LK7703-LAS

Lockheed Environmental Systems & Technologies Co.
Lockheed Analytical Services
975 Kelly Johnson Drive Las Vegas, Nevada 89119-3705
Telephone 702-361-0220 800-582-7605 Facsimile 702-361-8146

00480031

LOCKHEED MARTIN

September 20, 1996

Ms. Joan Kessner
Bechtel Hanford, Inc.
3350 George Washington Way
MISN B1-35
Richland, WA 99352

RE:	Log-in No.:	L7545
	Quotation No.:	Q400000-B
	SAF:	B96-152
	Document File No.:	0816596
	BHI Document File No.:	397
	SDG No.:	LK7703

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 16 August. The temperature of the cooler upon receipt was 4°C. Sample containers received agree with the chain-of-custody documentation. All sample containers were received intact. Samples were received in time to meet the analytical holding time requirements.

The case narratives included in the following attachments provide a detailed description of all events that occurred during sample preparation, analysis, and data review specific to the samples and analytical methods requested.

A list of data qualifiers, chain-of-custody forms, sample receiving checklist, and log-in report are also enclosed representing the samples received within this group.

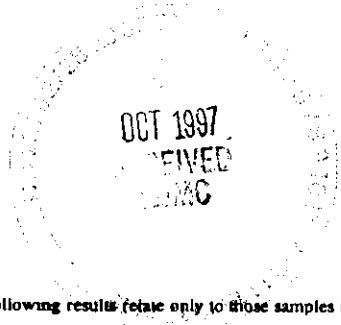
If you have any questions concerning the analysis or the data please call Mary K. Wolf (702) 361-3955, ext. 311. If you are unable to contact the Client Services Representative, please call Mary B. Ford, Client Services Manager, at extension 326.

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

Sincerely,

Mary K Wolf

Mary K. Wolf
Client Services Representative



cc: Client Services
Document Control

CASE NARRATIVE
INORGANIC TOTAL URANIUM ANALYSES

The routine calibration and quality control analyses performed for this batch include as applicable: instrument calibration, initial and continuing calibration verification, quench monitoring standards, instrument background analysis, method blanks, yield tracer, laboratory control samples, matrix spike samples, and matrix spike duplicate samples.

Holding Time Requirements

All holding time requirements were met.

Total Uranium

The Total Uranium analysis was performed using LAL-91-SOP-0168. All samples were prepared in Workgroup U TOTAL KPA LAL-0168 40419 with a Method Blank (MBB1), Laboratory Control Sample (LCS1), Duplicate (DUP1) and Matrix Spike (MS1). No problems were encountered during preparation or analysis. All QC criteria were met.

Shellee McGrath
Prepared By

September 20, 1996
Date

CASE NARRATIVE
ORGANIC ANALYSES

Analytical Method 8010 Volatiles

Analytical Batch 081996-801020-O-3

Note: Sample B0HZ08 (L7703-8) was the native sample used for the L7703-8MS and L7703-8MSD analyzed in this analytical batch.

The samples were analyzed within holding time on August 24, 1996. All initial calibration criteria were met except for the r^2 of compounds Bromomethane and 2-Chloroethylvinyl ether (2-CEVE). All beginning continuing calibration criteria were met except for Bromomethane, trans-1,2-Dichloroethene, and Bromoform. All ending continuing calibration criteria were met except for Dichlorodifluoromethane, Methylene Chloride, Chloromethane, 2-CEVE, Vinyl Chloride, Bromoform, and Bromomethane. These compounds were not detected in the associated client samples, therefore, data quality was believed to be unaffected. Target compounds were not detected in the method blank (40632MB). Surrogate recoveries were within QC limits except for BFB in sample L7703-8MSD. Compound recoveries were within QC limits in the L7703-8MS, L7703-8MSD, and laboratory control sample (40632LCS). The relative percent differences (RPDs) between the MS and MSD recoveries were within QC limits.

Lydia M. Coleman
Prepared By

September 18, 1996
Date

LOCKHEED ANALYTICAL SERVICES
LOGIN CHAIN OF CUSTODY REPORT (ln01)
Aug 16 1996, 04:13 pm

Login Number: L7703
Account: 596 Bechtel Hanford, Inc. * Richland, WA
Project: BECHTEL-HANFORD Bechtel Hanford Project

Laboratory Sample Number	Client Sample Number	Collect Date	Receive Date	PR	Due Date
L7703-1	B0HZ06	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4					
Location: 157					
Water 1	S SCREENING	Hold: 10-FEB-97			
L7703-2	B0HZ06	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4					
Location: 157					
Water 1	S U TOTAL KPA (INORG)	Hold: 10-FEB-97			
L7703-3	B0HZ06	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4	+ TRICHLOROETHENE				
Location: RFG18-49A3					
Water 1	S 8010 VOLATILES	Hold: 28-AUG-96			
L7703-4	B0HZ06	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4	+ TRICHLOROETHENE				
Location: RFG18-49A3					
L7703-5	B0HZ06	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4	+ TRICHLOROETHENE				
Location: RFG18-49A3					
L7703-6	B0HZ06	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4	+ TRICHLOROETHENE				
Location: RFG18-49A3					
L7703-7	B0HZ06	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4	+ TRICHLOROETHENE				
Location: RFG18-49A3					
L7703-8	B0HZ08	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4	+ TRICHLOROETHENE				
Location: RFG18-49A3					
Water 1	S 8010 VOLATILES	Hold: 28-AUG-96			
L7703-9	B0HZ08	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4	+ TRICHLOROETHENE				
Location: RFG18-49A3					
L7703-10	B0HZ08	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4	+ TRICHLOROETHENE				
Location: RFG18-49A3					

0009
C816.5

LOCKHEED ANALYTICAL SERVICES
LOGIN CHAIN OF CUSTODY REPORT (ln01)
Aug 16 1996, 04:13 pm

Login Number: L7703
Account: 596 Bechtel Hanford, Inc. * Richland, WA
Project: BECHTEL-HANFORD Bechtel Hanford Project

Laboratory Sample Number	Client Sample Number	Collect Date	Receive Date	PR	Due Date
L7703-11	B0HZ08	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4 + TRICHLOROETHENE					
Location: RFG18-49A3					
L7703-12	B0HZ08	14-AUG-96	16-AUG-96		20-SEP-96
TEMP 4 + TRICHLOROETHENE					
Location: RFG18-49A3					
L7703-13	REPORT TYPE	16-AUG-96	16-AUG-96		20-SEP-96
Location:					
Water 1 S EDD - DISK DEL.					
Water 1 S INORG TYPE 2 RPT					
Water 1 S RAD RPT TYPE 2					

Signature: [signature]

Date: 8-16-96 0010

CKIC 5416

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST L7703	B96-152-12	Page 1 of 1

Collector	Company Contact	Telephone No.	Data Turnaround
Al Rizzo / B. Whitten	Bob Egge	373-2774	24 Hours

Project Designation	Sampling Location	SAF No.
300-FF-5 Operation and Maintentance	300 Area	B96-152

Ice Chest No.	Field Logbook No.	Method of Shipment
GWS-003	FL-5015	

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
Lockheed	W96-0-0314-6	2904662905

POSSIBLE SAMPLE HAZARDS/REMARKS
Unknown

Special Handling and/or Storage

Preservation	None	HNO3 to pH <2	HCl or H2SO4 to pH <2	
Type of Container	G/P	G/P	Gs*	
No. of Container(s)	1	1	5	
Volume	20ml	~~40ml~~ See LP Matrix (D)	40ml	
SAMPLE ANALYSIS	Activity Scan	Total Uranium	See item (1) in Special Instructions	

Sample No.	Matrix *	Sample Date	Sample Time				
B0HZ06	Water	8/14/96	1010	X	X	X	
B0HZ08	Water	8/14/96	0730			X	

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
[signature] GAR B Whitten 8-15-96	0900		
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
Halogenated VOA analysis by EPA 8010 to inlcude only Trichloroethene per Field Sampling LOI #32936.

(1) Halogenated VOA - 8010 ~~(trans-1,2-Dichloroethylene~~, Trichloroethene), ~~Halogenated VOA - 8010 (Add-on) (cis-1,2-Dichloroethylene)~~ RJN 8/8/96

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

LABORATORY SECTION	Received By	Title	Date/Time
	[signature]	Sample Custodian	8-16-96 / 1000
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

MESSAGE CONFIRMATION

08/16/96 15:46
SESSION NO.= 197 ID=LOCKHEED LAB SAMPLE RECEIVING

DATE	TIME	S.R-TIME	DISTANT STATION ID	MODE	PAGES	RESULT	
08/16	15:43	03'21"	5093754238	G3 -S	04	OK	0000

0012

Environmental Restoration Contractor **ERC Team**

Interoffice Memorandum

Job No. 22192
Written Response Required: NO
CCN: N/A
OU: N/A
TSD: N/A
ERA: N/A
Subject Code: 5820

TO: W. S. Thompson N1-28
G. C. Henckel H4-80

DATE: February 29, 1996

COPIES: K. A. Smith X0-23
T. L. Lafreniere X0-23
D. E. Gergely X0-23

FROM: S. K. De Mers
Radiological Controls
T7-05/373-1913

SUBJECT: **Total Activities for Off-Site Shipments of Groundwater Samples to NRC Licensed Laboratories**

There is no need to perform total activities prior to offsite shipment to NRC licensed labs of samples taken from ground water wells located on the Hanford Site.

All wells reviewed to date for radiological content have shown no well with a total activity in excess of 2,000,000 pCi/l (2,000 pCi/gm), the Department Of Transportation limit for radioactive material. The highest activity in any known well is 1.56×10^6 pCi/l H^3.

While this does not constitute any release from radiological controls for worker protection, it does allow samples to be shipped based on historical laboratory data and save the expense of doing radiochemical analysis.

A copy of the most recent analytical data should be provided to the NRC licensed laboratory with the samples being shipped or if no data is available for new wells, the most recent data from adjacent wells.

FedEx # 290 4662 905

WHC-SOW-93-0003
Revision 4

SAMPLE CHECK-IN LIST

Date/Time Received: 8-16-96/1000 SDG#: N/A

Work Order Number: N/A SAF #: B96-152

Shipping Container ID: GWS003 Chain of Custody # B96-152-12

1. Custody Seals on shipping container intact? Yes [X] No [ ]
2. Custody Seals dated and signed? Yes [X] No [ ]
3. Sample temperature 4°C
4. Vermiculite/packing materials is Wet [ ] Dry [X]
5. Each sample is in a plastic bag? Yes [X] No [ ]
6. Sample holding times exceeded? Yes [ ] No [X]

7. Samples have:
   - ____ tape
   - __X__ custody seals
   - ____ hazard labels
   - ____ appropriate sample labels

8. Samples are:
   - __X__ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles

9. Is the information on the COC and Sample bottles in agreement?

Yes[X] No [ ]

Notes: _____

Sample Custodian/Laboratory: Paula Davis/L4T5 Date: 8-16-96

~~Telephoned~~ Faxed To: Kathleen Hill On 8-16-96 By Paula Davis

0014

LOCKHEED MARTIN

Sample Login
Login Review Checklist

Lot Number 47703

The login review should be conducted by that person logging in the samples as well as a peer. Please use this checklist to ensure that such reviews occur in a uniform basis. Please sign and date below to verify that a login review has occurred. This checklist should be affixed to each login package prior to distribution.

For effective login review, at a minimum, five reports form the login process are required. These are the COC (or equivalent), the login COC report, the sample summary report, the sample receiving checklist, and the login quotation. Before beginning review, ensure that these five components are available. Jobs with single component samples, the sample summary report may be omitted.

SAMPLE SUMMARY REPORT	YES	NO	N/A	Comment
1. Are all sample ID's correct?	X			
2. Are all samples present?	X			
3. Are all matrices indicated correctly?	X			
4. Are all analyses on the COC logged in for the appropriate samples?	X			
5. Are all analyses logged in for the correct container?	X			
6. Are samples logged in according to LAS batching procedures?	X			

LOGIN CHAIN OF CUSTODY	YES	NO	N/A	Comment
1. Are the collect, receive, and due dates correct for every sample?	X			
2. Have all appropriate comments been indicated in the comment section?	X			

SAMPLE RECEIVING CHECKLIST	YES	NO	N/A	Comment
1. Are all discrepancies between the COC and the login noted (if applicable)?			X	

Paula Davis — primary review signature — 8-16-96 — date

Paula Davis — secondary review signature — 8-16-96 — date

Lockheed Analytical Services
Sample Receiving Checklist

Client Name: Bechtel- Hanford Job No. 17703 Cooler ID: N/A

COOLER CONDITION UPON RECEIPT			
Temperature of cooler upon receipt:	4°C		
temperature of temp. blank upon receipt:			
	Yes	**No**	*** Comments/Discrepancies**
custody seals intact	X		
chain of custody present	X		
blue ice (or equiv.) present/frozen	X		
rad survey completed	X		

SAMPLE CONDITION UPON RECEIPT			
	Yes	**No**	*** Comments/Discrepancies**
all bottles labeled	X		
samples intact	X		
proper container used for sample type	X		
sample volume sufficient for analysis	X		
proper pres. indicated on the COC	X		
VOA's contain headspace		N/A	
are samples bi-phasic (if so, indicate sample ID'S):		N/A	

MISCELLANEOUS ITEMS			
	Yes	**No**	*** Comments/Discrepancies**
samples with short holding times		X	
samples to subcontract		N/A	

ADDITIONAL COMMENTS/DISCREPANCIES

Completed by / date: Paula Delma 5-16-96

Sent to the client (date/initials): ** Client's signature upon receipt:

*Notes: * = contact the appropriate CSR of any discrepancies immediately upon receipt*

*** = please review this information and return via facsimile to the appropriate CSR (702) 361-8146*

0001

version 2.0 (11/11/94)

Lockheed Analytical Laboratory
SAMPLE SUMMARY REPORT (su02)
Bechtel Hanford, Inc. * Richland, WA

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
B0HZ06	L7703-1		Water	SCREENING
	L7703-2		Water	U TOTAL KPA (INC
	L7703-3		Water	8010 VOLATILES
B0HZ08	L7703-8		Water	8010 VOLATILES
REPORT TYPE	L7703-13		Water	EDD - DISK DEL.
	L7703-13		Water	INORG TYPE 2 RPT
	L7703-13		Water	RAD RPT TYPE 2

LOCKHEED ANALYTICAL SERVICES

RADIOCHEMISTRY DATA REPORT
Account Name: Bechtel Hanford, Inc. * Richland, WA
Project Name: BECHTEL-HANFORD
Project Desc: Bechtel Hanford Project

Client Sample ID: B0HZ06
Date Collected: 14-AUG-96
Matrix: Water

Login Number: L7703
Date Received: 16-AUG-96

Constituent	Method	Batch	Activity	Error	MDA	Qualifier	Units	Analyzed	Lab ID
Uranium	KPA	40419	262.	15.	0.61		ug/L	19-SEP-96	L7703-2

0019

Lockheed Analytical Laboratory
Metals Analytical Data
Technical Review Checklist
(Analyst)

Analyst Name (Print): RANDALL BURNS	Instrument: CHEMCHEK KAA II	Method: KPA

Batch Number	Client Name	Code Comments	Bench Sheet included Y/N	ACS updated Y/N
816-BH	BECHTEL HANFORD	COMPLETE	Y	Y

CODE ANOMALY
10 Prep Blank data was not within criteria
11 Laboratory Control Sample was not within criteria
12 Duplicate Precision was not met
13 Matrix Spike recovery was not within criteria
00 Other

Description	Yes	No	Comments
Completeness Review 1. Were the standard operating procedures (SOP) followed?	✓		
2. Are all raw data available and labeled properly (e.g., methods used, units, sample IDs, dilution factors, reruns)?	✓		
3. Are all abnormalities in the raw data noted and/or explained?	✓		
4. Were all the client samples analyzed for all constituents and QC as specified on the LAL Bench Sheets?	✓		
Data Quality Assessment 5. Was the sample properly preserved and analyzed within the method-specified holding time?	✓		
6. Were the instrument calibration criteria met?	✓		
7. Are the initial and continuing calibration verification samples data bracketing the samples of interest within criteria?	✓		
8. Are the bracketing initial and continuing calibration blank data within criteria?	✓		
9. *For ICP Only:* Are the interference check standard recovery data within criteria?			

Notes and comments:

I certify, to the best of my knowledge, that the data are acceptable and in compliance with the laboratory policies and client requests, except as noted above.

Analyst Signature/Date 9/19/96

9/19/96
Secondary Reviewer Initials/Date

0026

Lockheed Analytical Laboratory

Uranium Total by KPA (0168)

U TOTAL KPA (INORG)_40419

V95234

LALID	Count Date	Nuclide	Final Activity	Total Error	MDA	Count Error	Aliqout (mL)	Dilution Factor
					0.615			
40419DUP1	09/19/96	Uranium	260.109	15.294	0.615	8.047	10	1
40419LCS1	09/19/96	Uranium	95.882	5.639	0.615	2.968	10	1
40419MBB1	09/19/96	Uranium	0.089	0.005	0.615	0.002	10	1
40419MS1	09/19/96	Uranium	361.159	21.249	0.615	11.199	10	1
L7703-2	09/19/96	Uranium	261.997	15.405	0.615	8.107	10	1

LCS Recovery = 95.9/100.0 = 95.9%. MS1 Recovery = 99.162/100.000 = 99.2%. SMP1,DUP1 RER = 0.06, RPD = 0.7 %.

µg/L

9/19/96

RADIATION RESULTS CHECK REPORT

Workgroup Number: U TOTAL KPA (INORG)_40419

Sample	Parameter	Value	Error	MDA	Units
40419DUP1	Uranium	260.109	15.2937	0.614925	ug/L
40419LCS1	Uranium	95.8818	5.63853	0.614925	ug/L
40419MBB1	Uranium	0.0888994	0.00503653	0.614925	ug/L
40419MS1	Uranium	361.159	21.2487	0.614925	ug/L
L7703-2	Uranium	261.997	15.4055	0.614925	ug/L

9/19/96

Lockheed Analytical Laboratory

Sample Preparation Worksheet for Total Uranium (KPA) Analysis

0031

Date Prep Started : 19 SEPT 96 Matrix : Water

Workgroup Number : U TOTAL KPA (INORG) 40419 Prep Due Date : 20-Sep-96

CLIENT ID	LAL ID		QC	ALIQUOT ((mL) g, sample)	DILUTION	COMMENTS	Client	Collection Date
L7703-2	40419DUP1	1	DUP1	10	1	RPD = 0.7 RER = 0.062	DUP	09/17/96
Lab Ctrl Sample	40419LCS1	2	LCS1		1	%REC = 96	LCS	09/17/96
Method Blank	40419MBB1	3	MBB1		1		MB	09/17/96
L7703-2	40419MS1	4	MS1		1	%REC = 99	MS	09/17/96
B0HZ06	L7703-2	5	SMP1,MSS1		1		Bechtel Hanford, Inc. *	08/14/96
		6						
		7						
		8						
		9						
		10						
		11						
		12						
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						
		21						
		22						
		23						
		24						

COMMENTS:

Amount of CCV	100 µg/L	Amount of LCS	100 µg/L	Amount of MS	100 µg/L
CCV Activity		LCS Activity		MS Activity	
CCV ID#		LCS ID#		MS ID#	

Balance Number : ( ) Pipette Number : ( ) Tracer, LCS, & MS added by:

( ) ( ) Witnessed by

Sample Prep Analyst : R BURNS Checked by :

Sample ID ICVH
Description 100 ug/L
Ref. Ratio 1.002
Laser Pulses 1000
Lifetime 268 + .361 us
R2 .9999
Integrated 380861
Range: HIGH
Date/Time 09/19/96/14:06:48
Cal Y=246.469X0
Intensity 20399 (t= 52 us)
Conc 105.58294 + 3.2698 ug/L
Dilution Factor 1 mL/mL
FINAL RESULT 105.583 + 3.27 ug/L

106 %

Sample ID ICVL
Description 5 ug/L
Ref. Ratio 1.087
Laser Pulses 1000
Lifetime 269 + .253 us
R2 .9999
Integrated 1638025
Range: LOW
Date/Time 09/19/96/14:08:28
Cal Y=20595.73X0
Intensity 87809 (t= 52 us)
Conc 5.39998 + 9.28E-02 ug/L
Dilution Factor 1 mL/mL
FINAL RESULT 5.4 + 9.28E-02 ug/L

108 %

Sample ID ICB
Description 0 ug/L
Ref. Ratio 1.091
Laser Pulses 1000
Lifetime 279 + 4.645 us
R2 .9882
Integrated 12501
Range: LOW
Date/Time 09/19/96/14:10:04
Cal Y=20595.73X0
Intensity 677 (t= 52 us)
Conc 3.97E-02 + 1.15E-03 ug/L
Dilution Factor 1 mL/mL
FINAL RESULT 3.97E-02 + 1.15E-03 ug/L

< RAL

Sample ID 40419MBB1
Description 0 ug/L
Ref. Ratio 1.104
Laser Pulses 1000
Lifetime 284 + 4.235 us
R2 .9906
Integrated 28589
Range: LOW
Date/Time 09/19/96/14:11:35
Cal Y=20595.73X0
Intensity 1703 (t= 52 us)
Conc 8.89E-02 + 2.37E-03 ug/L
Dilution Factor 1 mL/mL
FINAL RESULT 8.89E-02 + 2.37E-03 ug/L

Sample ID 40419LCS1
Description 100 ug/L
Ref. Ratio 1.024
Laser Pulses 1000
Lifetime 304 + .481 us
R2 .9999
Integrated 388252
Range: HIGH
Date/Time 09/19/96/14:13:10
Cal Y=246.469X0
Intensity 19156 (t= 52 us)
Conc 95.88184 + 2.9681 ug/L
Dilution Factor 1 mL/mL
FINAL RESULT 95.882 + 2.968 ug/L

Sample ID L7703-2
Description BOHZ06
Ref. Ratio 1.042
Laser Pulses 1000
Lifetime 290 + .414 us
R2 .9999
Integrated 1016598
Range: HIGH
Date/Time 09/19/96/14:16:13
Cal Y=246.469X0
Intensity 51589 (t= 52 us)
Conc 261.99728 + 8.1069 ug/L
Dilution Factor 1 mL/mL
FINAL RESULT 261.997 + 8.107 ug/L

Sample ID 40419DUP1
Description L7703-2
Ref. Ratio 1.022
Laser Pulses 1000
Lifetime 302 + .353 us
R2 .9999
Integrated 1047991
Range: HIGH
Date/Time 09/19/96/14:18:00
Cal Y=246.469X0
Intensity 51687 (t= 52 us)
Conc 260.10916 + 8.047 ug/L
Dilution Factor 1 mL/mL
FINAL RESULT 260.109 + 8.047 ug/L

9/19/96

Sample ID 40419MS1 Date/Time 09/19/96/14:19:34
Description L7703-2 Cal Y=246.469X0
Ref. Ratio 1.021 Intensity 71703 (t= 52 us)
Laser Pulses 1000 Conc 361.15887 + 11.1989 ug/L
Lifetime 298 + .575 us Dilution Factor 1 mL/mL
R2 .9998
Integrated 1435962 FINAL RESULT 361.159 + 11.199 ug/L
Range: HIGH

Sample ID CCVH Date/Time 09/19/96/14:21:13
Description 100 ug/L Cal Y=246.469X0
Ref. Ratio 1.024 Intensity 20348 (t= 52 us)
Laser Pulses 1000 Conc 105.37722 + 3.259 ug/L
Lifetime 268 + .338 us Dilution Factor 1 mL/mL
R2 .9999
Integrated 380619 FINAL RESULT 105.377 + 3.259 ug/L
Range: HIGH

105 %

Sample ID CCVL Date/Time 09/19/96/14:22:51
Description 5 ug/L Cal Y=20595.73X0
Ref. Ratio 1.108 Intensity 86817 (t= 52 us)
Laser Pulses 1000 Conc 5.36453 + 9.16E-02 ug/L
Lifetime 270 + .287 us Dilution Factor 1 mL/mL
R2 1
Integrated 1630198 FINAL RESULT 5.365 + 9.16E-02 ug/L
Range: LOW

107 %

Sample ID CCB Date/Time 09/19/96/14:24:22
Description 0 ug/L Cal Y=20595.73X0
Ref. Ratio 1.102 Intensity 735 (t= 52 us)
Laser Pulses 1000 Conc 4.04E-02 + 1.30E-03 ug/L
Lifetime 285 + 5.674 us Dilution Factor 1 mL/mL
R2 .9832
Integrated 13021 FINAL RESULT 4.04E-02 + 1.30E-03 ug/L
Range: LOW

< RDL

9/19/96

Calibration

Range: LOW
Background Measured Intensity 1401

Concentration	Intercept	Uncert.	% Disc.	Intensity	Lifetime	R2
+ .1 ug/L	1979.91	44.6	-3.87E+00	1645	266.8538	.9968
+ .5 ug/L	1.09E+04	104.42	5.88	8576	263.4206	.9992
+ 1 ug/L	2.23E+04	149.27	8.18	17891	272.8381	.9999
+ 5 ug/L	1.09E+05	329.51	5.44	86842	283.8276	.9999
+ 10 ug/L	2.03E+05	450.51	-1.46E+00	158830	277.6588	1

Zero Point Included. Y=20595.73X 0

Calibration

Range: HIGH
Background Measured Intensity 26

Concentration	Intercept	Uncert.	% Disc.	Intensity	Lifetime	R2
+ 10 ug/L	2576.06	50.75	4.52	1964	264.5794	.9991
+ 50 ug/L	1.28E+04	112.98	3.58	9971	262.9615	.9998
+ 100 ug/L	2.57E+04	160.39	4.37	20688	294.2976	.9999
+ 500 ug/L	1.23E+05	350.67	-2.13E-01	98378	281.5208	1

Zero Point Included. Y=246.469X 0

9/1/96

Calibration

Range: LOW
Background Measured Intensity 1505

Concentration	Intercept	Uncert.	% Disc.	Intensity	Lifetime	R2
+ 6.67E-02 pCi/L	2031.16	45.07	-9.13E+00	1667	272.315	.9967
+ .333 pCi/L	1.15E+04	107.24	3.06	9042	264.4767	.9996
+ .667 pCi/L	2.39E+04	154.68	7.05	18596	288.3134	.9999
+ 3.335 pCi/L	1.18E+05	343.23	5.41	93453	276.5616	1
+ 6.67 pCi/L	2.20E+05	469.38	-1.43E+00	172944	272.2987	.9999

Zero Point Included. Y=33510.27X 0

Calibration

Range: HIGH
Background Measured Intensity 13

Concentration	Intercept	Uncert.	% Disc.	Intensity	Lifetime	R2
+ 6.667 pCi/L	2548.22	50.48	1.53	2052	269.2414	.9994
+ 33.35 pCi/L	1.28E+04	113.27	2.2	10253	263.1504	.9997
+ 66.7 pCi/L	2.63E+04	162.17	4.73	21178	291.1487	.9998
+ 333.5 pCi/L	1.25E+05	353.95	-2.12E-01	100305	278.8074	.9998

Zero Point Included. Y=376.459X 0

Continued on Page

Read and Understood By

Signed 9/1/96 Date Signed Date

LOCKHEED ANALYTICAL SERVICES

PURGEABLE HALOCARBONS BY GC/ELCD
8010 VOLATILES

Client Sample ID:	B0HZ06	LAL Sample ID:	L7703-3
Date Collected:	14-AUG-96	Date Received:	16-AUG-96
Date Analyzed:	24-AUG-96	Analytical Batch ID:	081996-801020-O-3
Date Extracted:	N/A	Analytical Dilution:	1
Matrix:	Water	Preparation Dilution:	1.0

SURROGATE	RECOVERY	QC Limits
BFB	78%	60-120
BCM	87%	65-125

CONSTITUENT	CAS NO.	RESULT ug/L	PRACTICAL QUANTITATION LIMIT ug/L	DATA QUALIFIER(s)
Dichlorodifluoromethane	75-71-8	<1.0	1.0	
Chloromethane	74-87-3	<1.0	1.0	
Vinyl Chloride	75-01-4	<0.50	0.50	
Bromomethane	74-83-9	<2.0	2.0	
Chloroethane	75-00-3	<1.0	1.0	
Trichlorofluoromethane	75-69-4	<1.0	1.0	
1,1-Dichloroethene	75-35-4	<0.50	0.50	
Methylene Chloride	75-09-2	1.2	1.0	
trans-1,2-Dichloroethene	156-60-5	<1.0	1.0	
1,1-Dichloroethane	75-34-3	<1.0	1.0	
Chloroform	67-66-3	<1.0	1.0	
1,1,1-Trichloroethane	71-55-6	<1.0	1.0	
Carbon Tetrachloride	56-23-5	<0.50	0.50	
1,2-Dichloroethane	107-06-2	<0.50	0.50	
Trichloroethene (TCE)	79-01-6	1.9	0.50	
1,2-Dichloropropane	78-87-5	<0.50	0.50	
Bromodichloromethane	75-27-4	<1.0	1.0	
2-Chloroethylvinyl ether	110-75-8	<2.0	2.0	
cis-1,3-Dichloropropene	10061-01-5	<0.50	0.50	
trans-1,3-Dichloropropene	10061-02-6	<0.50	0.50	
1,1,2-Trichloroethane	79-00-5	<0.50	0.50	
Tetrachloroethene (PCE)	127-18-4	<0.50	0.50	
Dibromochloromethane	124-48-1	<1.0	1.0	
Chlorobenzene	108-90-7	<0.50	0.50	
Bromoform	75-25-2	<1.0	1.0	
1,1,2,2-Tetrachloroethane	79-34-5	<1.0	1.0	
1,3-Dichlorobenzene	541-73-1	<1.0	1.0	
1,4-Dichlorobenzene	106-46-7	<1.0	1.0	
1,2-Dichlorobenzene	95-50-1	<1.0	1.0	
cis-1,2-Dichloroethene	156-59-2	<1.0	1.0	

LOCKHEED ANALYTICAL SERVICES

PURGEABLE HALOCARBONS BY GC/ELCD
8010 VOLATILES

Client Sample ID:	B0HZ08	LAL Sample ID:	L7703-8
Date Collected:	14-AUG-96	Date Received:	16-AUG-96
Date Analyzed:	24-AUG-96	Analytical Batch ID:	081996-801020-O-3
Date Extracted:	N/A	Analytical Dilution:	1
Matrix:	Water	Preparation Dilution:	1.0

SURROGATE	RECOVERY	QC Limits
BFB	77%	60-120
BCM	88%	65-125

CONSTITUENT	CAS NO.	RESULT ug/L	PRACTICAL QUANTITATION LIMIT ug/L	DATA QUALIFIER(s)
Dichlorodifluoromethane	75-71-8	<1.0	1.0	
Chloromethane	74-87-3	<1.0	1.0	
Vinyl Chloride	75-01-4	<0.50	0.50	
Bromomethane	74-83-9	<2.0	2.0	
Chloroethane	75-00-3	<1.0	1.0	
Trichlorofluoromethane	75-69-4	<1.0	1.0	
1,1-Dichloroethene	75-35-4	<0.50	0.50	
Methylene Chloride	75-09-2	<1.0	1.0	
trans-1,2-Dichloroethene	156-60-5	<1.0	1.0	
1,1-Dichloroethane	75-34-3	<1.0	1.0	
Chloroform	67-66-3	<1.0	1.0	
1,1,1-Trichloroethane	71-55-6	<1.0	1.0	
Carbon Tetrachloride	56-23-5	<0.50	0.50	
1,2-Dichloroethane	107-06-2	<0.50	0.50	
Trichloroethene (TCE)	79-01-6	<0.50	0.50	
1,2-Dichloropropane	78-87-5	<0.50	0.50	
Bromodichloromethane	75-27-4	<1.0	1.0	
2-Chloroethylvinyl ether	110-75-8	<2.0	2.0	
cis-1,3-Dichloropropene	10061-01-5	<0.50	0.50	
trans-1,3-Dichloropropene	10061-02-6	<0.50	0.50	
1,1,2-Trichloroethane	79-00-5	<0.50	0.50	
Tetrachloroethene (PCE)	127-18-4	<0.50	0.50	
Dibromochloromethane	124-48-1	<1.0	1.0	
Chlorobenzene	108-90-7	<0.50	0.50	
Bromoform	75-25-2	<1.0	1.0	
1,1,2,2-Tetrachloroethane	79-34-5	<1.0	1.0	
1,3-Dichlorobenzene	541-73-1	<1.0	1.0	
1,4-Dichlorobenzene	106-46-7	<1.0	1.0	
1,2-Dichlorobenzene	95-50-1	<1.0	1.0	
cis-1,2-Dichloroethene	156-59-2	<1.0	1.0	

VALIDATION SUMMARY

Kearney/Centaur Division
A.T. Kearney, Inc.
2952 George Washington Way
Richland, Washington 99352
509 375 5667
Facsimile 509 375 5151

Management
Consultants

KEARNEY

5 November 1996

Ms. Joan Kessner
Bechtel Hanford Incorporated
3350 George Washington Way MSIN BI-35
Richland, Washington 99352

Dear Ms. Kessner:

Enclosed are the volatile organic and radiochemistry data validation reports for sample data groups W01107-QES and LK7703-LAS.

Sincerely,

R. Bruce Christian, CIH
Associate

cc: J. Duncan - CH2
J. Goode - ATK

Date: 5 November 1996
To: Bechtel Hanford, Inc. (technical representative)
From: A.T. Kearney, Inc.
Project: 300-FF-5 Post Closure Monitoring
Subject: Radiochemistry - Data Package No. LK7703-LAS (SDG No. LK7703)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. LK7703-LAS which was prepared by Lockheed Analytical Services (LAS). A list of samples validated along with the analyses reported and the requested analyte is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analysis
B0HZ06	08/14/96	Water	C	Total Uranium

Data validation was conducted in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1992b). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

  Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analyses is six months.

  All holding times were acceptable.

- **Instrument Calibration and Performance**

  Instrument calibration is performed to establish that the counters used to determine radionuclide activities are capable of producing acceptable and reliable analytical data. Each counting system must be factory calibrated at installation and after any maintenance or repair. Calibration consists of an instrument

efficiency determination for each applicable radionuclide. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible.

Initial and continuing calibrations are not reviewed under Level C validation.

- **Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the MDA, the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are elevated to the MDA and qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

- **Accuracy**

Accuracy is evaluated by analyzing distilled water or field samples spiked with known amounts of radionuclides. The sample activity as determined by analysis is compared to the known activity to assess accuracy. The acceptable laboratory control sample recovery range is 70% to 130%, while that for a matrix spike is 60% to 140%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, rejected, or not qualified, depending on the activity of the individual sample.

All accuracy results were acceptable.

- **Precision**

Analytical precision is expressed by the RPD between the recoveries of duplicate matrix spike analyses performed on a sample. Precision may also be assessed using unspiked duplicate sample analyses. If both sample and replicate activities are greater than five times the CRDL and the RPD is less than 35 percent for soil samples and 20 percent for water samples, the results are acceptable. If either activities are less then five times the CRDL, a control limit of less than or equal

to two times the CRDL is used for soil samples and less than or equal to the CRDL for water samples. If either the original or replicate value is below the CRDL, the applicable control limits are less than or equal to the CRDL for water samples and less than or equal to two times the CRDL for soil samples. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All precision results were acceptable.

Field Split Samples

One pair of field split samples were submitted to QES/LAS for analysis as shown below:

Sample No.	Split Sample No.	Well No.
B0HYZ7 (QES)	B0HZ06 (LAS)	399-2-2

The split sample results were compared using the validation guidelines for determining the RPD between a sample and its duplicate. All split sample results were within QC limits.

- **Detection Levels**

  Reported laboratory detection levels are reviewed to ensure that they are at or below the CRDL. The MDA for sample B0HZ06 was above the CRDL. Under WHC guidelines, no qualification is required.

- **Completeness**

  Data Package No. LK7703-LAS (SDG No. LK7703) was submitted for validation and verified for completeness. The completion rate was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

EPA, 1987, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, Environmental Protection Agency, Washington, D.C.

EPA, 1988a, *EPA Contract Laboratory Program Statement of Work for Organics Analyses, Multi-Media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1988b, *Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1988c, *EPA Contract Laboratory Program Statement of Work for Inorganics Analyses, Multi-Media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1988d, *Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1990, *EPA Contract Laboratory Program Statement of Work for Inorganic Analyses, Multi-media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1991, *EPA Contract Laboratory Program Statement of Work for Organics Analyses, Multi-Media, Multi-Concentration*, Environmental Protection Agency, Washington, D.C.

WHC, 1992a, *Data Validation Procedures for Chemical Analyses*, WHC-SD-EN-SPP-002, Rev. 2, Westinghouse Hanford Company, October 1993.

WHC, 1992b, *Data Validation Procedure for Radiological Analyses*, WHC-SD-EN-SPP-001, Rev. 2, Westinghouse Hanford Company, 1993.

EPA, 1994, *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, U.S. Environmental Protection Agency, Washington, D.C.

WHC, 1994, *Validation Statement of Work*, Rev.1, Westinghouse Hanford Company, 1994.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified QC deficiency.

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: LK7703	REVIEWER: RBC	DATE: 11/05/96	PAGE 1 OF 1
COMMENTS: No qualifiers assigned.			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

RADIOCHEMISTRY ANALYSIS, WATER MATRIX, (ug/L)

Project: BECHTEL-HANFORD																					
Laboratory: Lockheed																					
Case	SDG: LK7703																				
Sample Number		B0HZ06																			
Location		399-2-2																			
Remarks		Split																			
Sample Date		08/14/96																			
Radiochemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Uranium	0.1	262																			

LOCKHEED ANALYTICAL SERVICES

RADIOCHEMISTRY DATA REPORT
Account Name: Bechtel Hanford, Inc. * Richland, WA
Project Name: BECHTEL-HANFORD
Project Desc: Bechtel Hanford Project

Client Sample ID: B0HZ06
Date Collected: 14-AUG-96
Matrix: Water

Login Number: L7703
Date Received: 16-AUG-96

Constituent	Method	Batch	Activity	Error	MDA	Qualifier	Units	Analyzed	Lab ID
Uranium	KPA	40419	262.	15.	0.61		ug/L	19-SEP-96	L7703-2

10/29/96

0019

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Lockheed Environmental Systems & Technologies Co
Lockheed Analytical Services
975 Kelly Johnson Drive Las Vegas, Nevada 89119-3705
Telephone 702-361-0220 800-582-7605 Facsimile 702-361-8146

LOCKHEED MARTIN

September 20, 1996

Ms. Joan Kessner
Bechtel Hanford, Inc.
3350 George Washington Way
MISN B1-35
Richland, WA 99352

RE:	Log-in No.:	L7545
	Quotation No.:	Q400000-B
	SAF:	B96-152
	Document File No.:	0816596
	BHI Document File No.:	397
	SDG No.:	LK7703

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 16 August. The temperature of the cooler upon receipt was 4°C. Sample containers received agree with the chain-of-custody documentation. All sample containers were received intact. Samples were received in time to meet the analytical holding time requirements.

The case narratives included in the following attachments provide a detailed description of all events that occurred during sample preparation, analysis, and data review specific to the samples and analytical methods requested.

A list of data qualifiers, chain-of-custody forms, sample receiving checklist, and log-in report are also enclosed representing the samples received within this group.

If you have any questions concerning the analysis or the data please call Mary K. Wolf (702) 361-3955, ext. 311. If you are unable to contact the Client Services Representative, please call Mary B. Ford, Client Services Manager, at extension 326.

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

Sincerely,

Mary K Wolf

Mary K. Wolf
Client Services Representative

cc: Client Services
Document Control

CASE NARRATIVE
INORGANIC TOTAL URANIUM ANALYSES

The routine calibration and quality control analyses performed for this batch include as applicable: instrument calibration, initial and continuing calibration verification, quench monitoring standards, instrument background analysis, method blanks, yield tracer, laboratory control samples, matrix spike samples, and matrix spike duplicate samples.

Holding Time Requirements

All holding time requirements were met.

Total Uranium

The Total Uranium analysis was performed using LAL-91-SOP-0168. All samples were prepared in Workgroup U TOTAL KPA LAL-0168.40419 with a Method Blank (MBB1), Laboratory Control Sample (LCS1), Duplicate (DUP1) and Matrix Spike (MS1). No problems were encountered during preparation or analysis. All QC criteria were met.

Shellee McGrath
Prepared By

September 20, 1996
Date

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST L7703

B96-152-12 | Page 1 of 1

Collector Al Rizzo / B. Whitten	**Company Contact** Bob Egge	**Telephone No.** 373-2774
Project Designation 300-FF-5 Operation and Maintentance	**Sampling Location** 300 Area	**SAF No.** B96-152
Ice Chest No. GWS-003	**Field Logbook No.** EFL-1015	**Method of Shipment**
Shipped To Lockheed	**Offsite Property No.** W96-0-0314-6	**Bill of Lading/Air Bill No.** 290466290 5

Data Turnaround 24 Hours

POSSIBLE SAMPLE HAZARDS/REMARKS
Unknown

Special Handling and/or Storage

Preservation	None	HNO3 to pH <2	HCl or H2SO4 to pH <2								
Type of Container	G/P	G/P	Gs*								
No. of Container(s)	1	1	5								
Volume	20ml	~~40ml~~ See LP Sample ID	40ml								
SAMPLE ANALYSIS	Activity Scan	Total Uranium	See item (1) in Special Instructions								

Sample No.	Matrix *	Sample Date	Sample Time									
B0HZ06	Water	8/14/96	1010	X	X	X						
B0HZ08	Water	8/14/96	0730			X						

CHAIN OF POSSESSION

Sign/Print Names			
Relinquished By: GRE / B Whitten 8-15-96	Date/Time 0900	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
Halogenated VOA analysis by EPA 8010 to inlcude only Trichloroethene per Field Sampling LOI #32936.

(1) Halogenated VOA - 8010 (~~trans-1,2-Dichloroethylene~~, Trichloroethene), ~~Halogenated VOA - 8010 (Add on) (cis-1,2-Dichloroethylene)~~ RJN 8/8/96

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

LABORATORY SECTION
Received By: [signature] Title: Sample Custodian Date/Time: 8-16-96 / 1000

FINAL SAMPLE DISPOSITION
Disposal Method: Disposed By: Date/Time:

Appendix 5

Data Validation Supporting Documentation

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 300-FF-5 Post Closure			DATA PACKAGE: LK7703		
VALIDATOR: RBC		LAB: Lockheed		DATE: 22 oct 96	
CASE:			SDG: LK 7703		
ANALYSES PERFORMED					
☐ Gross Alpha/Beta	☐ Strontium-90	☐ Technetium-99	☐ Alpha Spectroscopy	☐ Gamma Spectroscopy	
☒ Total Uranium	☐ Radium-22	☐ Tritium	☐		
SAMPLES/MATRIX water					
B0H206					

1. Completeness . . . . . ☐ N/A

Technical verification forms present? . . . . . Yes No N/A

Comments: _____

2. Initial Calibration . . . . . ☒ N/A

Instruments/detectors calibrated within one year of sample analysis? . . . . . Yes No N/A

Initial calibration acceptable? . . . . . Yes No N/A

Standards NIST traceable? . . . . . Yes No N/A

Standards Expired? . . . . . Yes No N/A

Comments: _____

A-1

3. Continuing Calibration . . . . . ☒ N/A

Calibration checked within one week of sample analysis? . . .	Yes	No	N/A
Calibration check acceptable?	Yes	No	N/A
Calibration check standards NIST traceable?	Yes	No	N/A
Calibration check standards expired?	Yes	No	N/A

Comments: _____

4. Blanks . . . . . ☐ N/A

Method blank analyzed?	(Yes)	No	N/A
Method blank results acceptable?	(Yes)	No	N/A
Analytes detected in method blank?	Yes	(No)	N/A
Field blank(s) analyzed?	Yes	(No)	N/A
Field blank results acceptable?	Yes	No	(N/A)
Analytes detected in field blank(s)?	Yes	No	(N/A)
Transcription/Calculation Errors?	Yes	No	(N/A)

Comments: _____

5. Matrix Spikes . . . . . ☐ N/A

Matrix spike analyzed?	(Yes)	No	N/A
Spike recoveries acceptable?	(Yes)	No	N/A
Spike source traceable?	Yes	No	(N/A)
Spike source expired?	Yes	No	(N/A)
Transcription/Calculation Errors?	Yes	No	(N/A)

Comments: _____

A-2

6. Laboratory Control Samples . . . . . ☐ N/A

LCS analyzed?	Yes	No	N/A
LCS recoveries acceptable?	Yes	No	N/A
LCS traceable?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:_____

7. Chemical Recovery . . . . . ☒ N/A

Chemical carrier added?	Yes	No	N/A
Chemical recovery acceptable?	Yes	No	N/A
Chemical carrier traceable?	Yes	No	N/A
Chemical carrier expired?	Yes	No	N/A
Transcription/Calculation errors?	Yes	No	N/A

Comments:_____

8. Duplicates . . . . . ☐ N/A

Duplicates Analyzed?	Yes	No	N/A
RPD Values Acceptable?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:_____

9. Field QC Samples . . . . . ☐ N/A

Field duplicate sample(s) analyzed? . . . . . Yes (No) N/A
Field duplicate RPD values acceptable? . . . . . Yes No (N/A)
Field split sample(s) analyzed? . . . . . (Yes) No N/A
Field split RPD values acceptable? . . . . . (Yes) No N/A
Performance audit sample(s) analyzed? . . . . . Yes (No) ~~N/A~~
Performance audit sample results acceptable? . . . . . Yes No (N/A)

Comments:_____

10. Holding Times

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:_____

11. Results and Detection Limits (Levels D & E) . . . . . ☐ N/A

Results reported for all required sample analyses? . . . . . (Yes) No N/A
Results supported in raw data? . . . . . Yes No (N/A)
Results Acceptable? . . . . . (Yes) No N/A
Transcription/Calculation errors? . . . . . Yes No (N/A)
MDA's meet required detection limits? . . . . . Yes (No) N/A
Transcription/calculation errors? . . . . . Yes No (N/A)

Comments: MDA 0.01 — CRDL is 0.1
the sample was a detect at 262 ug/l

Date: 5 November 1996
To: Bechtel Hanford Inc. (technical representative)
From: A.T. Kearney, Inc.
Project: 300-FF-5 Post Closure Monitoring
Subject: Volatiles - Data Package No. LK7703-LAS (SDG No. LK7703)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. LK7703-LAS prepared by Lockheed Analytical Services (LAS). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analysis
B0HZ06	08/14/96	Water	C	Trichlorethene - EPA Method 8010
B0HZ08	08/14/96	Water	C	Trichloroethene - EPA Method 8010

Data validation was conducted in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1992a). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

  Analytical holding times are assessed to ascertain whether the holding time requirements were met by the laboratory. Preserved water samples must be analyzed within 14 days of the date of sample collection.

  If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two

times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

Holding times were met for all samples.

- **Instrument Calibration and Tuning**

Instrument calibration is performed to establish that the GC instrument is capable of producing acceptable and reliable analytical data over a range of concentrations. The initial and continuing calibrations are performed according to SW-846 methods and all results must meet validation requirements set by Westinghouse-Hanford (WHC 1992a). An initial multipoint calibration is performed prior to sample analysis to establish the linear range of the GC instrument. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible on a day-to-day basis.

Instrument calibrations are not evaluated under Level C validation.

- **Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples of a given matrix. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for laboratory contaminants) the highest associated blank result, the sample result value is raised to the CRQL, qualified as undetected and flagged "U".

Tentatively identified compounds (TICs) present in the samples and blanks that are within plus or minus 0.06 relative retention time units (RRT) of each other are qualified as undetected and flagged "U" if the sample concentration is less than five times (or less than ten times for common laboratory contaminants) the highest blank concentration.

All method blank target compound results were acceptable.

TIC identifications were not reviewed since spectral match comparisons could not be made without the raw data, which is not provided in a summary data package.

Trip Blank

One trip blank was identified in this data package. The trip blank sample number, location and associated field sample number are as follows:

Trip Blank	Associated Field Sample	Well Location
B0HZ08	B0HZ06	399-2-2

No analytes were detected in the trip blank.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using three compounds for which percent recoveries must be within established laboratory quality control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All matrix spike/matrix spike duplicate recovery results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of system performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is out of the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Undetected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Samples with surrogate recoveries less than ten percent are qualified as estimates and flagged "J" for detects, and rejected and flagged "UR" for nondetects. Undetected compounds with surrogate recoveries greater than the upper control limit require no qualification.

All surrogate recovery results were acceptable.

- **Precision**

  Matrix Spike/Matrix Spike Duplicate Samples

  Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the RPD between the recoveries of duplicate matrix spike analyses performed on a sample. For water samples analyzed using SW-846 protocol, results must be within RPD limits of plus or minus 20 percent. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

  All matrix spike/matrix spike duplicate recovery results were acceptable.

  Field Split Samples

  One set of field split samples were submitted for analysis as shown below:

Sample Number	Split Sample No.	Well Location
B0HYZ7 (QES)	B0HZ06 (LAS)	399-2-2

  The split sample results were compared using the validation guidelines for determining the RPD between a sample and its duplicate. All results were found to be acceptable.

- **System Performance**

  Internal Standards Performance

  The evaluation of internal standards results provides a means to assess the stability and sensitivity of the GC system on every analysis. Internal standard area counts must be within the limits of -50% to +100% of the most recent standard. The retention time of the internal standard must not vary by more than +/-30 seconds of the most recent calibration. If area counts for a particular internal standard are outside the control limits or the relative retention time shift is greater than +/- 30 seconds, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If area counts and retention times are both outside control limits, all non-detect sample results associated with that internal standard are rejected and flagged "UR".

  Internal standard performance is not reviewed under Level C validation.

Compound Identification

The identifications of detected compounds are confirmed to investigate the possibility of false positives or false negatives. If a compound was incorrectly reported as undetected, the associated result is qualified as detected (no qualifier) or as an estimate and flagged "J". If retention time and mass spectral criteria are not met, all associated results are qualified as unusable and flagged "R". If it is determined that incorrect identifications were made as a result of cross-contamination or carryover between analyses, then the affected data are qualified as unusable and flagged "UR/R".

Compound identifications are not reviewed under Level C data validation.

- **Analytical Detection Levels**

Reported analytical detection levels are compared to CRQLs to ensure that laboratory detection levels meet the required criteria. All laboratory reported analytical detection levels were at or below the analyte specific CRQLs.

- **Completeness**

Data Package No. LK7703-LAS (SDG No. LK7703) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

EPA, 1987, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, Environmental Protection Agency, Washington, D.C.

EPA, 1988a, *EPA Contract Laboratory Program Statement of Work for Organics Analyses, Multi-Media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1988b, *Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1988c, *EPA Contract Laboratory Program Statement of Work for Inorganics Analyses, Multi-Media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1988d, *Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1990, *EPA Contract Laboratory Program Statement of Work for Inorganic Analyses, Multi-media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1991, *EPA Contract Laboratory Program Statement of Work for Organics Analyses, Multi-Media, Multi-Concentration*, Environmental Protection Agency, Washington, D.C.

WHC, 1992a, *Data Validation Procedures for Chemical Analyses*, WHC-SD-EN-SPP-002, Rev. 2, Westinghouse Hanford Company, October 1993.

WHC, 1992b, *Data Validation Procedure for Radiological Analyses*, WHC-SD-EN-SPP-001, Rev. 2, Westinghouse Hanford Company, 1993.

EPA, 1994a, *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1994b, *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, U.S. Environmental Protection Agency, Washington, D.C.

WHC, 1994, *Validation Statement of Work*, Rev.1, Westinghouse Hanford Company, 1994.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validator in compliance with WHC procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. The associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: LK7703	REVIEWER: RBC	DATE: 11/05/96	PAGE 1 OF 1
COMMENTS: No qualifiers assigned.			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

VOLATILE ORGANIC ANALYSIS, WATER MATRIX, (ug/L)

Project: BECHTEL-HANFORD																			
Laboratory: Lockheed																			
Case	SDG: LK7703																		
Sample Number		B0HZ06		B0HZ08															
Location		399-2-2		399-2-2															
Remarks		Split		Trip Blank															
Sample Date		08/14/96		08/14/96															
Volatile Organic	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Trichloroethene	1	1.9		0.50	U														
Methylene Chloride*		1.2		1.0	U														

* = Analysis not requested and data not validated.

OCKHEED ANALYTICAL SERVICES

RGEABLE HALOCARBONS BY GC/ELCD
10 VOLATILES

Client Sample ID:	B0HZ06	LAL Sample ID:	L7703-3
Date Collected:	14-AUG-96	Date Received:	16-AUG-96
Date Analyzed:	24-AUG-96	Analytical Batch ID:	081996-801020-O-3
Date Extracted:	N/A	Analytical Dilution:	1
Matrix:	Water	Preparation Dilution:	1.0

SURROGATE	RECOVERY	QC Limits
BFB	78%	60-120
BCM	87%	65-125

CONSTITUENT	CAS NO.	RESULT ug/L	PRACTICAL QUANTITATION LIMIT ug/L	DATA QUALIFIER(s)
Dichlorodifluoromethane	75-71-8	<1.0	1.0	
Chloromethane	74-87-3	<1.0	1.0	
Vinyl Chloride	75-01-4	<0.50	0.50	
Bromomethane	74-83-9	<2.0	2.0	
Chloroethane	75-00-3	<1.0	1.0	
Trichlorofluoromethane	75-69-4	<1.0	1.0	
1,1-Dichloroethene	75-35-4	<0.50	0.50	
Methylene Chloride	75-09-2	1.2	1.0	
trans-1,2-Dichloroethene	156-60-5	<1.0	1.0	
1,1-Dichloroethane	75-34-3	<1.0	1.0	
Chloroform	67-66-3	<1.0	1.0	
1,1,1-Trichloroethane	71-55-6	<1.0	1.0	
Carbon Tetrachloride	56-23-5	<0.50	0.50	
1,2-Dichloroethane	107-06-2	<0.50	0.50	
Trichloroethene (TCE)	79-01-6	1.9	0.50	
1,2-Dichloropropane	78-87-5	<0.50	0.50	
Bromodichloromethane	75-27-4	<1.0	1.0	
2-Chloroethylvinyl ether	110-75-8	<2.0	2.0	
cis-1,3-Dichloropropene	10061-01-5	<0.50	0.50	
trans-1,3-Dichloropropene	10061-02-6	<0.50	0.50	
1,1,2-Trichloroethane	79-00-5	<0.50	0.50	
Tetrachloroethene (PCE)	127-18-4	<0.50	0.50	
Dibromochloromethane	124-48-1	<1.0	1.0	
Chlorobenzene	108-90-7	<0.50	0.50	
Bromoform	75-25-2	<1.0	1.0	
1,1,2,2-Tetrachloroethane	79-34-5	<1.0	1.0	
1,3-Dichlorobenzene	541-73-1	<1.0	1.0	
1,4-Dichlorobenzene	106-46-7	<1.0	1.0	
1,2-Dichlorobenzene	95-50-1	<1.0	1.0	
cis-1,2-Dichloroethene	156-59-2	<1.0	1.0	

RBC
10/29/96

OCKHEED ANALYTICAL SERVICES

RGEABLE HALOCARBONS BY GC/ELCD
10 VOLATILES

Client Sample ID:	B0HZ08	LAL Sample ID:	L7703-8
Date Collected:	14-AUG-96	Date Received:	16-AUG-96
Date Analyzed:	24-AUG-96	Analytical Batch ID:	081996-801020-O-3
Date Extracted:	N/A	Analytical Dilution:	1
Matrix:	Water	Preparation Dilution:	1.0

SURROGATE	RECOVERY	QC Limits
BFB	77%	60-120
BCM	88%	65-125

CONSTITUENT	CAS NO.	RESULT ug/L	PRACTICAL QUANTITATION LIMIT ug/L	DATA QUALIFIER(S)
Dichlorodifluoromethane	75-71-8	<1.0	1.0	
Chloromethane	74-87-3	<1.0	1.0	
Vinyl Chloride	75-01-4	<0.50	0.50	
Bromomethane	74-83-9	<2.0	2.0	
Chloroethane	75-00-3	<1.0	1.0	
Trichlorofluoromethane	75-69-4	<1.0	1.0	
1,1-Dichloroethene	75-35-4	<0.50	0.50	
Methylene Chloride	75-09-2	<1.0	1.0	
trans-1,2-Dichloroethene	156-60-5	<1.0	1.0	
1,1-Dichloroethane	75-34-3	<1.0	1.0	
Chloroform	67-66-3	<1.0	1.0	
1,1,1-Trichloroethane	71-55-6	<1.0	1.0	
Carbon Tetrachloride	56-23-5	<0.50	0.50	
1,2-Dichloroethane	107-06-2	<0.50	0.50	
Trichloroethene (TCE)	79-01-6	<0.50	0.50	
1,2-Dichloropropane	78-87-5	<0.50	0.50	
Bromodichloromethane	75-27-4	<1.0	1.0	
2-Chloroethylvinyl ether	110-75-8	<2.0	2.0	
cis-1,3-Dichloropropene	10061-01-5	<0.50	0.50	
trans-1,3-Dichloropropene	10061-02-6	<0.50	0.50	
1,1,2-Trichloroethane	79-00-5	<0.50	0.50	
Tetrachloroethene (PCE)	127-18-4	<0.50	0.50	
Dibromochloromethane	124-48-1	<1.0	1.0	
Chlorobenzene	108-90-7	<0.50	0.50	
Bromoform	75-25-2	<1.0	1.0	
1,1,2,2-Tetrachloroethane	79-34-5	<1.0	1.0	
1,3-Dichlorobenzene	541-73-1	<1.0	1.0	
1,4-Dichlorobenzene	106-46-7	<1.0	1.0	
1,2-Dichlorobenzene	95-50-1	<1.0	1.0	
cis-1,2-Dichloroethene	156-59-2	<1.0	1.0	

RKS
10/29/96

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Lockheed Environmental Systems & Technologies Co
Lockheed Analytical Services
975 Kelly Johnson Drive Las Vegas, Nevada 89119-3705
Telephone 702-361-0220 800-582-7605 Facsimile 702-361-8146

LOCKHEED MARTIN

September 20, 1996

Ms. Joan Kessner
Bechtel Hanford, Inc.
3350 George Washington Way
MISN B1-35
Richland, WA 99352

RE:	Log-in No.:	L7545
	Quotation No.:	Q400000-B
	SAF:	B96-152
	Document File No.:	0816596
	BHI Document File No.:	397
	SDG No.:	LK7703

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 16 August. The temperature of the cooler upon receipt was 4°C. Sample containers received agree with the chain-of-custody documentation. All sample containers were received intact. Samples were received in time to meet the analytical holding time requirements.

The case narratives included in the following attachments provide a detailed description of all events that occurred during sample preparation, analysis, and data review specific to the samples and analytical methods requested.

A list of data qualifiers, chain-of-custody forms, sample receiving checklist, and log-in report are also enclosed representing the samples received within this group.

If you have any questions concerning the analysis or the data please call Mary K. Wolf (702) 361-3955, ext. 311. If you are unable to contact the Client Services Representative, please call Mary B. Ford, Client Services Manager, at extension 326.

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

Sincerely,

Mary K. Wolf
Client Services Representative

cc: Client Services
Document Control

CASE NARRATIVE
INORGANIC TOTAL URANIUM ANALYSES

The routine calibration and quality control analyses performed for this batch include as applicable: instrument calibration, initial and continuing calibration verification, quench monitoring standards, instrument background analysis, method blanks, yield tracer, laboratory control samples, matrix spike samples, and matrix spike duplicate samples.

Holding Time Requirements

All holding time requirements were met.

Total Uranium

The Total Uranium analysis was performed using LAL-91-SOP-0168. All samples were prepared in Workgroup U TOTAL KPA LAL-0168 40419 with a Method Blank (MBB1), Laboratory Control Sample (LCS1), Duplicate (DUP1) and Matrix Spike (MS1). No problems were encountered during preparation or analysis. All QC criteria were met.

Shellee McGrath
Prepared By

September 20, 1996
Date

CASE NARRATIVE
ORGANIC ANALYSES

Analytical Method 8010 Volatiles

Analytical Batch 081996-801020-O-3

Note: Sample B0HZ08 (L7703-8) was the native sample used for the L7703-8MS and L7703-8MSD analyzed in this analytical batch.

The samples were analyzed within holding time on August 24, 1996. All initial calibration criteria were met except for the r^2 of compounds Bromomethane and 2-Chloroethylvinyl ether (2-CEVE). All beginning continuing calibration criteria were met except for Bromomethane, trans-1,2-Dichloroethene, and Bromoform. All ending continuing calibration criteria were met except for Dichlorodifluoromethane, Methylene Chloride, Chloromethane, 2-CEVE, Vinyl Chloride, Bromoform, and Bromomethane. These compounds were not detected in the associated client samples, therefore, data quality was believed to be unaffected. Target compounds were not detected in the method blank (40632MB). Surrogate recoveries were within QC limits except for BFB in sample L7703-8MSD. Compound recoveries were within QC limits in the L7703-8MS, L7703-8MSD, and laboratory control sample (40632LCS). The relative percent differences (RPDs) between the MS and MSD recoveries were within QC limits.

Lydia M. Coleman
Prepared By

September 18, 1996
Date

0005

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST L-1105

B96-152-12

Collector Al Rizzo / B. Whitten	**Company Contact** Bob Egge	**Telephone No.** 373-2774	**Data Turnaround** 24 Hours
Project Designation 300-FF-5 Operation and Maintentance	**Sampling Location** 300 Area	**SAF No.** B96-152	
Ice Chest No. GWS-003	**Field Logbook No.** EFL-1019	**Method of Shipment**	
Shipped To Lockheed	**Offsite Property No.** W96-0-0314-6	**Bill of Lading/Air Bill No.** 2904662905	

POSSIBLE SAMPLE HAZARDS/REMARKS
Unknown

Special Handling and/or Storage

Preservation	None	HNO3 to pH <2	HCl or H2SO4 to pH <2
Type of Container	G/P	G/P	G*
No. of Container(s)	1	1	5
Volume	20ml	~~40ml~~ 500 ml 5/14/96 (B)	40ml

SAMPLE ANALYSIS

				Activity Scan	Total Uranium	See item (1) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time			
B0HZ06	Water	8/14/96	1010	X	X	X
B0HZ08	Water	8/14/96	0730			X

CHAIN OF POSSESSION

Sign/Print Names			
Relinquished By: Eric Whitten ERE B Whitten	Date/Time 0900 8-15-96	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
Halogenated VOA analysis by EPA 8010 to inlcude only Trichloroethene per Field Sampling LOI #32936.

(1) Halogenated VOA - 8010 ~~(trans-1,2-Dichloroethylene~~, Trichloroethene); ~~Halogenated VOA - 8010 (Add on) (cis-1,2-Dichloroethylene)~~ RJN 8/8/96

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

LABORATORY SECTION	Received By	Title	Date/Time	
	A Hampton	Sample Custodian	8-16-96 / 1000	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

0021020

Appendix 5

Data Validation Supporting Documentation

GENERAL GC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 300-FF-5 Post Closure			DATA PACKAGE: LK7703		
VALIDATOR:		LAB: QES		DATE: 22 oct 96	
CASE:			SDG: LK 7703		

ANALYSES PERFORMED

☐ 8010	☐ 8015	☐ 8020	☐ 8021	8140	8141
☐ 8150	☐ 8151	☐ WTPH-HCID	☐ WTPH-G	☐ WTPH-D	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX: Water

B0H206 + B0H20H -TB

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No (N/A)

Is a case narrative present? . . . . . (Yes) No N/A

Comments: _____

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments: _____

GENERAL GC DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration performed? . . . . . Yes No (N/A)

Are %RSD values for calibration or response factors acceptable? . . . . . Yes No (N/A)

Comments: _____

3.2 CONTINUING CALIBRATION

Was a continuing calibration check performed? . . . . . Yes No (N/A)

Are %D values for calibration or response factors acceptable? . Yes No (N/A)

Comments: _____

4. BLANKS

Were laboratory blanks analyzed? . . . . . (Yes) No N/A

Are laboratory blank results acceptable? . . . . . (Yes) No N/A

Were field/trip blanks analyzed? . . . . . (Yes) No N/A

Are field/trip blank results acceptable? . . . . . (Yes) No N/A

Comments: _____

5. ACCURACY

Were surrogates analyzed? . . . . . (Yes) No N/A

Are surrogate recoveries acceptable? . . . . . (Yes) No N/A

Were MS/MSD samples analyzed? . . . . . (Yes) No N/A

Are MS/MSD recoveries acceptable? . . . . . (Yes) No N/A

Were LCS samples analyzed? . . . . . Yes No (N/A)

Are LCS recoveries acceptable? . . . . . Yes No (N/A)

GENERAL GC DATA VALIDATION CHECKLIST

Comments:_____

6. PRECISION

Are MS/MSD sample RPD values acceptable? . . . . . (Yes) No N/A

Are field duplicate RPD values acceptable? . . . . . (Yes) No N/A

Are field split RPD values acceptable? . . . . . (Yes) No N/A

Comments:_____

7. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No (N/A)

Is compound quantitation acceptable? . . . . . Yes No (N/A)

Comments:_____

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . (Yes) No N/A

Are all results supported in the raw data? . . . . . Yes No (N/A)

Do results meet the CRQLs? . . . . . (Yes) No N/A

Comments:_____