

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

LK7144-LAS

0046114

LOCKHEED MARTIN 

June 18, 1996

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

RE: Log-in No.: L7144
Quotation No.: Q400000-B
SAF: B96-092
Document File No.: 0601596
BHI Document File No.: 372
SDG No.: LK7144



The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 1 June 1996.

The temperature of the cooler upon receipt was 3°C. Sample containers received agree with the chain-of-custody documentation. Sample containers were received intact. Samples designated for hexachrome analysis were not 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 Kathleen Hall at (509) 375-4741.



0003

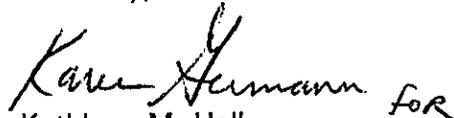
Lockheed Analytical Services

Log-in No.: L7144
Quotation No.: Q400000-B
SAF: B96-092
Document File No.: 0601596
BHI Document File No.:372
SDG No.: LK7144
Page1

Release of this data report has been authorized by the Laboratory Director or the Director's designee as evidenced by the following signature.

" 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 Manger or a designee, as verified by the following signature."

Sincerely,


Kathleen M. Hall *for*
Client Services Representative

cc: Client Services
Document Control

**CASE NARRATIVE
INORGANIC NON METALS ANALYSES**

The routine calibration and quality control analyses performed for this batch include as applicable: initial and continuing calibration verification, initial and continuing calibration blanks, method blank(s), laboratory control sample(s), matrix spike (predigestion) sample(s), duplicate sample(s).

Preparation and Analysis Requirements

- One water sample was received for LK7144 and analyzed in batch 601 bh for selected analytes as requested on the chain of custody. Quality control analysis was performed on the following samples:

Client ID	LAL #		Method
BOHD28	L7144-3	MS, DUP	7196 Hexavalent Chromium

Holding Time Requirements

- All samples were received and analyzed outside of the method-specific holding times. The associated samples are flagged with an "H".

Method Blanks

- The concentration levels of all the requested analytes in the method blank were below the reporting detection limits.

Internal Quality Control

- All Internal Quality Control were within acceptance limits.

Kay McCann
Prepared By

June 11, 1996
Date

**CASE NARRATIVE
INORGANIC METALS ANALYSES**

The routine calibration and quality control analyses performed for this batch include as applicable: instrument tune (ICP/MS only), initial and continuing calibration verification, initial and continuing calibration blanks, method blank(s), laboratory control sample(s), ICP interference check samples (ICP only), serial dilutions, analytical (post-digestion) spike samples, matrix spike (predigestion) sample(s), duplicate sample(s).

Preparation and Analysis Requirements

All samples were received on June 1, 1996. The samples were logged in as L7144 and were prepared and analyzed in batch 521 bh. The samples were analyzed by Method 200.7 ICP Metals.

Holding Time Requirements

- All samples were analyzed within the method-specific holding times.

Method Blanks

- The concentration levels of all the requested analytes in the method blank were below the reporting detection limits.

Internal Quality Control

- All Internal Quality Control were within acceptance limits.

Sheliee McGrath
Prepared By

June 17, 1996
Date

Lockheed Analytical Services
DATA QUALIFIERS FOR INORGANIC ANALYSES

[Revised 08/28/92]

For Use on the Analytical Data Reporting Forms	
B	<i>For CLP Analyses Only</i> -- Reported value is less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).
C	<i>For Routine, Non-CLP Analyses Only</i> -- Any constituent that was also detected in the associated blank whose concentration was greater than the reporting detection limit (RDL).
D	Presence of high levels of interfering constituents required dilution of sample which increased the RDL by the dilution factor.
E	Estimated value due to presence of interference.
H	Sample analysis performed outside of method-or client-specified maximum holding time requirement.
M	<i>For CLP Analyses Only</i> -- Duplicate injection precision criterion was not met.
N	Matrix spike recovery exceeded acceptance limits.
S	Reported value was determined from the method of standard addition.
U	<i>For CLP Reporting Only</i> -- Constituent was analyzed for but not detected (sample quantitation must be corrected for dilution and percent moisture).
W	<i>For AAS Only</i> -- Post-digestion spike for Furnace AAS did not meet acceptance criteria and sample absorbance is less than 50% of spike absorbance.
X, Y, or Z	Analyst-defined qualifier.
*	Relative percent difference (RPD) for duplicate analysis exceeded acceptance limits.
+	Correlation coefficient (r) for the MSA is less than 0.995.
For Use on the QC Data Reporting Forms	
a¹	The spike recovery and/or RPD for matrix spike and matrix spike duplicates cannot be evaluated due to insufficient spiking level compared to the elevated sample analyte concentration.
b¹	The RPD cannot be computed because the sample and/or duplicate concentration was below the RDL.

¹ Used as footnote designations on the QC summary form.

LOCKHEED ANALYTICAL SERVICES
 LOGIN CHAIN OF CUSTODY REPORT (ln01)
 Jun 01 1996, 09:51 am

Login Number: L7144
 Account: 596 Bechtel Hanford, Inc. * Richland, WA
 Project: BECHTEL-HANFORD Bechtel Hanford Project

Laboratory Sample Number	Client Sample Number	Collect Date	Receive Date	Due PR Date
L7144-1 TEMP 3 Location: 156RAD1-01 Water 1 S SCREENING	BOHD28	30-MAY-96	01-JUN-96	06-JUL-96
		Hold:26-NOV-96		
L7144-2 TEMP 3 Location: 156RAD1-01 Water 1 S 200.7 METALS	BOHD28	30-MAY-96	01-JUN-96	06-JUL-96
		Hold:26-NOV-96		
L7144-3 TEMP 3 Location: 156RAD1-01 Water 1 S 7196 CHROMIUM (VI)	BOHD28	30-MAY-96	01-JUN-96	06-JUL-96
		Hold:31-MAY-96		
L7144-4 Location: Water 1 S EDD - DISK DEL. Water 1 S INORG TYPE 2 RPT	REPORT TYPE	01-JUN-96	01-JUN-96	06-JUL-96

Page 1

Signature: *Paula Daus*
 Date: 6-01-96

0009

0601596

Data Turnaround
 Priority
 Normal

Collector R. Fahlberg	Company Contact M.T. Stankovich	Telephone 372-9626
Project Designation 100-HR-3 Routine Process Samples	Sampling Location 100 Area	SAF No. B96-092
Ice Chest No. ER-1B	Field Logbook No. EL-1309	Method of Shipment Hazard Delivered
Shipped To Lockheed	Offsite Property No. NA 5-31-96 W96-0-0640-47	Bill of Lading/Air Bill No. NA 5-31-96 2904657612

Possible Sample Hazards/Remarks	Preservation	HNO3	cool to 4o	None					
	Type of Container	G/P	G/P	G/P					
	No. of Containers	1	1	1					
Special Handling and/or Storage	Volume	500mL	500mL	20mL					

SAMPLE ANALYSIS	ICP Metals, 2 Cr	Cr Hex	Activity Scan						
-----------------	------------------	--------	---------------	--	--	--	--	--	--

Sample No.	Matrix*	Date Sampled	Time Sampled						
BOHD28	W	5/30/96	09:35	X	X	X			FF

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By <i>R. Fahlberg</i>	Date/Time 1400 5/30/96	Received By <i>Eric B. Whitte</i>
Relinquished By <i>Eric B. Whitte</i>	Date/Time 0800 5-31-96	Received By <i>Eric B. Whitte</i>
Relinquished By	Date/Time	Received By
Relinquished By	Date/Time	Received By

SPECIAL INSTRUCTIONS
 Sample analysis for Chromium VI is requested for information only. The ERC contractor acknowledges the 24-hour holding time will not be met.

- 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 <i>Paul Davis</i>	Title <i>Sample Custodian</i>	Date/Time 6-01-96/9:30 AM
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

000152

Environmental
Restoration
Contractor

ERC Team

Interoffice Memorandum

Job No. 22192
Written Response Required: NO
CCN: N/A
OU: N/A
TSD: N/A
EPA: N/A
Subject Code: 533

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 H³.

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.

SAMPLE CHECK-IN LIST

Date/Time Received: 6-01-96 / 9:30 am

SDG#: nca

Work Order Number: nca

SAF #: B96-092

Shipping Container ID: CR-113

Chain of Custody # nca

- 1. Custody Seals on shipping container intact? Yes No
- 2. Custody Seals dated and signed? Yes No
- 3. Sample temperature 30
- 4. Vermiculite/packing materials is Wet Dry
- 5. Each sample is in a plastic bag? Yes No
- 6. Sample holding times exceeded? Yes No

7. Samples have: <input type="checkbox"/> tape <input type="checkbox"/> hazard labels <input checked="" type="checkbox"/> custody seals <input type="checkbox"/> appropriate sample labels
8. Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> leaking <input type="checkbox"/> broken <input type="checkbox"/> have air bubbles

9. Is the information on the COC and Sample bottles in agreement?
Yes No

Notes: CR^c was passed 24 Hour Holding Time

Sample Custodian/Laboratory: Paula Davis / LAS Date: 6-01-96
F9 X00
Telephoned To: KATHLEEN HALL On 6-01-96 By Paula Davis
PO 6-01-96

LOCKHEED MARTIN



Sample Login Login Review Checklist

Lot Number L7144

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 from 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

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

LOGIN CHAIN OF CUSTODY

	<u>YES</u>	<u>NO</u>	<u>N/A</u>	<u>Comment</u>
1. Are the collect, receive, and due dates correct for every sample?	<u>X</u>	___	___	_____
2. Have all appropriate comments been indicated in the comment section?	<u>X</u>	___	___	_____

SAMPLE RECEIVING CHECKLIST

	<u>YES</u>	<u>NO</u>	<u>N/A</u>	<u>Comment</u>
1. Are all discrepancies between the COC and the login noted (if applicable)?	___	___	<u>X</u>	_____

Paul C. Davis
primary review signature

5-01-96
date

Paul C. Davis
secondary review signature

6-01-96⁰⁰¹³
date

0601546

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

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
BOHD28	L7144-1		Water	SCREENING
	L7144-2		Water	200.7 METALS
	L7144-3		Water	7196 CHROMIUM (V
REPORT TYPE	L7144-4		Water	EDD - DISK DEL.
	L7144-4		Water	INORG TYPE 2 RPT

0015

060159

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: B0HD28	Date Collected: 30-MAY-96
Matrix: Water	Date Received: 01-JUN-96
Percent Solids: N/A	

Constituent	Units	Method	Result	Project Reporting Limit	Data Qualifier(s)	Date Analyzed	LAS Batch ID	LAS Sample ID
Chromium, hexavalent	mg/L	7196	0.026	0.020	H	10-JUN-96	37919	L7144-3

Lockheed Analytical Laboratory
Determination of Hexavalent Chromium
Calibration and Calibration Verification Results

LAL Batch ID: 601-BH
 Work Group: 7196 CHROMIUM (VI)_37919
 Method: 7196 (Hexavalent Chromium)

Calibration Results

Standard Concentration (mg/L)	Measured Instrument Response	Linearized Instrument Response	Calculated Concentration (mg/L)	Standard Recovery (%)
0.000	0.000	0.000	-0.002	
0.025	0.021	0.021	0.025	99
0.050	0.043	0.043	0.052	105
0.100	0.081	0.081	0.100	100
0.200	0.161	0.161	0.200	100
0.250	0.200	0.200	0.249	100

Slope = 1.2544
 Intercept = -0.0016
 Correlation (r) = 0.9999

Measured Instrument Response: Absorbance (540 nm)

Calibration Verification Results

Sample Identification	True Concentration (mg/L)	Found Concentration (mg/L)	Analyte Recovery (%)
ICV	0.1	0.104	104
CCV	0.1	0.104	104

Calibration Blank Results

Sample Identification	Analyte Found (mg/L)
ICB	0.003 U
CCB	0.003 U

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: B0HD28	Date Collected: 30-MAY-96
Matrix: Water	Date Received: 01-JUN-96
Percent Solids: N/A	

Constituent	Units	Method	Result	MDL	RDL	Data Qual	Dilution	Date Analyzed	LAS Batch ID	LAS Sample ID
CHROMIUM, TOTAL	mg/L	6010	0.034	0.0030	0.010		1	11-JUN-96	37720	L7144-2