

**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-028
RFW# : 9903L586
SDG/SAF# : H0370/B99-028

W.O.# : 10985-001-001-9999-00
Date Received: 03-30-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 TCLP leachate samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. A ten-fold dilution was performed on all samples due to the sample matrix.
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 90-110% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, 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. The laboratory control sample (LCS) was within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The TCLP extract from sample B0T9V3 was selected for the matrix spike (MS) for this analytical batch. The MS recovery was greater than 50% as per method criteria. Refer to the Inorganics Accuracy Report.
11. The duplicate analysis was within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
12. For the purposes of this report, the data has been reported to the Instrument Detection Limit

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.

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/m03-586

4-19-99

Date



METALS METHOD GLOSSARY

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

Recra Lot#: 9903L586

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	<input checked="" type="checkbox"/> <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

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INORGANICS DATA SUMMARY REPORT 04/19/99

CLIENT: TNU-HANFORD B99-028
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9903L586

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-005	B0T9V3	Chromium, TCLP Leachate	3330	UG/L	6.0	10.0
-006	B0T9V9	Chromium, TCLP Leachate	3610	UG/L	6.0	10.0
-007	B0T9W5	Chromium, TCLP Leachate	3730	UG/L	6.0	10.0
-008	B0T9W7	Chromium, TCLP Leachate	4240	UG/L	6.0	10.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/19/99

CLIENT: TNU-HANFORD B99-028

RECRA LOT #: 9903L586

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0204-MB1	Chromium, TCLP Leachate	7.3	UG/L	6.0	10.0
BLANK2	99L0204-MB2	Chromium, TCLP Leachate	12.8	UG/L	6.0	10.0

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INORGANICS ACCURACY REPORT 04/19/99

CLIENT: TNU-HANFORD B99-028

RECRA LOT #: 9903L586

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-005	B0T9V3	Chromium, TCLP Leachat	8360	3330	5000	100.7	10.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/19/99

CLIENT: TNU-HANFORD B99-028

RECRA LOT #: 9903L586

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

SAMPLE	SITE ID	ANALYTE	INITIAL		DILUTION
			RESULT	REPLICATE RPD	
-----	-----	-----	-----	-----	-----
-005REP	B0T9V3	Chromium, TCLP Leachate	3330	3430 2.9	10.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/19/99

CLIENT: TNU-HANFORD B99-028

RECRA LOT #: 9903L586

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

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
-----	-----	-----	-----	-----	-----	-----
LCS1	99L0204-LC1	Chromium, LCS	508	500	UG/L	101.5

Recra LabNet - Lionville Laboratory
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-028

DATE RECEIVED: 03/30/99

RFW LOT # :9903L586

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B0T9V3

TCLP	001	SO	99LTO035	03/24/99	03/31/99	04/01/99
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B0T9V9

TCLP	002	SO	99LTO035	03/24/99	03/31/99	04/01/99
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B0T9W5

TCLP	003	SO	99LTO035	03/24/99	03/31/99	04/01/99
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B0T9W7

TCLP	004	SO	99LTO035	03/24/99	03/31/99	04/01/99
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B0T9V3

CHROMIUM, TCLP LEACH	005	W	99L0204	04/01/99	04/03/99	04/06/99
CHROMIUM, TCLP LEACH	005 REP	W	99L0204	04/01/99	04/03/99	04/06/99
CHROMIUM, TCLP LEACH	005 MS	W	99L0204	04/01/99	04/03/99	04/06/99

B0T9V9

CHROMIUM, TCLP LEACH	006	W	99L0204	04/01/99	04/03/99	04/06/99
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B0T9W5

CHROMIUM, TCLP LEACH	007	W	99L0204	04/01/99	04/03/99	04/06/99
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B0T9W7

CHROMIUM, TCLP LEACH	008	W	99L0204	04/01/99	04/03/99	04/06/99
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LAB QC:

CHROMIUM LABORATORY	LC1 BS	W	99L0204	N/A	04/03/99	04/06/99
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Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-028

DATE RECEIVED: 03/30/99

RFW LOT # :9903L586

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TCLP LEACH	MB1	W	99L0204	N/A	04/03/99	04/06/99
CHROMIUM, TCLP LEACH	MB2	W	99L0204	N/A	04/03/99	04/06/99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-028-02		Page 1 of 1	
Collector Gale/Nielson / <i>Dugger</i>		Company Contact Tom Pickett		Telephone No. 373-4630		Project Coordinator TRENT SJ		Price Code IV/FA Data Turnaround 45 Days	
Project Designation 100-1R-3 Pump & Treat - Resin Sampling FY 99		Sampling Location 10011		SAF No. B99-028					
Ice Chest No. <i>Shipping Van 96-004</i>		Field Logbook No. FI-1381-1		Method of Shipment Federal Express					
Shipped To <i>MM (R/CRA)</i> <i>3-24-99</i>		Offsite Property No. <i>A990093</i>		Bill of Lading/Air Bill No. <i>423579524008</i>					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	None	None	None				
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1	1	1	1	1				
	Special Handling and/or Storage	Volume	60ml.	60ml.	60ml.	60ml.	120ml.	250ml.	500ml.				

SAMPLE ANALYSIS				Activity Scan	Isotopic Uranium	Selenium Strontium TOTAL RAD <i>EXCEL TITIM</i> <i>2/26/99</i>	Technetium-99	Tritium - 113	IC Anions - 100.0 (Nitrate)	Metals by ICP (TCLP) - 1311-6010A (Chromium)			
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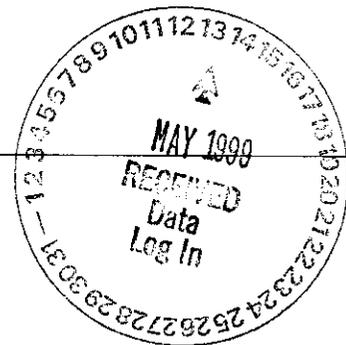
Sample No.	Matrix *	Sample Date	Sample Time									
B0T9V3	Other Solid	3-24-99	0727							Y	Y	B0T9V2
B0T9V9	Other Solid	3-24-99	0740							Y	Y	B0T9V3
B0T9W1	Other Solid	3-24-99	0752							Y	Y	B0T9W4
B0T9W7	Other Solid	3-24-99	0807							Y	Y	B0T9W6

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS ** Close SDG upon receipt of samples.				Matrix *	
Relinquished By <i>Doug Powers</i> Date/Time <i>3-24-99/1700</i>		Received By <i>Refg. 1A @ 3729</i> Date/Time <i>3/24/99/1700</i>		<i>in 1A @ 4°C</i>				<i>Dug Powers unavailable to relinquish samples.</i>		Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>Refg. 1A @ 3728 Bldg.</i> Date/Time <i>3/24/99 0945</i>		Received By <i>Isaac Nielson/R Nielson</i> Date/Time <i>3/24/99 0945</i>									
Relinquished By <i>R Nielson/R Nielson</i> Date/Time <i>3/24/99 0945</i>		Received By <i>Fel 44</i> Date/Time									
Relinquished By <i>Zeiler</i> Date/Time		Received By <i>Zeiler</i> Date/Time <i>3/26/99 1430</i>									
LABORATORY SECTION	Received By	Title				Date/Time					
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time					



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Virtual Laboratories Everywhere



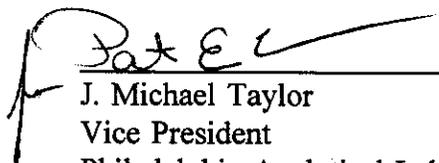
**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-028
RFW# : 9903L586
SDG# : H0370
SAF# : B99-028

W.O. # : 10985-001-001-9999-00
Date Received: 03-30-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 solid samples.
2. The samples were 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 Nitrate was within method criteria.
6. The Laboratory Control Sample (LCS) for Nitrate was within the laboratory control limits.
7. The matrix spike recovery for Nitrate was within the 75-125% control limits.
8. The replicate analysis for Nitrate was within the 20% Relative Percent Difference (RPD) control limit.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-4-99
Date

njp03-586

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 10 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: nitrate

Method: EPA 300.0

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 05/03/99

CLIENT: TNU-HANFORD B99-028

RECRA LOT #: 9903L586

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B0T9V3	% Solids	46.8	%	0.01	1.0
		Nitrate by IC	59	MG/KG	2.7	1.0
-002	B0T9V9	% Solids	48.6	%	0.01	1.0
		Nitrate by IC	14	MG/KG	2.6	1.0
-003	B0T9W5	% Solids	48.8	%	0.01	1.0
		Nitrate by IC	16	MG/KG	2.6	1.0
-004	B0T9W7	% Solids	45.5	%	0.01	1.0
		Nitrate by IC	20	MG/KG	2.7	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/03/99

CLIENT: TNU-HANFORD B99-028
WORK ORDER: 10985-001-001-9999-00

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SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LXC049-MB1	Nitrate by IC	1.2	u MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 05/03/99

CLIENT: TNU-HANFORD B99-028

RECRA LOT #: 9903L586

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B0T9V3	Nitrate by IC	120	59	53	107.0	2.0
BLANK10	99LXC049-MB1	Nitrate by IC	24	1.2 u	25	96.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 05/03/99

CLIENT: TNU-HANFORD B99-028
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9903L586

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	B0T9V3	Nitrate by IC	59	59	0.26	1.0

Recra LabNet - Lionville Laboratory
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD B99-028

DATE RECEIVED: 03/30/99

RFW LOT # :9903L586

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

BOT9V3

% SOLIDS	001			SO 99L&S047	03/24/99	03/31/99	04/01/99
NITRATE BY IC	001			SO 99LXC049	03/24/99	04/30/99	04/30/99
NITRATE BY IC	001	REP		SO 99LXC049	03/24/99	04/30/99	04/30/99
NITRATE BY IC	001	MS		SO 99LXC049	03/24/99	04/30/99	04/30/99
TCLP	001			SO 99LTO035	03/24/99	03/31/99	04/01/99

BOT9V9

% SOLIDS	002			SO 99L&S047	03/24/99	03/31/99	04/01/99
NITRATE BY IC	002			SO 99LXC049	03/24/99	04/30/99	04/30/99
TCLP	002			SO 99LTO035	03/24/99	03/31/99	04/01/99

BOT9W5

% SOLIDS	003			SO 99L&S047	03/24/99	03/31/99	04/01/99
NITRATE BY IC	003			SO 99LXC049	03/24/99	04/30/99	04/30/99
TCLP	003			SO 99LTO035	03/24/99	03/31/99	04/01/99

BOT9W7

% SOLIDS	004			SO 99L&S047	03/24/99	03/31/99	04/01/99
NITRATE BY IC	004			SO 99LXC049	03/24/99	04/30/99	04/30/99
TCLP	004			SO 99LTO035	03/24/99	03/31/99	04/01/99

LAB QC:

NITRATE BY IC	MB1			S 99LXC049	N/A	04/30/99	04/30/99
NITRATE BY IC	MB1	BS		S 99LXC049	N/A	04/30/99	04/30/99

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-028-02	Page 1 of 1
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Collector Gale/Nickson / Powers	Company Contact Tom Pickett	Telephone No. 373-4630	Project Coordinator TRENT, SJ	Price Code IV/FA	Data Turnaround 45 Days
Project Designation 100-11R-3 Pump & Treat - Resin Sampling FY 99	Sampling Location 10011	SAF No. B99-028			
Ice Chest No. Shipping Van 96-004	Field Logbook No. EL-1381-1	Method of Shipment Federal Express			
Shipped To RECREATION 3/24/99	Offsite Property No. A990093	Bill of Lading/Air Bill No. 423574524008			

COA

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	None	None	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1
	Volume	60ml.	60ml.	60mL	60mL	120mL	250mL	500ml.	

SAMPLE ANALYSIS				Activity Scan	Isotopic Uranium	-Strontium-89,90-3m	Technetium-99	Tritium - (H)	IC Anions - 3000 (Nitrate)	Metals by ICP (TCLP) - 1311/6010A (Chromium)
						TOTAL RAP ANALYSIS 3/24/99				

Sample No.	Matrix *	Sample Date	Sample Time								
B079V3	Other Solid	3-24-99	0727						Y	Y	B079V2
B079V9	Other Solid	3-24-99	0740						Y	Y	B079V3
B079W5	Other Solid	3-24-99	0752						Y	Y	B079W4
B079W7	Other Solid	3-24-99	0807						Y	Y	B079W6

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS ** Close SDG upon receipt of samples. in 1A @ 4°C Dug Powers unavailable to relinquish samples.	Matrix * Soil Water Vapor Other Solid Other Liquid		
	Relinquished By Doug Powers	Date/Time 3-24-99/1700			Received By Ref. 1A @ 3728	Date/Time 3/24/99/1700
	Relinquished By Ref. 1A @ 3728 Bldg.	Date/Time 3/24/99			Received By Gale Nickson / R Nickson	Date/Time 3/24/99
	Relinquished By Gale Nickson / R Nickson	Date/Time 3/24/99			Received By Feiler	Date/Time 3/24/99
Relinquished By Feiler	Date/Time 3/24/99	Received By Feiler	Date/Time 3/24/99			

LABORATORY SECTION	Received By	Title	Date/Time
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FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time
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Thermo Nutech
W.O. No. N9-03-162-7106

Bechtel Hanford Inc.
SDG H0370

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0370 is comprised of four solid (resin) samples designated under SAF No. B99-028 with a Project Designation of: 100-HR-3 Pump & Treat - Resin Sampling FY 99.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. All results were reported by fax on May 19, 1999.

2.0 ANALYSIS NOTES

2.1 Tritium 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 Technetium-99 Analyses

No problems were encountered during the processing of the samples.

2.4 Isotopic Uranium Analyses

No problems were encountered during the processing of the samples.



TMA/RICHMOND

SAMPLE DELIVERY GROUP H0370

SAMPLE SUMMARY

SDG 7106
 Contact L.A. Johnson

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0370

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB		CHAIN OF		COLLECTED
				SAMPLE ID	SAP NO	CUSTODY		
B0T9V3	100H	SOLID		N903162-01	B99-028	B99-028-02		03/24/99 07:27
B0T9V9	100H	SOLID		N903162-02	B99-028	B99-028-02		03/24/99 07:40
B0T9W5	100H	SOLID		N903162-03	B99-028	B99-028-02		03/24/99 07:52
B0T9W7	100H	SOLID		N903162-04	B99-028	B99-028-02		03/24/99 08:07
Method Blank		SOLID		N903162-06	B99-028			
Lab Control Sample		SOLID		N903162-05	B99-028			
Duplicate (N903162-01)	100H	SOLID		N903162-07	B99-028			03/24/99 07:27

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CS
 Version 3.06
 Report date 05/19/99

TMA/RICHMOND
 SAMPLE DELIVERY GROUP H0370

SDG 7106
 Contact L.A. Johnson

QC SUMMARY

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0370

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7106	B99-028-02	B0T9V3	SOLID	100.0			03/30/99 6	N903162-01	7106-001
		B0T9V9	SOLID	100.0			03/30/99 6	N903162-02	7106-002
		B0T9W5	SOLID	100.0			03/30/99 6	N903162-03	7106-003
		B0T9W7	SOLID	100.0			03/30/99 6	N903162-04	7106-004
		Method Blank	SOLID					N903162-06	7106-006
		Lab Control Sample	SOLID					N903162-05	7106-005
		Duplicate (N903162-01)	SOLID	100.0			03/30/99 6	N903162-07	7106-007

QC SUMMARY

Page 1

SUMMARY DATA SECTION

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Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-OS
 Version 3.06
 Report date 05/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0370

SDG 7106
 Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0370

TEST	MATRIX	METHOD	PREPARATION ERROR			PLANCHETS ANALYZED			QUALI-
			BATCH	2σ %	CLIENT MORE	RE BLANK	LCS	DUP/ORIG MS/ORIG	
Alpha Spectroscopy									
U	SOLID	Uranium, Isotopic in Soil	6880-023	5.0	4	1	1	1/1	
Beta Counting									
SR	SOLID	Total Strontium in Soil	6880-023	10.0	4	1	1	1/1	
TC	SOLID	Technetium 99 in Soil	6880-023	10.0	4	1	1	1/1	
Liquid Scintillation Counting									
H	SOLID	Tritium in Soil	6880-023	10.0	4	1	1	1/1	

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

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-PBS
 Version 3.06
 Report date 05/19/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0370

SDG 7106
Contact L.A. Johnson

WORK SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	SUF-					
CUSTODY	SAF No	RECEIVED			FIX	ANALYZED	REVIEWED	BY	METHOD	
B0T9V3		N903162-01	7106-001	H		05/01/99	05/19/99	TAH	Tritium in Soil	
100H	SOLID	03/24/99	7106-001	SR		05/05/99	05/19/99	TAH	Total Strontium in Soil	
B99-028-02	B99-028	03/30/99	7106-001	TC		05/03/99	05/19/99	TAH	Technetium 99 in Soil	
			7106-001	U		05/04/99	05/19/99	TAH	Uranium, Isotopic in Soil	
B0T9V9		N903162-02	7106-002	H		05/01/99	05/19/99	TAH	Tritium in Soil	
100H	SOLID	03/24/99	7106-002	SR		05/05/99	05/19/99	TAH	Total Strontium in Soil	
B99-028-02	B99-028	03/30/99	7106-002	TC		05/01/99	05/19/99	TAH	Technetium 99 in Soil	
			7106-002	U		05/04/99	05/19/99	TAH	Uranium, Isotopic in Soil	
B0T9W5		N903162-03	7106-003	H		05/01/99	05/19/99	TAH	Tritium in Soil	
100H	SOLID	03/24/99	7106-003	SR		05/05/99	05/19/99	TAH	Total Strontium in Soil	
B99-028-02	B99-028	03/30/99	7106-003	TC		05/03/99	05/19/99	TAH	Technetium 99 in Soil	
			7106-003	U		05/04/99	05/19/99	TAH	Uranium, Isotopic in Soil	
B0T9W7		N903162-04	7106-004	H		05/01/99	05/19/99	TAH	Tritium in Soil	
100H	SOLID	03/24/99	7106-004	SR		05/05/99	05/19/99	TAH	Total Strontium in Soil	
B99-028-02	B99-028	03/30/99	7106-004	TC		05/04/99	05/19/99	TAH	Technetium 99 in Soil	
			7106-004	U		05/04/99	05/19/99	TAH	Uranium, Isotopic in Soil	
Method Blank		N903162-06	7106-006	H		05/01/99	05/19/99	TAH	Tritium in Soil	
	SOLID		7106-006	SR		05/05/99	05/19/99	TAH	Total Strontium in Soil	
	B99-028		7106-006	TC		05/01/99	05/19/99	TAH	Technetium 99 in Soil	
			7106-006	U		05/04/99	05/19/99	TAH	Uranium, Isotopic in Soil	
Lab Control Sample		N903162-05	7106-005	H		05/01/99	05/19/99	TAH	Tritium in Soil	
	SOLID		7106-005	SR		05/08/99	05/19/99	TAH	Total Strontium in Soil	
	B99-028		7106-005	TC		05/01/99	05/19/99	TAH	Technetium 99 in Soil	
			7106-005	U		05/04/99	05/19/99	TAH	Uranium, Isotopic in Soil	
Duplicate (N903162-01)		N903162-07	7106-007	H		05/01/99	05/19/99	TAH	Tritium in Soil	
100H	SOLID	03/24/99	7106-007	SR		05/05/99	05/19/99	TAH	Total Strontium in Soil	
	B99-028	03/30/99	7106-007	TC		05/01/99	05/19/99	TAH	Technetium 99 in Soil	
			7106-007	U		05/04/99	05/19/99	TAH	Uranium, Isotopic in Soil	

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0370

WORK SUMMARY, cont.

SDG 7106
 Contact L.A. Johnson

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0370

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
H	B99-028	Tritium in Soil	EPA906.0	4			1	1	1		7
SR	B99-028	Total Strontium in Soil		4			1	1	1		7
TC	B99-028	Technetium 99 in Soil	TC99TRLSC	4			1	1	1		7
U	B99-028	Uranium, Isotopic in Soil	UPLATE	4			1	1	1		7
TOTALS				16			4	4	4		28

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CWS
 Version 3.06
 Report date 05/19/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

N903162-06

Method Blank

METHOD BLANK

SDG <u>7106</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0370</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N903162-06</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7106-006</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B99-028</u>	

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.015	0.056	0.096	0.50	U	H
Technetium 99	14133-76-7	0.160	0.39	<u>1.1</u>	0.50	U	TC
Uranium 233/234	U-233/234	0	0.022	0.082	0.30	U	U
Uranium 235	15117-96-1	0	0.026	0.10	0.30	U	U
Uranium 238	U-238	0	0.022	0.082	0.30	U	U
Total Strontium	SR-RAD	-0.056	0.10	0.15	1.0	U	SR

100-HR-3 Pump/Treat Resin Smplg FY99

QC-BLANK 30440

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>05/19/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0370

N903162-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7106</u>	Client/Case no <u>Hanford</u> SDG-H0370
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>
Lab sample id <u>N903162-05</u>	Client sample id <u>Lab Control Sample</u>
Dept sample id <u>7106-005</u>	Material/Matrix <u>SOLID</u>
	SAF No <u>B99-028</u>

ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ LMFS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST	pCi/g	pCi/g	%	(TOTAL)	LIMITS
Tritium	3.52	0.20	0.16	0.50	H	3.62	0.14	97	82-118	80-120
Technetium 99	29.7	1.1	0.40	0.50	TC	32.7	1.3	91	84-116	80-120
Uranium 233/234	4.96	0.61	0.27	0.30	U	4.75	0.19	104	78-122	80-120
Uranium 235	3.41	0.48	0.080	0.30	U	3.89	0.16	88	79-121	80-120
Uranium 238	4.67	0.59	0.26	0.30	U	4.90	0.20	95	80-120	80-120
Total Strontium	12.2	0.36	0.14	1.0	SR	11.4	0.46	107	82-118	

100-HR-3 Pump/Treat Resin Smpg FY99

QC-LCS 30439

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LCS
 Version 3.06
 Report date 05/19/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0370

N903162-07

B0T9V3

DUPLICATE

SDG <u>7106</u>	Client/Case no <u>Hanford</u>	SDG-H0370
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>N903162-07</u>	Lab sample id <u>N903162-01</u>	Client sample id <u>B0T9V3</u>
Dept sample id <u>7106-007</u>	Dept sample id <u>7106-001</u>	Location/Matrix <u>100H</u> <u>SOLID</u>
	Received <u>03/30/99</u>	Collected <u>03/24/99 07:27</u>
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>B99-028-02</u> <u>B99-028</u>

ANALYTE	DUPLICATE		MDA	RDL	QUALI-	TEST	ORIGINAL		MDA	QUALI-	RPD	3σ	PROT
	pCi/g	2σ ERR (COUNT)					pCi/g	2σ ERR (COUNT)					
Tritium	1.50	0.11	0.11	0.50		H	1.50	0.11	0.11		0	26	
Technetium 99	0.627	0.28	<u>0.81</u>	0.50	U	TC	0.416	0.34	<u>1.1</u>	U	-		
Uranium 233/234	0.469	0.15	0.076	0.30	U	U	0.348	0.12	0.072		30	71	
Uranium 235	0.024	0.024	0.092	0.30	U	U	0.023	0.023	0.087	U	-		
Uranium 238	0.359	0.12	0.076	0.30	U	U	0.301	0.12	0.072		18	78	
Total Strontium	0.012	0.10	0.14	1.0	U	SR	-0.045	0.11	0.16	U	-		

100-HR-3 Pump/Treat Resin Smply FY99

QC-DUP#1 30441

DUPLICATES

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>05/19/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

N903162-01

BOT9V3

DATA SHEET

SDG <u>7106</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0370</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N903162-01</u>	Client sample id <u>BOT9V3</u>	
Dept sample id <u>7106-001</u>	Location/Matrix <u>100H</u>	<u>SOLID</u>
Received <u>03/30/99</u>	Collected <u>03/24/99 07:27</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-028-02</u>	<u>B99-028</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	1.50	0.11	0.11	0.50		H
Technetium 99	14133-76-7	0.416	0.34	<u>1.1</u>	0.50	U	TC
Uranium 233/234	U-233/234	0.348	0.12	0.072	0.30		U
Uranium 235	15117-96-1	0.023	0.023	0.087	0.30	U	U
Uranium 238	U-238	0.301	0.12	0.072	0.30		U
Total Strontium	SR-RAD	-0.045	0.11	0.16	1.0	U	SR

100-HR-3 Pump/Treat Resin Smply FY99

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>05/19/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

N903162-02

B0T9V9

DATA SHEET

SDG <u>7106</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0370</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N903162-02</u>	Client sample id <u>B0T9V9</u>	
Dept sample id <u>7106-002</u>	Location/Matrix <u>100H</u>	<u>SOLID</u>
Received <u>03/30/99</u>	Collected <u>03/24/99 07:40</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-028-02</u>	<u>B99-028</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TRST
Tritium	10028-17-8	1.22	0.091	0.10	0.50		H
Technetium 99	14133-76-7	0.107	0.29	<u>0.78</u>	0.50	U	TC
Uranium 233/234	U-233/234	0.044	0.044	0.084	0.30	U	U
Uranium 235	15117-96-1	0	0.027	0.10	0.30	U	U
Uranium 238	U-238	0.044	0.044	0.084	0.30	U	U
Total Strontium	SR-RAD	-0.055	0.10	0.14	1.0	U	SR

100-HR-3 Pump/Treat Resin Smply FY99

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>05/19/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

N903162-03

B0T9W5

DATA SHEET

SDG <u>7106</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0370</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N903162-03</u>	Client sample id <u>B0T9W5</u>	
Dept sample id <u>7106-003</u>	Location/Matrix <u>100H</u>	<u>SOLID</u>
Received <u>03/30/99</u>	Collected <u>03/24/99 07:52</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-028-02</u>	<u>B99-028</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	1.23	0.091	0.10	0.50		H
Technetium 99	14133-76-7	0.136	0.45	<u>1.2</u>	0.50	U	TC
Uranium 233/234	U-233/234	0.036	0.048	0.092	0.30	U	U
Uranium 235	15117-96-1	0.014	0.029	0.11	0.30	U	U
Uranium 238	U-238	0.036	0.048	0.092	0.30	U	U
Total Strontium	SR-RAD	-0.011	0.12	0.16	1.0	U	SR

100-HR-3 Pump/Treat Resin Smply FY99

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>05/19/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

N903162-04

B0T9W7

DATA SHEET

SDG <u>7106</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0370</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N903162-04</u>	Client sample id <u>B0T9W7</u>	
Dept sample id <u>7106-004</u>	Location/Matrix <u>100H</u>	<u>SOLID</u>
Received <u>03/30/99</u>	Collected <u>03/24/99 08:07</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-028-02</u>	<u>B99-028</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	1.38	0.099	0.11	0.50		H
Technetium 99	14133-76-7	0.793	0.27	<u>0.75</u>	0.50		TC
Uranium 233/234	U-233/234	0.043	0.043	0.081	0.30	U	U
Uranium 235	15117-96-1	0	0.026	0.098	0.30	U	U
Uranium 238	U-238	0	0.021	0.081	0.30	U	U
Total Strontium	SR-RAD	0.031	0.098	0.14	1.0	U	SR

100-HR-3 Pump/Treat Resin Smply FY99

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>05/19/99</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0370

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7106
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Uranium			2: Uranium				3: Uranium				RESULT RATIOS (%)			
					233/234	235	238	1+3	2σ	2+3	2σ	1+3	2σ	2+3	2σ				
Preparation batch 6880-023																			
B0T9V3	N903162-01			7106-001	0.348	U		0.301	116	61	8	8							
B0T9V9	N903162-02			7106-002	U	U		U											
B0T9W5	N903162-03			7106-003	U	U		U											
B0T9W7	N903162-04			7106-004	U	U		U											
BLK (QC ID=30440)	N903162-06			7106-006	U	U		U											
LCS (QC ID=30439)	N903162-05			7106-005	ok	ok		ok											
Duplicate (N903162-01)	N903162-07			7106-007	ok	-	U	ok	131	60	7	7							
Nominal values and limits from method					RDLs (pCi/g)	0.30	0.30	0.30	100				4						
100-HR-3 Pump/Treat Resin Smply FY99									Averages 123				7						

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 6880-023 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.23																
B0T9V3	N903162-01			0.087	1.02			81	151	41	05/03/99	05/04	SS-005			
B0T9V9	N903162-02			0.10	1.02			70	151	41	05/03/99	05/04	SS-006			
B0T9W5	N903162-03			0.11	1.00			67	151	41	05/03/99	05/04	SS-007			
B0T9W7	N903162-04			0.098	1.01			74	151	41	05/03/99	05/04	SS-008			
BLK (QC ID=30440)	N903162-06			0.10	1.00			74	151		05/03/99	05/04	SS-010			
LCS (QC ID=30439)	N903162-05			0.27	1.00			95	151		05/03/99	05/04	SS-009			
Duplicate (N903162-01)	N903162-07			0.092	1.02			80	151	41	05/03/99	05/04	SS-011			
(QC ID=30441)																
Nominal values and limits from method				0.30	1.00			30-105	150	100	180					

PROCEDURES	REFERENCE	UPDATE
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	0.12 ± 0.13
FOR 7 SAMPLES	YIELD	77 ± 19

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 05/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0370

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
SDG 7106
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Strontium
Preparation batch 6880-023					
B0T9V3	N903162-01			7106-001	U
B0T9V9	N903162-02			7106-002	U
B0T9W5	N903162-03			7106-003	U
B0T9W7	N903162-04			7106-004	U
BLK (QC ID=30440)	N903162-06			7106-006	U
LCS (QC ID=30439)	N903162-05			7106-005	ok
Duplicate (N903162-01)	N903162-07			7106-007	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
100-HR-3 Pump/Treat Resin Smply FY99

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 6880-023 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.23																	
B0T9V3	N903162-01			0.16	1.02				88		400			42	05/04/99	05/05	GRB-202
B0T9V9	N903162-02			0.14	1.01				94		400			42	05/04/99	05/05	GRB-203
B0T9W5	N903162-03			0.16	1.02				92		400			42	05/04/99	05/05	GRB-204
B0T9W7	N903162-04			0.14	1.04				97		400			42	05/04/99	05/05	GRB-217
BLK (QC ID=30440)	N903162-06			0.15	1.00				95		400				05/04/99	05/05	GRB-219
LCS (QC ID=30439)	N903162-05			0.14	1.00				95		400				05/04/99	05/08	GRB-218
Duplicate (N903162-01)	N903162-07			0.14	1.02				93		400			42	05/04/99	05/05	GRB-220
(QC ID=30441)																	

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 0.15 ± 0.019
FOR 7 SAMPLES YIELD 93 ± 6

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 05/19/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0370

Test TC Matrix SOLID
SDG 7106
Contact L.A. Johnson

METHOD SUMMARY
TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Technetium
Preparation batch 6880-023					
B0T9V3	N903162-01			7106-001	U
B0T9V9	N903162-02			7106-002	U
B0T9W5	N903162-03			7106-003	U
B0T9W7	N903162-04			7106-004	0.793
BLK (QC ID=30440)	N903162-06			7106-006	U
LCS (QC ID=30439)	N903162-05			7106-005	ok
Duplicate (N903162-01)	N903162-07			7106-007	- U

Nominal values and limits from method RDLs (pCi/g) 0.50
100-HR-3 Pump/Treat Resin Smply FY99

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP PAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6880-023 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.23																
B0T9V3	N903162-01			<u>1.1</u>	<u>1.00</u>			32	101	40	04/28/99	05/03	GRB-220			
B0T9V9	N903162-02			<u>0.78</u>	<u>1.00</u>			44	120	38	04/28/99	05/01	GRB-206			
B0T9W5	N903162-03			<u>1.2</u>	<u>1.00</u>			28	101	40	04/28/99	05/03	GRB-230			
B0T9W7	N903162-04			<u>0.75</u>	<u>1.00</u>			45	101	41	04/28/99	05/04	GRB-220			
BLK (QC ID=30440)	N903162-06			<u>1.1</u>	<u>1.00</u>			31	101		04/28/99	05/01	GRB-217			
LCS (QC ID=30439)	N903162-05			0.40	2.00			48	101		04/28/99	05/01	GRB-208			
Duplicate (N903162-01)	N903162-07			<u>0.81</u>	<u>1.00</u>			40	120	38	04/29/99	05/01	GRB-207			
(QC ID=30441)																

Nominal values and limits from method 0.50 2.00 20-105 50 180

PROCEDURES	REFERENCE	TC99TRLSC
EP-060	Soil Preparation, rev 0	
EP-020	Sample Leach For Technetium-99, rev 0	
EP-540	Technetium-99 Purification, rev 0	

AVERAGES ± 2 SD	MDA <u>0.88</u> ± <u>0.55</u>
FOR 7 SAMPLES	YIELD <u>38</u> ± <u>16</u>

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0370

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Test H Matrix SOLID
SDG 7106
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUP- PLANCHET	Tritium
Preparation batch 6880-023				
B0T9V3	N903162-01	7106-001		1.50
B0T9V9	N903162-02	7106-002		1.22
B0T9W5	N903162-03	7106-003		1.23
B0T9W7	N903162-04	7106-004		1.38
BLK (QC ID=30440)	N903162-06	7106-006		U
LCS (QC ID=30439)	N903162-05	7106-005		ok
Duplicate (N903162-01)	N903162-07	7106-007		ok

Nominal values and limits from method RDLs (pCi/g) 0.50
100-HR-3 Pump/Treat Resin Smplg FY99

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUP- pCi/g	MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 6880-023 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.23															
B0T9V3	N903162-01		0.11	<u>18.7</u>				100	91		38	04/29/99	05/01	LSC-004	
B0T9V9	N903162-02		0.10	20.0				100	101		38	04/29/99	05/01	LSC-004	
B0T9W5	N903162-03		0.10	<u>19.8</u>				100	101		38	04/29/99	05/01	LSC-004	
B0T9W7	N903162-04		0.11	<u>19.6</u>				100	96		38	04/29/99	05/01	LSC-004	
BLK (QC ID=30440)	N903162-06		0.096	20.0				100	120			04/29/99	05/01	LSC-004	
LCS (QC ID=30439)	N903162-05		0.16	20.0				100	43			04/29/99	05/01	LSC-004	
Duplicate (N903162-01)	N903162-07		0.11	<u>18.6</u>				100	92		38	04/29/99	05/01	LSC-004	
(QC ID=30441)															

Nominal values and limits from method 0.50 20.0 25 180

PROCEDURES REFERENCE EPA906.0
EP-060 Soil Preparation, rev 0
EP-211 Tritium in Solid Samples by Azeotropic Distillation, rev 0

AVERAGES ± 2 SD MDA 0.11 ± 0.044
FOR 7 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

SDG 7106
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

SDG 7106
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

These qualifiers should be reviewed as follows:

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

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

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

SDG 7106
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
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WORK SUMMARY

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

The following notes apply to this report:

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

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/19/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

SDG 7106
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

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).

REPORT GUIDES

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Protocol Hanford
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GUIDE, cont.

Client Hanford
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DATA SHEET

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

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

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

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

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

The following values are underlined to indicate possible problems:

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

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

SDG 7106
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

DATA SHEET

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

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Version Ver 1.0
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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

SDG 7106
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

SDG 7106
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

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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SDG 7106
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

DUPLICATE

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

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

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

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

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/19/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

SDG 7106
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

REPORT GUIDE

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

2. The error of ADDED.

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

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

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/19/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0370

SDG 7106
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0370

MATRIX SPIKE

for the recovery.

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

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

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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

MDAs are underlined if greater than the printed RDL.

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

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METHOD SUMMARY

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

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

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

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

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

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

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METHOD SUMMARY

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

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

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

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

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Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-028-02		Page 1 of 1	
Collector Gale/Nielson / <i>Dowry</i>		Company Contact Tom Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code IV/FA Data Turnaround 45 Days	
Project Designation 100-HR-3 Pump & Treat - Resin Sampling FY 99		Sampling Location 100H		SAF No. B99-028					
Ice Chest No. <i>ERC96-045</i>		Field Logbook No. EL-1381-1		Method of Shipment Federal Express					
Shipped To <i>TMA/REGRA</i> <i>570 3-24-99</i>		Offsite Property No. <i>A9900694</i>		Bill of Lading/Air Bill No. <i>423579524099</i>					
				COA					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	None	None	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	120mL	250mL	500mL	

SAMPLE ANALYSIS	Activity Scan	Isotopic Uranium	Sr-90 TOTAL RPD STRONTIUM 4/2/699	Technetium-99	Tritium - H3	IC Anions - 300.0 (Nitrate)	Metals by ICP (TCLP) - 131/6010A (Chromium)

Sample No.	Matrix *	Sample Date	Sample Time							
<i>✓</i> B079V3	Other Solid	<i>3-24-99</i>	<i>0727</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>B079V3</i>
<i>✓</i> B079V9	Other Solid	<i>3-24-99</i>	<i>0740</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>B079V9</i>
<i>✓</i> B079W5	Other Solid	<i>3-24-99</i>	<i>0752</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>B079W5</i>
<i>✓</i> B079W7	Other Solid	<i>3-24-99</i>	<i>0807</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>B079W7</i>

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS ** Close SDG upon receipt of samples. <i>in 1A @ 40C 4C</i>				Matrix * Soil Water Vapor Other Solid Other Liquid	
Relinquished By <i>Dave Bowers</i> Date/Time <i>3-24-99/1300</i>		Received By <i>Arts. 1A @ 3728</i> Date/Time <i>3-24-99/1300</i>							
Relinquished By <i>Arts. 1A in 3728 Bldg</i> Date/Time <i>3/29/99</i>		Received By <i>R. Nielson</i> Date/Time <i>3/29/99</i>							
Relinquished By <i>R. Nielson</i> Date/Time <i>3/29/99</i>		Received By <i>Fed Ex</i> Date/Time <i>3-29-99</i>							
Relinquished By <i>Fed Ex</i> Date/Time <i>3-30-99 10:30</i>		Received By <i>Arts. JR</i> Date/Time <i>3-30-99</i>							

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client:	<u>Bechtel Hanford</u>	Date/Time received	<u>3-30-99 10:30</u>
CoC No.	<u>B99-028-02, B99-028-12, B99-001-133</u>		
Container I.D. No.	<u>ERC96-045</u>	Requested TAT (Days)	<u>45</u> P.O. Received Yes [] No [<input checked="" type="checkbox"/>]
INSPECTION			
1.	Custody seals on shipping container intact?	Yes [<input checked="" type="checkbox"/>]	No [] N/A []
2.	Custody seals on shipping container dated & signed?	Yes [<input checked="" type="checkbox"/>]	No [] N/A []
3.	Custody seals on sample containers intact?	Yes [<input checked="" type="checkbox"/>]	No [] N/A []
4.	Custody seals on sample containers dated & signed?	Yes [<input checked="" type="checkbox"/>]	No [] N/A []
5.	Cooler Temperature: _____	Packing material is:	Wet [] Dry [<input checked="" type="checkbox"/>]
6.	Number of samples in shipping container:	<u>9</u>	
7.	Number of containers per sample: _____	(Or see CoC <u>✓</u>)	
8.	Paperwork agrees with samples?	Yes [<input checked="" type="checkbox"/>]	No []
9.	Samples have:	Tape [] Hazard labels [] Rad labels [<input checked="" type="checkbox"/>]	Appropriate sample labels [<input checked="" type="checkbox"/>]
10.	Samples are:	In good condition [<input checked="" type="checkbox"/>]	Leaking [] Broken Container [] Missing []
11.	Describe any anomalies:	_____ _____ _____	
13.	Was P.M. notified of any anomalies?	Yes [] No []	Date _____
14.	Received by	<u>APCORAT</u>	Date: <u>3-30-99</u> Time: <u>10:30</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 _____	