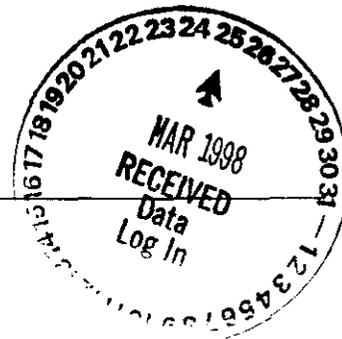


F0135-T1W



a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

0049310



**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD
RFW# : 9802L512
SDG #: H135

W.O. #: 10985-001-001-9999-00
Date Received: 02-13-98

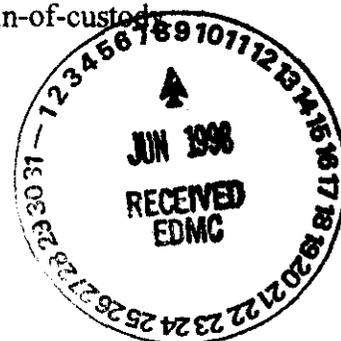
GC/MS VOLATILE

The set of samples consisted of two (2) water samples collected on 02-10-98.

The samples were analyzed according to criteria set forth in SW 846 Method 8260A for TCL Volatile target compounds on 02-23-98.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were not detected in these samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.



J. Michael Taylor
J. Michael Taylor
Vice President and Laboratory Manager
Lionville Analytical Laboratory

3-15-98
Date

mmz\voa\02-512v.cn

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.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP, Z** = Indicates Spiked Compound.



Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 03/11/98 13:27

RFW Batch Number: 9802L512

Client: TNU-WAMPORD

Work Order: 10985001001 Page: 1a

Sample Information	Cust ID:	BON1R7	BON1H1	BON1H1	BON1H1	BON1H1	VELKAS	VELKAS BS
	RFW#:	001	002	002 MS	002 MSD	98LVH047-MB1	98LVH047-MB1	
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER	
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00	
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	
Surrogate	Toluene-d8	98 %	99 %	100 %	98 %	94 %	97 %	
Recovery	Bromofluorobenzene	96 %	98 %	100 %	99 %	94 %	97 %	
	1,2-Dichloroethane-d4	89 %	94 %	96 %	96 %	91 %	94 %	
=====f1=====f1=====f1=====f1=====f1=====								
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U	
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U	
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U	
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U	
Methylene Chloride		3 JB	2 JB	3 JB	3 JB	7	2 JB	
Acetone		10 U	10 U	10 U	10 U	3 J	10 U	
Carbon Disulfide		5 U	5 U	5 U	5 U	5 U	5 U	
1,1-Dichloroethene		5 U	5 U	106 %	106 %	5 U	108 %	
1,1-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U	
1,2-Dichloroethene (total)		5 U	5 U	5 U	5 U	5 U	5 U	
Chloroform		5 U	3 J	3 J	3 J	5 U	5 U	
1,2-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U	
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U	
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U	
Carbon Tetrachloride		5 U	64	64	62	5 U	5 U	
Bromodichloromethane		5 U	5 U	5 U	5 U	5 U	5 U	
1,2-Dichloropropane		5 U	5 U	5 U	5 U	5 U	5 U	
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U	
Trichloroethene		5 U	5 U	97 %	100 %	5 U	94 %	
Dibromochloromethane		5 U	5 U	5 U	5 U	5 U	5 U	
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U	
Benzene		5 U	5 U	100 %	102 %	5 U	100 %	
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U	
Bromoform		5 U	5 U	5 U	5 U	5 U	5 U	
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U	
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U	
Tetrachloroethene		5 U	5 U	5 U	5 U	5 U	5 U	
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	5 U	5 U	
Toluene		5 U	5 U	99 %	100 %	5 U	98 %	

004

*= Outside of EPA CLP QC limits.

Cust ID:	BON1R7	BON1H1	BON1H1	BON1H1	VBLKAS	VBLKAS BS
RFW#:	001	002	002 MS	002 MSD	98LVH047-MB1	98LVH047-MB1

Chlorobenzene	5 U	5 U	100 %	101 %	5 U	99 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

003

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD

DATE RECEIVED: 02/13/98

RFW LOT # :9802L512

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BON1R7	001	W	98LVH047	02/10/98	N/A	02/23/98
BON1H1	002	W	98LVH047	02/10/98	N/A	02/23/98
BON1H1	002 MS	W	98LVH047	02/10/98	N/A	02/23/98
BON1H1	002 MSD	W	98LVH047	02/10/98	N/A	02/23/98

LAB QC:

VBLKAS	MB1	W	98LVH047	N/A	N/A	02/23/98
VBLKAS	MB1 BS	W	98LVH047	N/A	N/A	02/23/98

5.9

_____ _____ 2/13/98	_____ _____ _____	_____ _____ 2/12/98 2/13/98	_____ _____ _____	_____ _____ 2/12/98 2/13/98	_____ _____ _____
DATE	RECEIVED BY	DATE	TRANSFERRED TO	DATE	RELEASED BY

.....	RECMA-LAB	WB202	02A-W BONINI7
.....	RECMA-LAB	WB202	01C-W BONINI DUP
.....	RECMA-LAB	WB202	01B-W BONINI MS
.....	RECMA-LAB	WB202	01A-W BONINI1
.....	TESTS	STORAGE	DATA SAMPLE IDENTIFICATION

Collector RT SICKLE (RFS)	Company Contact JH KESSNER	Telephone No. (509) 372-9538	Project Coordinator FORD, BH	Data Turnaround 45 Days 600
Project Designation 200 UPI IAM GW SAMPLING, FEB 1998	Sampling Location HANFORD SITE	SAF No. C98-026		
Ice Chest No. 567	Field Logbook No. WJH-5012-14 10	Method of Shipment GOVT. VEHICLE		
Shipped To TMA/WESTON	Offsite Property No. W9800123	Bill of Lading/Air Bill No. 423579508942		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	HCl or H2SO4 to pH <2 Con							
	Type of Container	P	aGs*							
	No. of Container(s)	1	3							
	Special Handling and/or Storage	Volume	20ml	40ml						

SAMPLE ANALYSIS	Activity Scan	VOA - 8240A (TCL)								
SDG H135										

Sample No.	Matrix *	Sample Date	Sample Time	✓	✓								
BON1R7	Water	2-10-98	0800	✓	✓								

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wine L = Liquid V = Vegetation X = Other
	Relinquished By RT SICKLE	Date/Time 2-11-98 0900	Received By R.J. Hill	Date/Time 2-11-98 0900	TOTAL ACTIVITY EXEMPTION APPLIES FAX copies of TMA log-in to DI Stewart (372-1704) & JM Duncan (372-9052).		
	Relinquished By R.J. Hill	Date/Time 2-11-98 1100	Received By C. S. Adams	Date/Time 2/12/98 1030			
	Relinquished By	Date/Time	Received By	Date/Time			

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

Collector **RT SICKLE (RFS)** Company Contact **JH KESSNER** Telephone No. **(509) 372-9538** Project Coordinator **FORD, BH** Data Turnaround **45 Days**

Project Designation **200 UPI IAM GW SAMPLING, FEB 1998** Sampling Location **HANFORD SITE** SAF No. **C98-026**

Ice Chest No. **567** Field Logbook No. **WJW-5112-1110** Method of Shipment **GOVT. VEHICLE**

Shipped To **TMA/WESTON** Offsite Property No. **W4800123** Bill of Lading/Air Bill No. **423579508942**

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	HNO3 to pH <2	HCl to pH <2	HCl or H2SO4 to pH <2 Cao
	Type of Container	P	G/P	G/P	aGr*
	No. of Container(s)	1	1	1	3

Special Handling and/or Storage	Volume	20ml	125ml	1000ml	40ml

SAMPLE ANALYSIS	Activity Scan	Total Uranium	Technetium-99	VOA - 8240A (TC1)
	SDG H135			

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Total Uranium	Technetium-99	VOA - 8240A (TC1)
BON1H1	Water	2-10-98	1053	✓	✓	✓	✓

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By RT SICKLE (RFS)	Date/Time 2-11-98 0900	Received By R.P. SICKLE	Date/Time 2-11-98 0900
Relinquished By R.P. SICKLE	Date/Time 2-11-98 1100	Received By C. S. SARGALANG	Date/Time 2/11/98 1030
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
TOTAL ACTIVITY EXEMPTION APPLIES
 FAX copies of TMA log-in to DI Stewart (372-1704) & JM Duncan (372-9052).

- Matrix ***
- S = Soil
 - SH = Sediment
 - SO = Solid
 - SL = Sludge
 - W = Water
 - O = Oil
 - A = Air
 - DS = Drum Solids
 - DL = Drum Liquids
 - T = Tissue
 - WI = Waste
 - L = Liquid
 - V = Vegetation
 - X = Other

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

H0135-T/w

Thermo Nutech
W.O. No. N8-02-041-7471, SDG H0135

Bechtel Hanford Inc.
P.O. TRB-SBB-207925

Case Narrative

1.0 GENERAL

Thermo Nutech Sample Delivery Group H0135 is comprised of the single liquid sample designated as SAF No. C98-026 delivered under project designation 200 UP1 IAM GW Sampling, Feb 1998.

The sample was received as stated on the Chain-of-Custody document.

2.0 ANALYSIS NOTES

2.1 Technetium-99 Analyses

A preliminary rad screen was performed on the sample to determine gross alpha and gross beta. Based on the result of that rad screen the aliquot for the technetium analysis was reduced from 0.2 L to 0.05 L. No problems were encountered with the analyses. All sample MDA's were less than the RDL.

2.2 Total Uranium Analyses

The MDA's of the sample, the duplicate, and the LCS were greater than the RDL however the sample contained uranium mass greater than the RDL. No problems were encountered with the analyses.



T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0135

SDG 7471
Contact N. Joseph Verville

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG_H0135

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

T A B L E O F C O N T E N T S				
About this section	.	.	.	1
Sample Summaries	.	.	.	3
Prep Batch Summary	.	.	.	5
Work Summary	.	.	.	6
Method Blanks	.	.	.	7
Lab Control Samples	.	.	.	8
Duplicates	.	.	.	9
Data Sheets	.	.	.	10
Method Summaries	.	.	.	11
Report Guides	.	.	.	13
End of Section	.	.	.	27


Prepared by


Reviewed by

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 03/31/98

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0135

SDG 7471
Contact N. Joseph Verville

REPORT GUIDE

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 1

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/31/98

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0135

SDG 7471
Contact N. Joseph Verville

GUIDE, cont.

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

Page 2

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/31/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0135

SAMPLE SUMMARY

SDG 7471
Contact N. Joseph Verville

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB		CHAIN OF	
				SAMPLE ID	SAF NO	CUSTODY	COLLECTED
BON1H1	HANFORD SITE	LIQUID		N802041-01	C98-026		02/10/98 10:53
Method Blank		LIQUID		N802041-03	C98-026		
Lab Control Sample		LIQUID		N802041-02	C98-026		
Duplicate (N802041-01)	HANFORD SITE	LIQUID		N802041-04	C98-026		02/10/98 10:53

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 03/31/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0135

QC SUMMARY

SDG 7471
Contact N. Joseph Verville

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7471		BON1H1	LIQUID				02/12/98	2	N802041-01	7471-001
		Method Blank	LIQUID						N802041-03	7471-003
		Lab Control Sample	LIQUID						N802041-02	7471-002
		Duplicate (N802041-01)	LIQUID				02/12/98	2	N802041-04	7471-004

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 03/31/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0135

PREP BATCH SUMMARY

SDG 7471
Contact N. Joseph Verville

Client Westinghouse Manford
Contract TRB-SBB-207925
Case no SDG H0135

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED			QUALI-			
			BATCH	2σ %	CLIENT	MORE	RE		BLANK	LCS	DUP/ORIG
Beta Counting											
TC	LIQUID	Technetium 99 in Water	2785-074	10.0	1			1	1	1/1	
Kinetic Phosphorimetry											
U_T	LIQUID	Uranium, Total in Water	2785-074	9.0	1			1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

Page 1

SUMMARY DATA SECTION

Page 5

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 03/31/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0135

WORK SUMMARY

SDG 7471
 Contact N. Joseph Verville

Client Westinghouse Hanford
 Contract TRB-SBB-207925
 Case no SDG H0135

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED	SUF-							
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
BON1H1		N802041-01	7471-001	TC		03/23/98	03/26/98	NJV	Technetium 99 in Water	
HANFORD SITE	LIQUID	02/10/98	7471-001	U_T		02/20/98	03/26/98	NJV	Uranium, Total in Water	
	C98-026	02/12/98								
Method Blank		N802041-03	7471-003	TC		03/23/98	03/26/98	NJV	Technetium 99 in Water	
	LIQUID		7471-003	U_T		02/20/98	03/26/98	NJV	Uranium, Total in Water	
	C98-026									
Lab Control Sample		N802041-02	7471-002	TC		03/23/98	03/26/98	NJV	Technetium 99 in Water	
	LIQUID		7471-002	U_T		02/20/98	03/26/98		Uranium, Total in Water	
	C98-026									
Duplicate (N802041-01)		N802041-04	7471-004	TC		03/23/98	03/26/98	NJV	Technetium 99 in Water	
HANFORD SITE	LIQUID	02/10/98	7471-004	U_T		02/20/98	03/26/98	NJV	Uranium, Total in Water	
	C98-026	02/12/98								

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
TC	C98-026	Technetium 99 in Water	TC99TRLSC	1			1	1	1		4
U_T	C98-026	Uranium, Total in Water	UKPA	1			1	1	1		4
TOTALS				2			2	2	2		8

Lab id TMANC
 Protocol WHC-HASM-1
 Version Ver 1.0
 Form DVD-CWS
 Version 3.06
 Report date 03/31/98

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0135

N802041-03

Method Blank

METHOD BLANK

SDG 7471 Client/Case no Westinghouse Hanford SDG H0135
Contact N. Joseph Verville Case no TRB-SBB-207925

Lab sample id N802041-03 Client sample id Method Blank
Dept sample id 7471-003 Material/Matrix LIQUID
SAF No C98-026

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TRST
Technetium 99	14133-76-7	0.78	0.96	1.7	15	U	TC
Total Uranium (ug/L)	7440-61-1	0.005	0.006	0.015	0.10	U	U_T

QC-BLANK 28026

METHOD BLANKS

Page 1

SUMMARY DATA SECTION

Page 7

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVP-DS
Version 3.06
Report date 03/31/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0135

N802041-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7471</u>	Client/Case no <u>Westinghouse Hanford SDG H0135</u>
Contact <u>N. Joseph Verville</u>	Case no <u>TRB-SBB-207925</u>
Lab sample id <u>N802041-02</u>	Client sample id <u>Lab Control Sample</u>
Dept sample id <u>7471-002</u>	Material/Matrix <u>LIQUID</u>
	SAF No <u>C98-026</u>

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Technetium 99	240	6.0	2.4	15		TC	262	10	92	85-115	80-120
Total Uranium (ug/L)	86	15	<u>0.15</u>	0.10		U_T	82.5	3.3	104	69-131	80-120

QC-LCS 28025

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0135

N802041-04

B0N1H1

DUPLICATE

SDG <u>7471</u>	Client/Case no <u>Westinghouse Hanford SDG H0135</u>
Contact <u>N. Joseph Verville</u>	Case no <u>TRB-SBB-207925</u>
DUPLICATE	ORIGINAL
Lab sample id <u>N802041-04</u>	Lab sample id <u>N802041-01</u>
Dept sample id <u>7471-004</u>	Dept sample id <u>7471-001</u>
	Received <u>02/12/98</u>
	Client sample id <u>B0N1H1</u>
	Location/Matrix <u>HANFORD SITE</u> <u>LIQUID</u>
	Collected <u>02/10/98 10:53</u>
	Custody/SAF No <u>C98-026</u>

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Technetium 99	3700	46	8.8	15		TC	3600	46	8.1		3	22	
Total Uranium (ug/L)	240	42	1.5	0.10		U_T	240	42	1.5		0	42	

QC-DUP#1 28037

DUPLICATES

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Lab id TMANC
 Protocol WHC-HASM-1
 Version Ver 1.0
 Form DVD-DUP
 Version 3.06
 Report date 03/31/98

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0135

N802041-01

BON1H1

DATA SHEET

SDG <u>7471</u>	Client/Case no <u>Westinghouse Hanford SDG H0135</u>
Contact <u>N. Joseph Verville</u>	Case no <u>TRB-SBB-207925</u>
Lab sample id <u>N802041-01</u>	Client sample id <u>BON1H1</u>
Dept sample id <u>7471-001</u>	Location/Matrix <u>HANFORD SITE</u> <u>LIQUID</u>
Received <u>02/12/98</u>	Collected <u>02/10/98 10:53</u>
	Custody/SAF No <u> </u> <u>C98-026</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Technetium 99	14133-76-7	3600	46	8.1	15		TC
Total Uranium (ug/L)	7440-61-1	240	42	<u>1.5</u>	0.10		U_T

DATA SHEETS

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Lab id <u>TMANC</u>
Protocol <u>WHC-HASM-1</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>03/31/98</u>

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0135

METHOD SUMMARY

TECHNETIUM 99 IN WATER

BETA COUNTING

Test TC Matrix LIQUID
SDG 7471
Contact N. Joseph Verville

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

RESULTS

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

Preparation batch 2785-074

BON1H1	N802041-01	7471-001		3600	
BLK (QC ID-28026)	N802041-03	7471-003		U	
LCS (QC ID-28025)	N802041-02	7471-002		ok	
Duplicate (N802041-01)	N802041-04	7471-004		ok	

Nominal values and limits from method RDLs (pCi/L) 15

METHOD PERFORMANCE

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

Preparation batch 2785-074 2σ prep error 10.0 % Reference Lab Notebook #2785 pg. 074

BON1H1	N802041-01	8.1		0.0500				59	200				41	03/18/98	03/23	GRB-222
BLK (QC ID-28026)	N802041-03	1.7		0.200				73	200					03/18/98	03/23	GRB-224
LCS (QC ID-28025)	N802041-02	2.4		0.200				52	200					03/18/98	03/23	GRB-223
Duplicate (N802041-01)	N802041-04	8.8		0.0500				66	200				41	03/18/98	03/23	GRB-226
	(QC ID-28027)															

Nominal values and limits from method 15 0.200 20-105 50 180

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

AVERAGES ± 2 SD	MDA	5.2 ± 7.4
FOR 4 SAMPLES	YIELD	62 ± 18

METHOD SUMMARIES

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0135

METHOD SUMMARY

URANIUM, TOTAL IN WATER
KINETIC PHOSPHORIMETRY

Test U T Matrix LIQUID
SDG 7471
Contact N. Joseph Verville

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	PLANCHET	Total Uranium
Preparation batch 2785-074				
BON1H1	N802041-01	7471-001		240
BLK (QC ID=28026)	N802041-03	7471-003		U
LCS (QC ID=28025)	N802041-02	7471-002		ok
Duplicate (N802041-01)	N802041-04	7471-004		ok
Nominal values and limits from method				RDLs (ug/L) 0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MDA ug/L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 2785-074 2σ prep error 9.0 % Reference Lab Notebook #2785 pg. 074														
BON1H1	N802041-01		<u>1.5</u>	0.0200								10	02/20/98	KPA-001
BLK (QC ID=28026)	N802041-03		0.015	0.0200									02/20/98	KPA-001
LCS (QC ID=28025)	N802041-02		<u>0.15</u>	0.0200									02/20/98	KPA-001
Duplicate (N802041-01) (QC ID=28027)	N802041-04		<u>1.5</u>	0.0200								10	02/20/98	KPA-001
Nominal values and limits from method												0.10	0.0200	180

PROCEDURES	REFERENCE	UKPA
EP-040	Environmental Water Dissolution, rev 1	
EP-044	Preparation of Total Uranium by Kinetic Phosphorimetry, rev 1	
EP-928	Total Uranium by Kinetic Phosphorimetry, rev 0	

AVERAGES ± 2 SD	MDA	<u>0.79</u>	±	<u>1.6</u>
FOR 4 SAMPLES	YIELD	_____	±	_____

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0135

SDG 7471
Contact N. Joseph Verville

REPORT GUIDE

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

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.

REPORT GUIDES

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Form DVD-RG
Version 3.06
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TMA/RICHMOND
SAMPLE DELIVERY GROUP H0135

SDG 7471
Contact N. Joseph Verville

REPORT GUIDE

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

These qualifiers should be reviewed as follows:

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

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

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SDG 7471
Contact N. Joseph Verville

REPORT GUIDE

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

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.

REPORT GUIDES

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SAMPLE DELIVERY GROUP H0135

SDG 7471
Contact N. Joseph Verville

REPORT GUIDE

Client Westinghouse Hanford
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Case no SDG H0135

DATA SHEET

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

The following notes apply to this report:

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

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

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

The following qualifiers are defined by the DVD system:

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

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Contact N. Joseph Verville

GUIDE, cont.

Client Westinghouse Hanford
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Case no SDG H0135

DATA SHEET

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

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

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

The following values are underlined to indicate possible problems:

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

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SDG 7471
Contact N. Joseph Verville

GUIDE, cont.

Client Westinghouse Hanford
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DATA SHEET

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

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Contact N. Joseph Verville

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

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SDG 7471
Contact N. Joseph Verville

REPORT GUIDE

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:
 1. A fixed percentage specified in the protocol.

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DUPLICATE

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

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

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

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

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

2. The error of ADDED.

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

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

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SDG 7471
Contact N. Joseph Verville

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Client Westinghouse Hanford
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MATRIX SPIKE

for the recovery.

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

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

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SDG 7471
Contact N. Joseph Verville

REPORT GUIDE

Client Westinghouse Hanford
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Case no SDG H0135

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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Case no SDG H0135

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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GUIDE, cont.

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

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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SUMMARY DATA SECTION

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Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/31/98

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0135

SDG 7471
Contact N. Joseph Verville

GUIDE, cont.

Client Westinghouse Hanford
Contract TRB-SBB-207925
Case no SDG H0135

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 WHC-HASM-1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/31/98

PNNL		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						C98-026-27		Page 1 of 1		
Collector RT SICKLE (RFS)			Company Contact JH KESSNER		Telephone No. (509) 372-9538		Project Coordinator FORD, BH		Data Turnaround 45 Days			
Project Designation 200 UPI IAM GW SAMPLING, FEB 1998			Sampling Location HANFORD SITE		SAF No. C98-026							
Ice Chest No. 567			Field Logbook No. 1011-5112-1110		Method of Shipment GOVT. VEHICLE							
Shipped To TMA/WESTON			Offsite Property No. W4800123		Bill of Lading/Air Bill No. 423579508942							
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation	None	HNO3 to pH <2	HCl to pH <2	HCl or H2SO4 to pH <2 Cool				
				Type of Container	P	G/P	G/P	aGs*				
				No. of Container(s)	1	1	1	3				
Special Handling and/or Storage				Volume	20ml	125ml	1000ml	40ml				
SAMPLE ANALYSIS				Activity Scan	Total Uranium	Technetium-99	VOA - 8240A (TCL)					
Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Total Uranium	Technetium-99	VOA - 8240A (TCL)					
BON1H1	Water	2-10-98	1053	✓	✓	✓	✓					
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS TOTAL ACTIVITY EXEMPTION APPLIES FAX copies of TMA log-in to DI Stewart (372-1704) & JM Duncan (372-9052).				Matrix *		
Relinquished By RT SICKLE (RFS)	Date/Time 2-11-98 0900	Received By R. J. SICKLE	Date/Time 2-11-98 0900									S = Soil
Relinquished By R. J. SICKLE	Date/Time 2-11-98 1100	Received By C. SANGALANG	Date/Time 2/11/98 1030									SH = Sediment
Relinquished By	Date/Time	Received By	Date/Time									SO = Solid
Relinquished By	Date/Time	Received By	Date/Time									SL = Sludge
												W = Water
												O = Oil
												A = Air
												DS = Drum Solids
												DL = Drum Liquids
												T = Tissue
												WI = Waste
												L = Liquid
												V = Vegetation
												X = Other
LABORATORY SECTION	Received By	Title								Date/Time		
FINAL SAMPLE DISPOSITION	Disposal Method					Disposed By				Date/Time		

Overnight Air

Contractor <i>Waste Management</i>	OFF-SITE PROPERTY CONTROL	CONTROL NO. <i>W9800123</i> <small>(To be obtained from PROPERTY MANAGEMENT)</small>
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PART I - TO BE COMPLETED BY ORIGINATOR

Department <i>Hanford Technical Services</i>	Section <i>Environmental Ops.</i>	Unit <i>Sampling + Mobile Labs</i>
The following items are to be shipped from <input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor		
Routing <i>Fed Ex. 42357950</i> <input checked="" type="checkbox"/> Prepaid <input type="checkbox"/> Collect		
Shipped to Company Address City Country	Off-site Custodian <i>Attn. Dolores Sanchez</i>	Payroll No.
<i>TMA / Weston 2030 Wright Ave. Richmond State CA Zip Code 94804 U.S.A.</i>	On-site Custodian	

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1		<i>Cooler</i> Groundwater samples that are on wet ice. C.C # <i>98-026-27</i> Sample # <i>BON1H1</i> <i>98-026-32</i> <i>BON1R7</i> Cooler # <i>567</i> Weight <i>35 lbs</i>	

Classified Unclassified Shipped Under DOE Contract Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

- Required for Project Work. List Project No. _____
- Business Trip
- Off-site Assignment
- Shipment to Subcontractor. List Subcontract No. _____
- Other (Please specify) *Samples require analysis other than ones available at this site.*

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release <i>NA</i>	RM Survey No. <i>NA</i>	Date <i>NA</i>
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Location of and Contact for Property (Name/Phone No./Bldg./Area)
R2 Steffler / 372-2321 / 345 Hills / 1100 Area

Date Ready for Shipment <i>2-11-98</i>	Cost Code to be Charged <i>0403E00</i>	Approximate Date This Property will be Returned <i>NA</i>
Originator's Signature <i>R2 Steffler</i>	Date <i>11:00 2-11-98</i>	Authorized By <i>[Signature]</i>
Property Representative Signature <i>[Signature]</i>	Date <i>2/11/98</i>	Property Management Approval <i>[Signature]</i>

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature <i>[Signature]</i>	Date <i>2/11/98</i>
---	------------------------

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

US DOE %
FLUOR DANIEL HANFORD CO, INC.
2355 STEVENS DRIVE/1163 BLDG.
RICHLAND WA 99352
(509)376-5098

SHIP DATE: 11FEB98
ACC# 188288189

ACTUAL WGT: 35 LBS MAN-WT
DIM WEIGHT CHECKED

TO: MS. DOLORES SANCHEZ
TWA/WESTON
2038 WRIGHT AVE.

RICHMOND CA 94804

4235 7950 8942

FedEx

REGULATIONS GOVERN THE TRANSPORTATION OF MAIL MATTER BY AIR AND BY SEA. THE FOLLOWING REGULATIONS APPLY TO THE TRANSPORTATION OF MAIL MATTER BY AIR AND BY SEA. FOR A COMPLETE LIST OF REGULATIONS, SEE THE AIR MAIL REGULATIONS AND THE MARITIME REGULATIONS. THE FOLLOWING REGULATIONS APPLY TO THE TRANSPORTATION OF MAIL MATTER BY AIR AND BY SEA. FOR A COMPLETE LIST OF REGULATIONS, SEE THE AIR MAIL REGULATIONS AND THE MARITIME REGULATIONS.

REF: 03E00 DB8074 K98-0-0123

PRIORITY OVERNIGHT THU

CAD# 0053292 11FEB98

Deliver by:

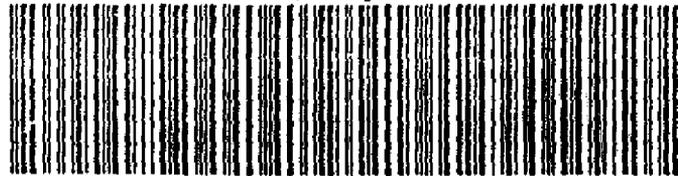
TRK# 4235 7950 8942 Form 8201

12FEB98

OAK AA

94804 -CA-US

WA JEMA



PART # 147923 FORMAT # 077 RIT 09/97

Ice Chest Receipt Log

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: WTC

Date: 2-12-98

Ice chest # or description	H557					
Thermometer: time in	1055					
Thermometer: time out	1115					
Thermometer reading	2°C					
Thermometer number	205					
Correction factor						
Actual temperature*						
Custody seals on ice chest intact?	Y					
Custody seals dated?	Y					
Custody seals signed?	Y					
Custody seals on samples?	Y					
Ice chest scanned for activity?	Y					

* Temperature is in degrees centigrade.

Technician: [Signature]

Comments: _____

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 2/12/98 1030 S.G.#: H0135
Work Order Number: N8-02-039 40 SAF #: C98-026
Shipping Container ID: #567 Chain of Custody # _____

- 1. Custody Seals on shipping container intact? Yes No
- 2. Custody Seals dated and signed? Yes No
- 3. Chain-of-Custody record present? Yes No
- 4. Cooler temperature 2°C
- 5. Vermiculite/packing materials is Wet Dry
- 6. Number of samples in shipping container: 2 (10 containers)
- 7. Sample holding times exceeded? Yes No

8. Samples have: <input checked="" type="checkbox"/> tape <input type="checkbox"/> hazard labels <input checked="" type="checkbox"/> custody seals <input checked="" type="checkbox"/> appropriate sample labels
--

9. Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> leaking <input type="checkbox"/> broken <input type="checkbox"/> have air bubbles
--

10. Where any anomalies identified in sample receipt? Yes No

11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: [Signature] Date: 2-12-98
Telephoned To: _____ On _____ By _____