soil	5/18/99	1300			X	X			B9V984
009 BOVFM5	Soil	5/18/99	1300			X	X			" B9V984
010 BOVFM6	Soil	5/18/99	0815			X	X			---

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By K. Feller	Date/Time 5/18/99 1606	Received By Ref H 1-C	Date/Time 5/18/99 1615	(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238) COLLECTOR UNAVAILABLE TO SIGN COC				Soil Water Vapor Other Solid Other Liquid
Relinquished By REF 1-C	Date/Time 5/20/99 1045	Received By SIGMUND	Date/Time 5/20/99 1045					
Relinquished By NAME	Date/Time 5/20/99 1045	Received By FED EX	Date/Time					
Relinquished By FED EX	Date/Time 5/21/99 0930	Received By BM	Date/Time 5/21/99 0930					

LABORATORY SECTION	Received By	Disposal Method	Disposed By	Date/Time	Date/Time
FINAL SAMPLE DISPOSITION					

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0409 is comprised of ten solid (soil) samples designated under SAF No. B99-002 with a Project Designation of: 100 BC Areas-Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. Preliminary results for Isotopic Uranium, Nickel-63 and Total Strontium were transmitted to Bechtel Hanford via fax on June 9, 1999.

2.0 ANALYSIS NOTES

2.1 Nickel-63 Analyses

No problems were encountered during the processing of the samples.

2.2 Total Strontium Analyses

No problems were encountered during the processing of the samples.

2.3 Isotopic Plutonium Analyses

No problems were encountered during the processing of the samples.

2.4 Gamma Scan Analyses

No problems were encountered during the processing of the samples.

2.5 Isotopic Uranium Analyses

No problems were encountered during the processing of the samples.

2.6 Americium-241 Analyses

No problems were encountered during the processing of the samples.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

SDG 7128

Contact L.A. Johnson

SAMPLE SUMMARY

Client Hanford

Contract TRB-SBB-207925

Case no SDG-H0409

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0VFL1	100 B/C Overburden "A"	SOLID		N905124-01	B99-002	B99-002-105	05/18/99 08:50
B0VFL2	100 B/C Overburden "A"	SOLID		N905124-02	B99-002	B99-002-105	05/18/99 09:15
B0VFL3	100 B/C Overburden "A"	SOLID		N905124-03	B99-002	B99-002-105	05/18/99 09:40
B0VFL4	100 B/C Overburden "A"	SOLID		N905124-04	B99-002	B99-002-105	05/18/99 10:00
B0VFL5	100 B/C Overburden "B"	SOLID		N905124-05	B99-002	B99-002-106	05/18/99 10:20
B0VFL6	100 B/C Overburden "B"	SOLID		N905124-06	B99-002	B99-002-106	05/18/99 10:40
B0VFM3	100 B/C Overburden "B"	SOLID		N905124-07	B99-002	B99-002-108	05/18/99 12:40
B0VFM4	100 B/C Overburden "B"	SOLID		N905124-08	B99-002	B99-002-108	05/18/99 13:00
B0VFM5	100 B/C Overburden "B"	SOLID		N905124-09	B99-002	B99-002-108	05/18/99 13:00
B0VFM6	100 B/C Overburden "B"	SOLID		N905124-10	B99-002	B99-002-108	05/18/99 08:15
Method Blank		SOLID		N905124-12	B99-002		
Lab Control Sample		SOLID		N905124-11	B99-002		
Duplicate (N905124-01)	100 B/C Overburden "A"	SOLID		N905124-13	B99-002		05/18/99 08:50

SAMPLE SUMMARY

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Lab id TMANC

Protocol Hanford

Version Ver 1.0

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TMA/RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

QC SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7128	B99-002-105	B0VFL1	SOLID	96.0			05/21/99	3 N905124-01	7128-001
		B0VFL2	SOLID	96.2			05/21/99	3 N905124-02	7128-002
		B0VFL3	SOLID	95.9			05/21/99	3 N905124-03	7128-003
		B0VFL4	SOLID	96.3			05/21/99	3 N905124-04	7128-004
	B99-002-106	B0VFL5	SOLID	96.4			05/21/99	3 N905124-05	7128-005
		B0VFL6	SOLID	95.5			05/21/99	3 N905124-06	7128-006
	B99-002-108	B0VFM3	SOLID	96.9			05/21/99	3 N905124-07	7128-007
		B0VFM4	SOLID	97.1			05/21/99	3 N905124-08	7128-008
		B0VFM5	SOLID	97.1			05/21/99	3 N905124-09	7128-009
		B0VFM6	SOLID	100.0			05/21/99	3 N905124-10	7128-010
		Method Blank	SOLID					N905124-12	7128-012
		Lab Control Sample	SOLID					N905124-11	7128-011
		Duplicate (N905124-01)	SOLID	96.0			05/21/99	3 N905124-13	7128-013

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

SDG 7128

Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford

Contract TRB-SBB-207925

Case no SDG-H0409

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED					QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Alpha Spectroscopy											
AM	SOLID	Americium 241 in Soil	6880-096	5.0	10			1	1	1/1	
PU	SOLID	Plutonium, Isotopic in Solids	6880-096	5.0	10			1	1	1/1	
U	SOLID	Uranium, Isotopic in Soil	6880-096	5.0	10			1	1	1/1	
Beta Counting											
SR	SOLID	Total Strontium in Soil	6880-096	10.0	10			1	1	1/1	
Gamma Spectroscopy											
GAM	SOLID	Gamma Scan	6880-096	15.0	10			1	1	1/1	
Liquid Scintillation Counting											
NI_L	SOLID	Nickel 63 in Soil	6880-096	10.0	10			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.

PREP BATCH SUMMARY

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

SDG 7128

Contact L.A. Johnson

WORK SUMMARY

Client Hanford

Contract TRB-SBB-207925

Case no SDG-H0409

CLIENT SAMPLE ID		LAB SAMPLE ID																	
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	SUP-	ANALYZED	REVIEWED	BY	METHOD										
CUSTODY	SAF No	RECEIVED			FIX														
B0VFL1		N905124-01	7128-001	AM		06/08/99	06/14/99	TAH	Americium 241 in Soil										
100 B/C Overburden "A"	SOLID	05/18/99	7128-001	GAM		06/14/99	06/16/99	TAH	Gamma Scan										
B99-002-105	B99-002	05/21/99	7128-001	NI_L		05/29/99	06/14/99	TAH	Nickel 63 in Soil										
			7128-001	PU		06/03/99	06/14/99	TAH	Plutonium, Isotopic in Solids										
			7128-001	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil										
			7128-001	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil										
B0VFL2		N905124-02	7128-002	AM		06/08/99	06/14/99	TAH	Americium 241 in Soil										
100 B/C Overburden "A"	SOLID	05/18/99	7128-002	GAM		06/02/99	06/16/99	TAH	Gamma Scan										
B99-002-105	B99-002	05/21/99	7128-002	NI_L		05/29/99	06/14/99	TAH	Nickel 63 in Soil										
			7128-002	PU		06/03/99	06/14/99	TAH	Plutonium, Isotopic in Solids										
			7128-002	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil										
			7128-002	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil										
B0VFL3		N905124-03	7128-003	AM		06/08/99	06/14/99	TAH	Americium 241 in Soil										
100 B/C Overburden "A"	SOLID	05/18/99	7128-003	GAM		06/03/99	06/16/99	TAH	Gamma Scan										
B99-002-105	B99-002	05/21/99	7128-003	NI_L		05/29/99	06/14/99	TAH	Nickel 63 in Soil										
			7128-003	PU		06/03/99	06/14/99	TAH	Plutonium, Isotopic in Solids										
			7128-003	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil										
			7128-003	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil										
B0VFL4		N905124-04	7128-004	AM		06/08/99	06/14/99	TAH	Americium 241 in Soil										
100 B/C Overburden "A"	SOLID	05/18/99	7128-004	GAM		06/03/99	06/16/99	TAH	Gamma Scan										
B99-002-105	B99-002	05/21/99	7128-004	NI_L		05/29/99	06/14/99	TAH	Nickel 63 in Soil										
			7128-004	PU		06/12/99	06/14/99	TAH	Plutonium, Isotopic in Solids										
			7128-004	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil										
			7128-004	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil										
B0VFL5		N905124-05	7128-005	AM		06/08/99	06/14/99	TAH	Americium 241 in Soil										
100 B/C Overburden "B"	SOLID	05/18/99	7128-005	GAM		06/04/99	06/16/99	TAH	Gamma Scan										
B99-002-106	B99-002	05/21/99	7128-005	NI_L		05/29/99	06/14/99	TAH	Nickel 63 in Soil										
			7128-005	PU		06/04/99	06/14/99	TAH	Plutonium, Isotopic in Solids										
			7128-005	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil										
			7128-005	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil										

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

SDG 7128

Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford

Contract TRB-SBB-207925

Case no SDG-H0409

CLIENT SAMPLE ID		LAB SAMPLE ID													
LOCATION	MATRIX	COLLECTED			SUF-										
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD						
B0VFL6		N905124-06	7128-006	AM		06/10/99	06/14/99	TAH	Americium 241 in Soil						
100 B/C Overburden "B"	SOLID	05/18/99	7128-006	GAM		06/04/99	06/16/99	TAH	Gamma Scan						
B99-002-106	B99-002	05/21/99	7128-006	NI_L		05/29/99	06/14/99	TAH	Nickel 63 in Soil						
			7128-006	PU		06/07/99	06/14/99	TAH	Plutonium, Isotopic in Solids						
			7128-006	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil						
			7128-006	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil						
B0VFM3		N905124-07	7128-007	AM		06/10/99	06/14/99	TAH	Americium 241 in Soil						
100 B/C Overburden "B"	SOLID	05/18/99	7128-007	GAM		06/04/99	06/16/99	TAH	Gamma Scan						
B99-002-108	B99-002	05/21/99	7128-007	NI_L		05/29/99	06/14/99	TAH	Nickel 63 in Soil						
			7128-007	PU		06/04/99	06/14/99	TAH	Plutonium, Isotopic in Solids						
			7128-007	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil						
			7128-007	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil						
B0VFM4		N905124-08	7128-008	AM		06/10/99	06/14/99	TAH	Americium 241 in Soil						
100 B/C Overburden "B"	SOLID	05/18/99	7128-008	GAM		06/04/99	06/16/99	TAH	Gamma Scan						
B99-002-108	B99-002	05/21/99	7128-008	NI_L		05/29/99	06/14/99	TAH	Nickel 63 in Soil						
			7128-008	PU		06/04/99	06/14/99	TAH	Plutonium, Isotopic in Solids						
			7128-008	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil						
			7128-008	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil						
B0VFM5		N905124-09	7128-009	AM		06/10/99	06/14/99	TAH	Americium 241 in Soil						
100 B/C Overburden "B"	SOLID	05/18/99	7128-009	GAM		06/04/99	06/16/99	TAH	Gamma Scan						
B99-002-108	B99-002	05/21/99	7128-009	NI_L		05/29/99	06/14/99	TAH	Nickel 63 in Soil						
			7128-009	PU		06/04/99	06/14/99	TAH	Plutonium, Isotopic in Solids						
			7128-009	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil						
			7128-009	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil						
B0VFM6		N905124-10	7128-010	AM		06/10/99	06/14/99	TAH	Americium 241 in Soil						
100 B/C Overburden "B"	SOLID	05/18/99	7128-010	GAM		06/05/99	06/16/99	TAH	Gamma Scan						
B99-002-108	B99-002	05/21/99	7128-010	NI_L		05/30/99	06/14/99	TAH	Nickel 63 in Soil						
			7128-010	PU		06/04/99	06/14/99	TAH	Plutonium, Isotopic in Solids						
			7128-010	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil						
			7128-010	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil						

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

SDG 7128

Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford

Contract TRB-SBB-207925

Case no SDG-H0409

CLIENT SAMPLE ID		LAB SAMPLE ID								
LOCATION	MATRIX	COLLECTED		SUF-						
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
Method Blank		N905124-12	7128-012	AM		06/08/99	06/14/99	TAH	Americium 241 in Soil	
	SOLID		7128-012	GAM		06/07/99	06/16/99	TAH	Gamma Scan	
	B99-002		7128-012	NI_L		05/30/99	06/14/99	TAH	Nickel 63 in Soil	
			7128-012	PU		06/04/99	06/14/99	TAH	Plutonium, Isotopic in Solids	
			7128-012	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil	
			7128-012	U		06/05/99	06/14/99	TAH	Uranium, Isotopic in Soil	
Lab Control Sample		N905124-11	7128-011	AM		06/10/99	06/14/99	TAH	Americium 241 in Soil	
	SOLID		7128-011	GAM		06/05/99	06/16/99	TAH	Gamma Scan	
	B99-002		7128-011	NI_L		05/30/99	06/14/99	TAH	Nickel 63 in Soil	
			7128-011	PU		06/03/99	06/14/99	TAH	Plutonium, Isotopic in Solids	
			7128-011	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil	
			7128-011	U		06/02/99	06/14/99	TAH	Uranium, Isotopic in Soil	
Duplicate (N905124-01)		N905124-13	7128-013	AM		06/11/99	06/14/99	TAH	Americium 241 in Soil	
100 B/C Overburden "A"	SOLID	05/18/99	7128-013	GAM		06/07/99	06/16/99	TAH	Gamma Scan	
	B99-002	05/21/99	7128-013	NI_L		05/30/99	06/14/99	TAH	Nickel 63 in Soil	
			7128-013	PU		06/04/99	06/14/99	TAH	Plutonium, Isotopic in Solids	
			7128-013	SR		06/01/99	06/14/99	TAH	Total Strontium in Soil	
			7128-013	U		06/05/99	06/14/99	TAH	Uranium, Isotopic in Soil	

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-002	Americium 241 in Soil	AM/CMPLATE	10			1	1	1	13
GAM	B99-002	Gamma Scan	GAMMAHI	10			1	1	1	13
NI_L	B99-002	Nickel 63 in Soil	NI63LSC	10			1	1	1	13
PU	B99-002	Plutonium, Isotopic in Solids	PUPLATE	10			1	1	1	13
SR	B99-002	Total Strontium in Soil		10			1	1	1	13
U	B99-002	Uranium, Isotopic in Soil	UPLATE	10			1	1	1	13
TOTALS				60			6	6	6	78

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-12

Method Blank

METHOD BLANK

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-12</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7128-012</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B99-002</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.029	0.038	0.073	1.0	U	U
Uranium 235	15117-96-1	0	0.023	0.089	1.0	U	U
Uranium 238	U-238	0	0.019	0.073	1.0	U	U
Plutonium 238	13981-16-3	0.002	0.014	0.026	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.002	0.009	0.026	1.0	U	PU
Nickel 63	13981-37-8	0.410	3.5	5.8	30	U	NI_L
Americium 241	14596-10-2	0.005	0.014	0.026	1.0	U	AM
Total Strontium	SR-RAD	-0.011	0.12	0.17	1.0	U	SR
Potassium 40	13966-00-2	U		92		U	GAM
Cobalt 60	10198-40-0	U		9.9	0.050	U	GAM
Cesium 137	10045-97-3	U		7.2	0.10	U	GAM
Europium 152	14683-23-9	U		18	0.10	U	GAM
Europium 154	15585-10-1	U		26	0.10	U	GAM
Europium 155	14391-16-3	U		10	0.10	U	GAM
Radium 226	13982-63-3	U		12	0.10	U	GAM
Radium 228	15262-20-1	U		34	0.20	U	GAM
Thorium 228	14274-82-9	U		9.2		U	GAM
Thorium 232	TH-232	U		34		U	GAM
Americium 241	14596-10-2	U		5.3		U	GAM
Uranium 238	U-238	U		920		U	GAM
Uranium 235	15117-96-1	U		20		U	GAM

100 B/C Areas-Full Protocol

QC-BLANK 30856

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-11

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-11</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7128-011</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B99-002</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Uranium 233/234	4.72	0.58	0.28	1.0		U	4.64	0.19	102	79-121	80-120
Uranium 235	3.89	0.51	0.078	1.0		U	3.77	0.15	103	77-123	80-120
Uranium 238	5.00	0.61	0.27	1.0		U	5.04	0.20	99	80-120	80-120
Plutonium 238	5.16	0.43	0.022	1.0		PU	5.03	0.20	103	84-116	80-120
Plutonium 239/240	5.26	0.44	0.022	1.0		PU	5.29	0.21	99	84-116	80-120
Nickel 63	173	4.0	2.3	30		NI_L	168	6.7	103	83-117	
Americium 241	4.59	0.38	0.019	1.0		AM	4.79	0.19	96	85-115	80-120
Total Strontium	12.0	0.41	0.19	1.0		SR	11.4	0.46	105	82-118	
Potassium 40	U		52		U	GAM					
Cobalt 60	156	9.9	<u>4.8</u>	0.050		GAM	169	6.8	92	77-123	80-120
Cesium 137	187	9.1	<u>6.3</u>	0.10		GAM	195	7.8	96	77-123	80-120
Europium 152	U		<u>14</u>	0.10	U	GAM					
Europium 154	U		<u>12</u>	0.10	U	GAM					
Europium 155	U		<u>11</u>	0.10	U	GAM					
Radium 226	U		<u>8.8</u>	0.10	U	GAM					
Radium 228	U		<u>22</u>	0.20	U	GAM					
Thorium 228	U		7.4		U	GAM					
Thorium 232	U		22		U	GAM					
Americium 241	U		9.0		U	GAM					
Uranium 238	U		710		U	GAM					
Uranium 235	U		17		U	GAM					

100 B/C Areas-Full Protocol

QC-LCS 30855

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>06/16/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-13

BOVFL1

DUPLICATE

SDG <u>7128</u>		Client/Case no <u>Hanford</u>		SDG- <u>H0409</u>
Contact <u>L.A. Johnson</u>		Case no <u>TRB-SBB-207925</u>		
DUPLICATE		ORIGINAL		
Lab sample id <u>N905124-13</u>	Lab sample id <u>N905124-01</u>	Client sample id <u>BOVFL1</u>		
Dept sample id <u>7128-013</u>	Dept sample id <u>7128-001</u>	Location/Matrix <u>100 B/C Overburden "A"</u> <u>SOLID</u>		
	Received <u>05/21/99</u>	Collected <u>05/18/99 08:50</u>		
% solids <u>96.0</u>	% solids <u>96.0</u>	Custody/SAF No <u>B99-002-105</u> <u>B99-002</u>		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Uranium 233/234	0.501	0.14	0.062	1.0	J	U	0.652	0.19	0.12	J	26	62
Uranium 235	0.039	0.039	0.075	1.0	U	U	0.093	0.063	0.12	U	-	
Uranium 238	0.428	0.12	0.062	1.0	J	U	0.371	0.16	0.098	J	14	76
Plutonium 238	0.017	0.034	0.062	1.0	U	PU	-0.014	0.014	0.068	U	-	
Plutonium 239/240	0.034	0.045	0.069	1.0	U	PU	0.035	0.043	0.054	U	-	
Nickel 63	-0.435	1.5	2.5	30	U	NI_L	-0.027	1.8	3.1	U	-	
Americium 241	0.007	0.015	0.028	1.0	U	AM	-0.004	0.017	0.040	U	-	
Total Strontium	0.091	0.12	0.15	1.0	U	SR	0.146	0.14	0.18	U	-	
Potassium 40	12.2	0.48	0.22			GAM	12.1	0.52	0.26		1	33
Cobalt 60	U		0.023	0.050	U	GAM	U		0.024	U	-	
Cesium 137	15.4	0.12	0.045	0.10		GAM	17.2	0.14	0.055		11	32
Europium 152	U		<u>0.14</u>	0.10	U	GAM	U		<u>0.16</u>	U	-	
Europium 154	U		0.076	0.10	U	GAM	U		0.083	U	-	
Europium 155	U		<u>0.11</u>	0.10	U	GAM	U		<u>0.13</u>	U	-	
Radium 226	0.483	0.067	0.079	0.10		GAM	0.420	0.078	0.096		14	47
Radium 228	0.752	0.11	0.10	0.20		GAM	0.764	0.11	0.11		2	44
Thorium 228	0.625	0.043	0.059			GAM	0.671	0.049	0.067		7	35
Thorium 232	0.752	0.11	0.10			GAM	0.764	0.11	0.11		2	44
Americium 241	U		0.17		U	GAM	U		0.19	U	-	
Uranium 238	U		2.6		U	GAM	U		3.1	U	-	
Uranium 235	U		0.17		U	GAM	U		0.19	U	-	

100 B/C Areas-Full Protocol

QC-DUP#1 30857

DUPLICATES

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-01

BOVFL1

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-01</u>	Client sample id <u>BOVFL1</u>	
Dept sample id <u>7128-001</u>	Location/Matrix <u>100 B/C Overburden "A"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 08:50</u>	
% solids <u>96.0</u>	Custody/SAF No <u>B99-002-105</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.652	0.19	0.12	1.0	J	U
Uranium 235	15117-96-1	0.093	0.063	0.12	1.0	U	U
Uranium 238	U-238	0.371	0.16	0.098	1.0	J	U
Plutonium 238	13981-16-3	-0.014	0.014	0.068	1.0	U	PU
Plutonium 239/240	PU-239/240	0.035	0.043	0.054	1.0	U	PU
Nickel 63	13981-37-8	-0.027	1.8	3.1	30	U	NI_L
Americium 241	14596-10-2	-0.004	0.017	0.040	1.0	U	AM
Total Strontium	SR-RAD	0.146	0.14	0.18	1.0	U	SR
Potassium 40	13966-00-2	12.1	0.52	0.26			GAM
Cobalt 60	10198-40-0	U		0.024	0.050	U	GAM
Cesium 137	10045-97-3	17.2	0.14	0.055	0.10		GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.083	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Radium 226	13982-63-3	0.420	0.078	0.096	0.10		GAM
Radium 228	15262-20-1	0.764	0.11	0.11	0.20		GAM
Thorium 228	14274-82-9	0.671	0.049	0.067			GAM
Thorium 232	TH-232	0.764	0.11	0.11			GAM
Americium 241	14596-10-2	U		0.19		U	GAM
Uranium 238	U-238	U		3.1		U	GAM
Uranium 235	15117-96-1	U		0.19		U	GAM

100 B/C Areas-Full Protocol

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-02

BOVFL2

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-02</u>	Client sample id <u>BOVFL2</u>	
Dept sample id <u>7128-002</u>	Location/Matrix <u>100 B/C Overburden "A"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 09:15</u>	
% solids <u>96.2</u>	Custody/SAF No <u>B99-002-105</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.529	0.14	0.065	1.0	J	U
Uranium 235	15117-96-1	0.041	0.041	0.079	1.0	U	U
Uranium 238	U-238	0.504	0.14	0.065	1.0	J	U
Plutonium 238	13981-16-3	0.008	0.031	0.074	1.0	U	PU
Plutonium 239/240	PU-239/240	0.016	0.031	0.074	1.0	U	PU
Nickel 63	13981-37-8	0.772	1.6	2.7	30	U	NI_L
Americium 241	14596-10-2	-0.018	0.018	0.055	1.0	U	AM
Total Strontium	SR-RAD	0.125	0.095	0.15	1.0	U	SR
Potassium 40	13966-00-2	25.6	0.64	0.26			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	6.17	0.074	0.027	0.10		GAM
Europium 152	14683-23-9	U		0.094	0.10	U	GAM
Europium 154	15585-10-1	U		0.090	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Radium 226	13982-63-3	0.976	0.061	0.059	0.10		GAM
Radium 228	15262-20-1	1.37	0.13	0.13	0.20		GAM
Thorium 228	14274-82-9	1.33	0.042	0.044			GAM
Thorium 232	TH-232	1.37	0.13	0.13			GAM
Americium 241	14596-10-2	U		0.099		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

100 B/C Areas-Full Protocol

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-03

B0VFL3

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-03</u>	Client sample id <u>B0VFL3</u>	
Dept sample id <u>7128-003</u>	Location/Matrix <u>100 B/C Overburden "A"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 09:40</u>	
% solids <u>95.9</u>	Custody/SAF No <u>B99-002-105</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.446	0.16	0.10	1.0	J	U
Uranium 235	15117-96-1	0.016	0.032	0.12	1.0	U	U
Uranium 238	U-238	0.563	0.19	0.10	1.0	J	U
Plutonium 238	13981-16-3	0.006	0.024	0.057	1.0	U	PU
Plutonium 239/240	PU-239/240	0.006	0.036	0.066	1.0	U	PU
Nickel 63	13981-37-8	0.418	1.6	2.6	30	U	NI_L
Americium 241	14596-10-2	0	0.017	0.041	1.0	U	AM
Total Strontium	SR-RAD	-0.217	0.30	0.43	1.0	U	SR
Potassium 40	13966-00-2	11.4	0.31	0.12			GAM
Cobalt 60	10198-40-0	U		0.012	0.050	U	GAM
Cesium 137	10045-97-3	1.14	0.026	0.016	0.10		GAM
Europium 152	14683-23-9	U		0.038	0.10	U	GAM
Europium 154	15585-10-1	U		0.044	0.10	U	GAM
Europium 155	14391-16-3	U		0.060	0.10	U	GAM
Radium 226	13982-63-3	0.440	0.027	0.025	0.10		GAM
Radium 228	15262-20-1	0.631	0.068	0.065	0.20		GAM
Thorium 228	14274-82-9	0.576	0.019	0.019			GAM
Thorium 232	TH-232	0.631	0.068	0.065			GAM
Americium 241	14596-10-2	U		0.045		U	GAM
Uranium 238	U-238	U		1.7		U	GAM
Uranium 235	15117-96-1	U		0.072		U	GAM

100 B/C Areas-Full Protocol

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-04

B0VFL4

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-04</u>	Client sample id <u>B0VFL4</u>	
Dept sample id <u>7128-004</u>	Location/Matrix <u>100 B/C Overburden "A"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 10:00</u>	
% solids <u>96.3</u>	Custody/SAF No <u>B99-002-105</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.531	0.16	0.071	1.0	J	U
Uranium 235	15117-96-1	0.034	0.045	0.086	1.0	U	U
Uranium 238	U-238	0.522	0.14	0.071	1.0	J	U
Plutonium 238	13981-16-3	0.018	0.037	0.061	1.0	U	PU
Plutonium 239/240	PU-239/240	0.028	0.028	0.044	1.0	U	PU
Nickel 63	13981-37-8	-0.259	1.4	2.5	30	U	NI_L
Americium 241	14596-10-2	0	0.026	0.052	1.0	U	AM
Total Strontium	SR-RAD	0.131	0.13	0.16	1.0	U	SR
Potassium 40	13966-00-2	11.6	0.49	0.25			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	2.36	0.054	0.032	0.10		GAM
Europium 152	14683-23-9	U		0.073	0.10	U	GAM
Europium 154	15585-10-1	U		0.074	0.10	U	GAM
Europium 155	14391-16-3	U		0.065	0.10	U	GAM
Radium 226	13982-63-3	0.437	0.043	0.047	0.10		GAM
Radium 228	15262-20-1	0.700	0.12	0.11	0.20		GAM
Thorium 228	14274-82-9	0.576	0.030	0.032			GAM
Thorium 232	TH-232	0.700	0.12	0.11			GAM
Americium 241	14596-10-2	U		0.094		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.094		U	GAM

100 B/C Areas-Full Protocol

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-05

BOVFL5

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-05</u>	Client sample id <u>BOVFL5</u>	
Dept sample id <u>7128-005</u>	Location/Matrix <u>100 B/C Overburden "B"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 10:20</u>	
% solids <u>96.4</u>	Custody/SAF No <u>B99-002-106</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.549	0.14	0.064	1.0	J	U
Uranium 235	15117-96-1	0.020	0.020	0.077	1.0	U	U
Uranium 238	U-238	0.682	0.16	0.064	1.0	J	U
Plutonium 238	13981-16-3	0.008	0.031	0.075	1.0	U	PU
Plutonium 239/240	PU-239/240	0.039	0.047	0.087	1.0	U	PU
Nickel 63	13981-37-8	1.42	1.7	2.8	30	U	NI_L
Americium 241	14596-10-2	0	0.018	0.035	1.0	U	AM
Total Strontium	SR-RAD	0.166	0.11	0.15	1.0	J	SR
Potassium 40	13966-00-2	11.4	0.30	0.12			GAM
Cobalt 60	10198-40-0	U		0.012	0.050	U	GAM
Cesium 137	10045-97-3	1.14	0.023	0.011	0.10		GAM
Europium 152	14683-23-9	U		0.037	0.10	U	GAM
Europium 154	15585-10-1	U		0.042	0.10	U	GAM
Europium 155	14391-16-3	U		0.045	0.10	U	GAM
Radium 226	13982-63-3	0.424	0.028	0.026	0.10		GAM
Radium 228	15262-20-1	0.589	0.058	0.056	0.20		GAM
Thorium 228	14274-82-9	0.599	0.018	0.018			GAM
Thorium 232	TH-232	0.589	0.058	0.056			GAM
Americium 241	14596-10-2	U		0.043		U	GAM
Uranium 238	U-238	U		1.6		U	GAM
Uranium 235	15117-96-1	U		0.077		U	GAM

100 B/C Areas-Full Protocol

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-06

B0VFL6

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-06</u>	Client sample id <u>B0VFL6</u>	
Dept sample id <u>7128-006</u>	Location/Matrix <u>100 B/C Overburden "B"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 10:40</u>	
% solids <u>95.5</u>	Custody/SAF No <u>B99-002-106</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.504	0.14	0.064	1.0	J	U
Uranium 235	15117-96-1	0.020	0.020	0.078	1.0	U	U
Uranium 238	U-238	0.588	0.14	0.064	1.0	J	U
Plutonium 238	13981-16-3	0.008	0.015	0.029	1.0	U	PU
Plutonium 239/240	PU-239/240	0.008	0.023	0.042	1.0	U	PU
Nickel 63	13981-37-8	0.680	1.8	3.0	30	U	NI_L
Americium 241	14596-10-2	0.003	0.012	0.022	1.0	U	AM
Total Strontium	SR-RAD	0.023	0.12	0.15	1.0	U	SR
Potassium 40	13966-00-2	11.6	0.55	0.29			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	0.394	0.036	0.030	0.10		GAM
Europium 152	14683-23-9	U		0.054	0.10	U	GAM
Europium 154	15585-10-1	U		0.094	0.10	U	GAM
Europium 155	14391-16-3	U		0.067	0.10	U	GAM
Radium 226	13982-63-3	0.487	0.048	0.045	0.10		GAM
Radium 228	15262-20-1	0.607	0.12	0.13	0.20		GAM
Thorium 228	14274-82-9	0.590	0.028	0.026			GAM
Thorium 232	TH-232	0.607	0.12	0.13			GAM
Americium 241	14596-10-2	U		0.031		U	GAM
Uranium 238	U-238	U		3.2		U	GAM
Uranium 235	15117-96-1	U		0.084		U	GAM

100 B/C Areas-Full Protocol

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-07

B0VFM3

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-07</u>	Client sample id <u>B0VFM3</u>	
Dept sample id <u>7128-007</u>	Location/Matrix <u>100 B/C Overburden "B"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 12:40</u>	
% solids <u>96.9</u>	Custody/SAF No <u>B99-002-108</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.519	0.15	0.098	1.0	J	U
Uranium 235	15117-96-1	0.086	0.074	0.094	1.0	U	U
Uranium 238	U-238	0.550	0.15	0.078	1.0	J	U
Plutonium 238	13981-16-3	0	0.028	0.067	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.007	0.028	0.067	1.0	U	PU
Nickel 63	13981-37-8	-1.06	1.6	2.8	30	U	NI_L
Americium 241	14596-10-2	0.008	0.017	0.021	1.0	U	AM
Total Strontium	SR-RAD	-0.033	0.11	0.16	1.0	U	SR
Potassium 40	13966-00-2	12.2	0.49	0.24			GAM
Cobalt 60	10198-40-0	0.051	0.023	0.026	0.050		GAM
Cesium 137	10045-97-3	1.63	0.045	0.029	0.10		GAM
Europium 152	14683-23-9	U		0.069	0.10	U	GAM
Europium 154	15585-10-1	U		0.080	0.10	U	GAM
Europium 155	14391-16-3	U		0.063	0.10	U	GAM
Radium 226	13982-63-3	0.463	0.048	0.051	0.10		GAM
Radium 228	15262-20-1	0.740	0.092	0.092	0.20		GAM
Thorium 228	14274-82-9	0.654	0.029	0.031			GAM
Thorium 232	TH-232	0.740	0.092	0.092			GAM
Americium 241	14596-10-2	U		0.093		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-08

BOVFM4

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-08</u>	Client sample id <u>BOVFM4</u>	
Dept sample id <u>7128-008</u>	Location/Matrix <u>100 B/C Overburden "B"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 13:00</u>	
% solids <u>97.1</u>	Custody/SAF No <u>B99-002-108</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.430	0.15	0.11	1.0	J	U
Uranium 235	15117-96-1	0.073	0.073	0.093	1.0	U	U
Uranium 238	U-238	0.490	0.15	0.076	1.0	J	U
Plutonium 238	13981-16-3	-0.007	0.028	0.068	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.007	0.028	0.068	1.0	U	PU
Nickel 63	13981-37-8	0.987	1.5	2.5	30	U	NI_L
Americium 241	14596-10-2	0	0.023	0.042	1.0	U	AM
Total Strontium	SR-RAD	0.001	0.14	0.18	1.0	U	SR
Potassium 40	13966-00-2	11.8	0.32	0.14			GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	0.029	0.009	0.011	0.10	J	GAM
Europium 152	14683-23-9	U		0.033	0.10	U	GAM
Europium 154	15585-10-1	U		0.042	0.10	U	GAM
Europium 155	14391-16-3	U		0.038	0.10	U	GAM
Radium 226	13982-63-3	0.452	0.028	0.025	0.10		GAM
Radium 228	15262-20-1	0.674	0.062	0.059	0.20		GAM
Thorium 228	14274-82-9	0.609	0.019	0.017			GAM
Thorium 232	TH-232	0.674	0.062	0.059			GAM
Americium 241	14596-10-2	U		0.044		U	GAM
Uranium 238	U-238	U		1.6		U	GAM
Uranium 235	15117-96-1	U		0.056		U	GAM

100 B/C Areas-Full Protocol

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-09

BOVFM5

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-09</u>	Client sample id <u>BOVFM5</u>	
Dept sample id <u>7128-009</u>	Location/Matrix <u>100 B/C Overburden "B"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 13:00</u>	
% solids <u>97.1</u>	Custody/SAF No <u>B99-002-108</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.432	0.12	0.064	1.0	J	U
Uranium 235	15117-96-1	0.040	0.040	0.077	1.0	U	U
Uranium 238	U-238	0.515	0.14	0.064	1.0	J	U
Plutonium 238	13981-16-3	0.013	0.025	0.061	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.025	0.070	1.0	U	PU
Nickel 63	13981-37-8	-1.14	2.0	3.4	30	U	NI_L
Americium 241	14596-10-2	0.003	0.016	0.026	1.0	U	AM
Total Strontium	SR-RAD	0.028	0.11	0.15	1.0	U	SR
Potassium 40	13966-00-2	11.3	0.40	0.19			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	0.023	0.017	0.020	0.10	J	GAM
Europium 152	14683-23-9	U		0.039	0.10	U	GAM
Europium 154	15585-10-1	U		0.074	0.10	U	GAM
Europium 155	14391-16-3	U		0.047	0.10	U	GAM
Radium 226	13982-63-3	0.476	0.039	0.038	0.10		GAM
Radium 228	15262-20-1	0.653	0.096	0.094	0.20		GAM
Thorium 228	14274-82-9	0.643	0.022	0.020			GAM
Thorium 232	TH-232	0.653	0.096	0.094			GAM
Americium 241	14596-10-2	U		0.024		U	GAM
Uranium 238	U-238	U		2.5		U	GAM
Uranium 235	15117-96-1	U		0.064		U	GAM

100 B/C Areas-Full Protocol

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

N905124-10

BOVFM6

DATA SHEET

SDG <u>7128</u>	Client/Case no <u>Hanford</u>	SDG-H0409
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N905124-10</u>	Client sample id <u>BOVFM6</u>	
Dept sample id <u>7128-010</u>	Location/Matrix <u>100 B/C Overburden "B"</u>	<u>SOLID</u>
Received <u>05/21/99</u>	Collected <u>05/18/99 08:15</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-002-108</u>	<u>B99-002</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.237	0.10	0.094	1.0	J	U
Uranium 235	15117-96-1	0.021	0.041	0.078	1.0	U	U
Uranium 238	U-238	0.229	0.087	0.065	1.0	J	U
Plutonium 238	13981-16-3	0	0.028	0.066	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.014	0.014	0.066	1.0	U	PU
Nickel 63	13981-37-8	-0.379	1.3	2.3	30	U	NI_L
Americium 241	14596-10-2	-0.003	0.016	0.033	1.0	U	AM
Total Strontium	SR-RAD	-0.007	0.11	0.16	1.0	U	SR
Potassium 40	13966-00-2	16.8	0.59	0.23			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	U		0.020	0.10	U	GAM
Europium 152	14683-23-9	U		0.049	0.10	U	GAM
Europium 154	15585-10-1	U		0.087	0.10	U	GAM
Europium 155	14391-16-3	U		0.051	0.10	U	GAM
Radium 226	13982-63-3	0.198	0.033	0.037	0.10		GAM
Radium 228	15262-20-1	0.232	0.12	0.13	0.20		GAM
Thorium 228	14274-82-9	0.224	0.023	0.024			GAM
Thorium 232	TH-232	0.232	0.12	0.13			GAM
Americium 241	14596-10-2	U		0.076		U	GAM
Uranium 238	U-238	U		3.2		U	GAM
Uranium 235	15117-96-1	U		0.082		U	GAM

100 B/C Areas-Full Protocol

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>06/16/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0409

Test AM Matrix SOLID
SDG 7128
Contact L.A. Johnson

METHOD SUMMARY
AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Americium 241 PLANCHET
Preparation batch 6880-096				
B0VFL1	N905124-01		7128-001	U
B0VFL2	N905124-02		7128-002	U
B0VFL3	N905124-03		7128-003	U
B0VFL4	N905124-04		7128-004	U
B0VFL5	N905124-05		7128-005	U
B0VFL6	N905124-06		7128-006	U
B0VFM3	N905124-07		7128-007	U
B0VFM4	N905124-08		7128-008	U
B0VFM5	N905124-09		7128-009	U
B0VFM6	N905124-10		7128-010	U
BLK (QC ID=30856)	N905124-12		7128-012	U
LCS (QC ID=30855)	N905124-11		7128-011	ok
Duplicate (N905124-01)	N905124-13		7128-013	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
100 B/C Areas-Full Protocol

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

Test AM Matrix SOLIDSDG 7128Contact L.A. Johnson

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client HanfordContract TRB-SBB-207925Case no SDG-H0409

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 6880-096 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.96																
BOVFL1	N905124-01			0.040	<u>0.500</u>			84		<u>689</u>			21	06/08/99	06/08	SS-013
BOVFL2	N905124-02			0.055	<u>0.500</u>			90		<u>604</u>			21	06/08/99	06/08	SS-050
BOVFL3	N905124-03			0.041	<u>0.500</u>			81		<u>689</u>			21	06/08/99	06/08	SS-014
BOVFL4	N905124-04			0.052	<u>0.500</u>			84		<u>689</u>			21	06/08/99	06/08	SS-015
BOVFL5	N905124-05			0.035	<u>0.500</u>			77		<u>689</u>			21	06/08/99	06/08	SS-016
BOVFL6	N905124-06			0.022	<u>0.500</u>			86		1023			23	06/08/99	06/10	SS-002
BOVFM3	N905124-07			0.021	<u>0.500</u>			85		1023			23	06/08/99	06/10	SS-004
BOVFM4	N905124-08			0.042	<u>0.500</u>			61		1023			23	06/08/99	06/10	SS-005
BOVFM5	N905124-09			0.026	<u>0.500</u>			84		1023			23	06/08/99	06/10	SS-006
BOVFM6	N905124-10			0.033	<u>0.500</u>			87		1023			23	06/08/99	06/10	SS-008
BLK (QC ID=30856)	N905124-12			0.026	1.00			84		<u>606</u>				06/08/99	06/08	SS-048
LCS (QC ID=30855)	N905124-11			0.019	1.00			88		<u>547</u>				06/08/99	06/10	SS-056
Duplicate (N905124-01) (QC ID=30857)	N905124-13			0.028	<u>0.500</u>			73		950			24	06/08/99	06/11	SS-002
Nominal values and limits from method				1.0	1.00			20-105		700 100			180			

PROCEDURES	REFERENCE	AM/CMPLATE
EP-060		Soil Preparation, rev 0
EP-070		Soil Dissolution, rev 0
EP-940		Plutonium Purification, rev 0
EP-960		Americium-Curium Purification, rev 0
EP-008		Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	<u>0.034</u> ± <u>0.023</u>
FOR 13 SAMPLES	YIELD	<u>82</u> ± <u>15</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id	<u>TMANC</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-CMS</u>
Version	<u>3.06</u>
Report date	<u>06/16/99</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

Test PU Matrix SOLIDSDG 7128Contact L.A. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client HanfordContract TRB-SBB-207925Case no SDG-H0409

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6880-096					
B0VFL1	N905124-01		7128-001	U	U
B0VFL2	N905124-02		7128-002	U	U
B0VFL3	N905124-03		7128-003	U	U
B0VFL4	N905124-04		7128-004	U	U
B0VFL5	N905124-05		7128-005	U	U
B0VFL6	N905124-06		7128-006	U	U
B0VFM3	N905124-07		7128-007	U	U
B0VFM4	N905124-08		7128-008	U	U
B0VFM5	N905124-09		7128-009	U	U
B0VFM6	N905124-10		7128-010	U	U
BLK (QC ID=30856)	N905124-12		7128-012	U	U
LCS (QC ID=30855)	N905124-11		7128-011	ok	ok
Duplicate (N905124-01)	N905124-13		7128-013	- U	- U
Nominal values and limits from method					
			RDLs (pCi/g)	1.0	1.0
100 B/C Areas-Full Protocol					

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CMSVersion 3.06Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

Test PU Matrix SOLIDSDG 7128Contact L.A. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client HanfordContract TRB-SBB-207925Case no SDG-H0409

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX 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 6880-096 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.96																	
BOVFL1	N905124-01			0.068	<u>0.500</u>				57		596			16	06/03/99	06/03	SS-016
BOVFL2	N905124-02			0.074	<u>0.500</u>				53		599			16	06/03/99	06/03	SS-001
BOVFL3	N905124-03			0.066	<u>0.500</u>				68		599			16	06/03/99	06/03	SS-002
BOVFL4	N905124-04			0.061	<u>0.500</u>				68		815			25	06/03/99	06/12	SS-034
BOVFL5	N905124-05			0.087	<u>0.500</u>				57		527			17	06/03/99	06/04	SS-008
BOVFL6	N905124-06			0.042	<u>0.500</u>				65		1027			20	06/03/99	06/07	SS-002
BOVFM3	N905124-07			0.067	<u>0.500</u>				65		526			17	06/03/99	06/04	SS-014
BOVFM4	N905124-08			0.068	<u>0.500</u>				66		526			17	06/03/99	06/04	SS-001
BOVFM5	N905124-09			0.070	<u>0.500</u>				72		526			17	06/03/99	06/04	SS-002
BOVFM6	N905124-10			0.066	<u>0.500</u>				64		526			17	06/03/99	06/04	SS-004
BLK (QC ID=30856)	N905124-12			0.026	1.00				67		793				06/03/99	06/04	SS-001
LCS (QC ID=30855)	N905124-11			0.022	1.00				85		596				06/03/99	06/03	SS-014
Duplicate (N905124-01) (QC ID=30857)	N905124-13			0.069	<u>0.500</u>				55		793			17	06/03/99	06/04	SS-002
Nominal values and limits from method				1.0	1.00				20-105		10	100		180			

PROCEDURES	REFERENCE	PUPLATE
EP-060		Soil Preparation, rev 0
EP-070		Soil Dissolution, rev 0
EP-940		Plutonium Purification, rev 0
EP-008		Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	<u>0.060</u> ± <u>0.038</u>
FOR 13 SAMPLES	YIELD	<u>65</u> ± <u>17</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

Page 25

Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CMSVersion 3.06Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

Test U Matrix SOLIDSDG 7128Contact L.A. Johnson

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client HanfordContract TRB-SBB-207925Case no SDG-H0409

RESULTS

CLIENT SAMPLE ID	LAB	RAW	SUF-	1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)				
	SAMPLE ID	TEST	FIX	PLANCHET	233/234	235	238	1+3	2σ	2+3	2σ
Preparation batch 6880-096											
BOVFL1	N905124-01			7128-001	0.652 J	U	0.371 J	176	91	25	20
BOVFL2	N905124-02			7128-002	0.529 J	U	0.504 J	105	40	8	8
BOVFL3	N905124-03			7128-003	0.446 J	U	0.563 J	79	39	3	6
BOVFL4	N905124-04			7128-004	0.531 J	U	0.522 J	102	41	7	9
BOVFL5	N905124-05			7128-005	0.549 J	U	0.682 J	80	28	3	3
BOVFL6	N905124-06			7128-006	0.504 J	U	0.588 J	86	31	3	3
BOVFM3	N905124-07			7128-007	0.519 J	U	0.550 J	94	37	16	14
BOVFM4	N905124-08			7128-008	0.430 J	U	0.490 J	88	41	15	16
BOVFM5	N905124-09			7128-009	0.432 J	U	0.515 J	84	33	8	8
BOVFM6	N905124-10			7128-010	0.237 J	U	0.229 J	103	59	9	18
BLK (QC ID=30856)	N905124-12			7128-012	U	U	U				
LCS (QC ID=30855)	N905124-11			7128-011	ok	ok	ok				
Duplicate (N905124-01)	N905124-13			7128-013	ok J	- U	ok J	117	46	9	9
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100 B/C Areas-Full Protocol								Averages	101	10	

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CMSVersion 3.06Report date 06/16/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0409

METHOD SUMMARY
URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7128
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX 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 6880-096 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.96																
B0VFL1	N905124-01			0.12	1.00			61		155			15	06/02/99	06/02	SS-035
B0VFL2	N905124-02			0.079	1.00			92		155			15	06/02/99	06/02	SS-036
B0VFL3	N905124-03			0.12	1.00			62		155			15	06/02/99	06/02	SS-038
B0VFL4	N905124-04			0.086	1.00			82		155			15	06/02/99	06/02	SS-039
B0VFL5	N905124-05			0.077	1.00			92		155			15	06/02/99	06/02	SS-040
B0VFL6	N905124-06			0.078	1.00			90		154			15	06/02/99	06/02	SS-044
B0VFM3	N905124-07			0.098	1.00			74		154			15	06/02/99	06/02	SS-045
B0VFM4	N905124-08			0.11	1.00			77		153			15	06/02/99	06/02	SS-047
B0VFM5	N905124-09			0.077	1.00			92		153			15	06/02/99	06/02	SS-048
B0VFM6	N905124-10			0.094	1.00			91		153			15	06/02/99	06/02	SS-049
BLK (QC ID=30856)	N905124-12			0.089	1.00			87		153				06/02/99	06/05	SS-034
LCS (QC ID=30855)	N905124-11			0.28	1.00			91		153				06/02/99	06/02	SS-050
Duplicate (N905124-01) (QC ID=30857)	N905124-13			0.075	1.00			103		153			18	06/02/99	06/05	SS-035
Nominal values and limits from method				1.0	1.00			30-105		150	100		180			

PROCEDURES	REFERENCE	UPLATE
EP-060		Soil Preparation, rev 0
EP-070		Soil Dissolution, rev 0
EP-910		Uranium Purification, rev 0
EP-008		Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	<u>0.11</u>	±	<u>0.11</u>
FOR 13 SAMPLES	YIELD	<u>84</u>	±	<u>25</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id	<u>TMANC</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-CMS</u>
Version	<u>3.06</u>
Report date	<u>06/16/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0409

Test SR Matrix SOLID
SDG 7128
Contact L.A. Johnson

METHOD SUMMARY
TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Total Strontium
Preparation batch 6880-096				
B0VFL1	N905124-01		7128-001	U
B0VFL2	N905124-02		7128-002	U
B0VFL3	N905124-03		7128-003	U
B0VFL4	N905124-04		7128-004	U
B0VFL5	N905124-05		7128-005	0.166 J
B0VFL6	N905124-06		7128-006	U
B0VFM3	N905124-07		7128-007	U
B0VFM4	N905124-08		7128-008	U
B0VFM5	N905124-09		7128-009	U
B0VFM6	N905124-10		7128-010	U
BLK (QC ID=30856)	N905124-12		7128-012	U
LCS (QC ID=30855)	N905124-11		7128-011	ok
Duplicate (N905124-01)	N905124-13		7128-013	- U
Nominal values and limits from method				
100 B/C Areas-Full Protocol			RDLs (pCi/g)	1.0

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

Test SR Matrix SOLIDSDG 7128Contact L.A. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client HanfordContract TRB-SBB-207925Case no SDG-H0409

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX 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 6880-096 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.96																	
BOVFL1	N905124-01			0.18	1.00				84		400			15	06/02/99	<u>06/01</u>	GRB-201
BOVFL2	N905124-02			0.15	1.00				81		200			15	06/02/99	<u>06/01</u>	GRB-202
BOVFL3	N905124-03			0.43	1.00				30		400			15	06/02/99	<u>06/01</u>	GRB-203
BOVFL4	N905124-04			0.16	1.00				91		400			15	06/02/99	<u>06/01</u>	GRB-204
BOVFL5	N905124-05			0.15	1.00				90		400			15	06/02/99	<u>06/01</u>	GRB-205
BOVFL6	N905124-06			0.15	1.00				96		400			15	06/02/99	<u>06/01</u>	GRB-206
BOVFM3	N905124-07			0.16	1.00				90		400			15	06/02/99	<u>06/01</u>	GRB-207
BOVFM4	N905124-08			0.18	1.00				88		400			15	06/02/99	<u>06/01</u>	GRB-208
BOVFM5	N905124-09			0.15	1.00				92		400			15	06/02/99	<u>06/01</u>	GRB-229
BOVFM6	N905124-10			0.16	1.00				82		400			15	06/02/99	<u>06/01</u>	GRB-230
BLK (QC ID=30856)	N905124-12			0.17	1.00				75		400				06/02/99	<u>06/01</u>	GRB-203
LCS (QC ID=30855)	N905124-11			0.19	1.00				72		400				06/02/99	<u>06/01</u>	GRB-231
Duplicate (N905124-01) (QC ID=30857)	N905124-13			0.15	1.00				89		400			15	06/02/99	<u>06/01</u>	GRB-204
Nominal values and limits from method				1.0	1.00						100			180			

PROCEDURES RP-500 Strontium - Initial Separation, rev 0
 RP-519 Strontium-89,90 Demounting and Yttrium
 Purification, rev 0

AVERAGES ± 2 SD MDA 0.18 ± 0.15
 FOR 13 SAMPLES YIELD 82 ± 34

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 06/16/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0409

Test GAM Matrix SOLID
SDG 7128
Contact L.A. Johnson

METHOD SUMMARY
GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6880-096					
B0VFL1	N905124-01		7128-001	U	17.2
B0VFL2	N905124-02		7128-002	U	6.17
B0VFL3	N905124-03		7128-003	U	1.14
B0VFL4	N905124-04		7128-004	U	2.36
B0VFL5	N905124-05		7128-005	U	1.14
B0VFL6	N905124-06		7128-006	U	0.394
B0VFM3	N905124-07		7128-007	0.051	1.63
B0VFM4	N905124-08		7128-008	U	0.029 J
B0VFM5	N905124-09		7128-009	U	0.023 J
B0VFM6	N905124-10		7128-010	U	U
BLK (QC ID=30856)	N905124-12		7128-012	U	U
LCS (QC ID=30855)	N905124-11		7128-011	ok	ok
Duplicate (N905124-01)	N905124-13		7128-013	- U	ok
Nominal values and limits from method					
			RDLs (pCi/g)	0.050	0.10
100 B/C Areas-Full Protocol					

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/16/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0409

Test GAM Matrix SOLID
SDG 7128
Contact L.A. Johnson

METHOD SUMMARY
GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX 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 6880-096 2σ prep error 15.0 % Reference Lab Notebook 6880 pg.96																
BOVFL1	N905124-01			<u>0.055</u>	783					357			27		06/14/99	02,03,00
BOVFL2	N905124-02			<u>0.073</u>	694					486			15		06/02/99	02,04,00
BOVFL3	N905124-03			0.036	711					409			16		06/03/99	02,04,00
BOVFL4	N905124-04			<u>0.052</u>	685					456			16		06/03/99	02,03,00
BOVFL5	N905124-05			0.033	704					458			17		06/04/99	02,04,00
BOVFL6	N905124-06			<u>0.069</u>	692					407			17		06/04/99	02,01,00
BOVFM3	N905124-07			0.050	812					408			17		06/04/99	02,03,00
BOVFM4	N905124-08			0.035	696					408			17		06/04/99	02,04,00
BOVFM5	N905124-09			<u>0.052</u>	700					683			17		06/04/99	02,01,00
BOVFM6	N905124-10			<u>0.057</u>	683					405			18		06/05/99	02,03,00
BLK (QC ID=30856)	N905124-12			<u>17</u>	1.00					433					06/07/99	01,01,00
LCS (QC ID=30855)	N905124-11			<u>11</u>	1.00					405					06/05/99	01,04,00
Duplicate (N905124-01) (QC ID=30857)	N905124-13			<u>0.053</u>	783					433			20		06/07/99	02,03,00
Nominal values and limits from method				0.050	1.00					100			180			

PROCEDURES REFERENCE GAMMAHI
EP-060 Soil Preparation, rev 0
EP-100 Ge(Li) Preparation for Environmental Samples,
 rev 0

AVERAGES ± 2 SD MDA 2.2 ± 11
FOR 13 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

Test NI L Matrix SOLIDSDG 7128Contact L.A. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client HanfordContract TRB-SBB-207925Case no SDG-H0409

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Nickel 63
Preparation batch 6880-096				
B0VFL1	N905124-01	7128-001	U	
B0VFL2	N905124-02	7128-002	U	
B0VFL3	N905124-03	7128-003	U	
B0VFL4	N905124-04	7128-004	U	
B0VFL5	N905124-05	7128-005	U	
B0VFL6	N905124-06	7128-006	U	
B0VFM3	N905124-07	7128-007	U	
B0VFM4	N905124-08	7128-008	U	
B0VFM5	N905124-09	7128-009	U	
B0VFM6	N905124-10	7128-010	U	
BLK (QC ID=30856)	N905124-12	7128-012	U	
LCS (QC ID=30855)	N905124-11	7128-011	ok	
Duplicate (N905124-01)	N905124-13	7128-013	-	U

Nominal values and limits from method RDLs (pCi/g) 30
100 B/C Areas-Full Protocol

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/16/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0409

Test NI L Matrix SOLIDSDG 7128Contact L.A. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client HanfordContract TRB-SBB-207925Case no SDG-H0409

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 6880-096 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.96																
BOVFL1	N905124-01			3.1	0.500			66	100				11	05/29/99	05/29	LSC-004
BOVFL2	N905124-02			2.7	0.500			77	100				11	05/29/99	05/29	LSC-004
BOVFL3	N905124-03			2.6	0.500			77	100				11	05/29/99	05/29	LSC-004
BOVFL4	N905124-04			2.5	0.500			83	100				11	05/29/99	05/29	LSC-004
BOVFL5	N905124-05			2.8	0.500			73	100				11	05/29/99	05/29	LSC-004
BOVFL6	N905124-06			3.0	0.500			69	100				11	05/29/99	05/29	LSC-004
BOVFM3	N905124-07			2.8	0.500			74	100				11	05/29/99	05/29	LSC-004
BOVFM4	N905124-08			2.5	0.500			82	100				11	05/29/99	05/29	LSC-004
BOVFM5	N905124-09			3.4	0.500			61	100				11	05/29/99	05/29	LSC-004
BOVFM6	N905124-10			2.3	0.500			89	100				12	05/29/99	05/30	LSC-004
BLK (QC ID=30856)	N905124-12			5.8	0.500			36	100					05/29/99	05/30	LSC-004
LCS (QC ID=30855)	N905124-11			2.3	0.500			89	100					05/29/99	05/30	LSC-004
Duplicate (N905124-01) (QC ID=30857)	N905124-13			2.5	0.500			82	100				12	05/29/99	05/30	LSC-004
Nominal values and limits from method				30	0.500					10			180			

PROCEDURES REFERENCE NI63LSC
 EP-060 Soil Preparation, rev 0
 EP-431 Nickel-63 Purification, rev 0

AVERAGES ± 2 SD MDA 2.9 ± 1.8
 FOR 13 SAMPLES YIELD 74 ± 28

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CMSVersion 3.06Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

S A M P L E S U M M A R Y

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.

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

P R E P A R A T I O N B A T C H S U M M A R Y

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.

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

R E P O R T G U I D E

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

W O R K S U M M A R Y

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

The following notes apply to this report:

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

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

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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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

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.

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

DATA SHEET

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

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

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

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

MATRIX SPIKE

for the recovery.

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

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

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

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'

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

METHOD SUMMARY

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

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

MDAs are underlined if greater than the printed RDL.

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

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SUMMARY DATA SECTION

Page 46

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0409

SDG 7128
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0409

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/16/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B99-002-105		Page 1 of 1		
Collector Fahlberg/Kerkow		Company Contact R Coffinan		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code		Data Turnaround 15 Days	
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100 B/C Overburden "A"		SAF No. B99-002							
Ice Chest No. SML 395		Field Logbook No. EL 1327-3		Method of Shipment FEDEX							
Shipped To TMA/RECRA R.F. 5/18/99		Offsite Property No. A990144		Bill of Lading/Air Bill No. 4235 7952 6231							
				COA R116B4 ZF&Q							

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	Cool 4C	None	None				
	Type of Container	P	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1	1				
Special Handling and/or Storage	Volume	20mL	60mL	125mL	250mL	1000mL				

SAMPLE ANALYSIS				Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.			
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Sample No.	Matrix *	Sample Date	Sample Time								
BOVFL1	Soil	5/18/99	0850	X	X			X			file to BOV939
BOVFL2	Soil	5/18/99	0915	X	X			X			BOV948
BOVFL3	Soil	5/18/99	0940	X	X			X			BOV950
BOVFL4	Soil	5/18/99	1000	X	X			X			BOV956

CHAIN OF POSSESSION	Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By <i>R. Fahlberg</i>	Date/Time 5/18/99	Received By <i>Ref #1-C</i>	Date/Time 5/18/99	(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 - Total Sr; Nickel-63 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238) COLLECTOR UNAVAILABLE TO SIGN COC				Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>REF 1-C</i>	Date/Time 5/20/99	Received By <i>SSGALC</i>	Date/Time 5/20/99						
Relinquished By <i>SIOME</i>	Date/Time 5/20/99	Received By <i>FEDEX</i>	Date/Time 5/20/99						
Relinquished By <i>FedEx</i>	Date/Time 5/21/99	Received By <i>TNU M. Coldenberg</i>	Date/Time 5/21/99						

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By
			Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B99-002-106		Page 1 of 1		
Collector Fahlberg/Kerkow		Company Contact R Coffinan		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code		Data Turnaround 15 Days	
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100 B/C Overburden "A" "B" R.F. 5-1793				SAF No. B99-002					
Ice Chest No. SML 395		Field Logbook No. EL 1327-3				Method of Shipment Fed Ex					
Shipped To TMA/REGRA REF 5/18/99		Offsite Property No. A990144				Bill of Lading/Air Bill No. 4235 7952 6231					
						COA R16B12 ZFφφ					

POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage	Preservation	None	None	Cool 4C	None	None					
	Type of Container	P	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
	Volume	20mL	60mL	125mL	250mL	1000mL					

SAMPLE ANALYSIS				Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.				
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Sample No.	Matrix *	Sample Date	Sample Time								
✓ BOVFL5	Soil	5/18/99	1020	X	X			X			tierto BOV 964
✓ BOVFL6	Soil	5/18/99	1040	X	X			X			BOV 968

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By REF 1615 REF 1C 52099 1030		Date/Time 5/18/99		Received By REF 1C 5/20/99		Date/Time 5/20/99		(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238) COLLECTOR UNAVAILABLE TO SIGN COC				Soil Water Vapor Other Solid Other Liquid	
Relinquished By REF 1C 52099 1030		Date/Time 5/20/99		Received By FED EX 5/20/99		Date/Time 5/20/99							
Relinquished By Fed Ex 9:45 5/21/99		Date/Time 5/21/99		Received By TNU M. Goldberger 5/21/99		Date/Time 5/21/99							
LABORATORY SECTION		Received By		Title		Date/Time							
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By						Date/Time			

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B99-002-108		Page 1 of 1					
Collector Fahlberg/Kerkow		Company Contact R Coffman		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code		Data Turnaround 15 Days				
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100 B/C Overburden "B"		SAF No. B99-002										
Ice Chest No. SML 395		Field Logbook No. EL 1327-3		Method of Shipment Fed Ex										
Shipped To TMA/REGRA RE 5/18/99		Offsite Property No. A 990144		Bill of Lading/Air Bill No. 4235 7952 6231										
				COA R16C2A 2FDD										
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation		None	None	Cool 4C	None	None				
				Type of Container		P	aG	aG	aG	aG				
				No. of Container(s)		1	1	1	1	1				
Special Handling and/or Storage				Volume		20mL	60mL	125mL	250mL	1000mL				
SAMPLE ANALYSIS				Activity Scan	See item (1) in Special Instructions.	Chromium Hex - 7196	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time											
✓ BOVFM3	Soil	5/18/99	1240	X	X			X					tie to BOV975	
✓ BOVFM4	Soil	5/18/99	1300	X	X			X					BOV984	
✓ BOVFM5	Soil	5/18/99	1300	X	X			X					BOV984	
✓ BOVFM6	Soil	5/18/99	0815	X	X			X						
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS					Matrix *			
Relinquished By <i>R. Fahlberg</i>		Date/Time 5/18/99 1615		Received By <i>R. Fahlberg</i>		Date/Time 5/18/99 1615		(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238) COLLECTOR UNAVAILABLE TO SIGN COC					Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>R. Fahlberg</i>		Date/Time 5/18/99 1615		Received By <i>Ref #1-C</i>		Date/Time 5/18/99 1615								
Relinquished By <i>REF 1-C</i>		Date/Time 5/20/99 1030		Received By <i>SJGALE</i>		Date/Time 5/20/99 1030								
Relinquished By <i>SJGALE</i>		Date/Time 5/20/99 1030		Received By <i>FED EX</i>		Date/Time 5/20/99								
LABORATORY SECTION		Received By <i>TNU M. Goldenberg</i>				Title <i>5/21/99 9:45</i>		Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method				Disposed By					Date/Time			

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client:	<u>Beechtle Hanford Tne</u>		Date/Time received <u>5-21-99 9:45</u>
CoC No.	<u>B99-028-15, B99-029-18, B99-002-105, B99-002-106</u>		
Container I.D. No.	<u>SMC395</u>	Requested TAT (Days) <u>15; 20</u>	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.	Cooler Temperature: _____	Packing material is:	Wet [] Dry [☒]
6.	Number of samples in shipping container:	<u>14</u>	
7.	Number of containers per sample: _____	(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 <u>M. Goldenberg</u>	Date: <u>5-21-99</u>	Time: <u>9:45</u>
LOGIN			
TNU W.O. No.	Group No.	Client W.O. No.	
PROGRAM MANAGER			
Sample holding times exceeded?	Yes []	No []	
Client Notified: Name _____	Date/time _____		