

**START** 9713516.2059

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

LK7417-LAS  
0046206



July 25, 1996

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



RE:	Log-in No.:	L7417
	Quotation No.:	Q400000-B
	SAF:	B96-092
	Document File No.:	0713596
	BHI Document File No.:	385
	SDG No.:	LK7417

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 13 July 1996.

The temperature of the cooler upon receipt was 5°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.

**Lockheed Analytical Services**

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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,

Handwritten signature of Karen Hermann in cursive script, followed by the word "for" in a smaller, simpler font.

Kathleen M. Hall  
Client Services Representative

cc: Client Services  
Document Control

**Lockheed Analytical Services**

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**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 LK7417 and analyzed in batch 713 bh for selected analytes as requested on the chain of custody. Quality control analysis was performed on the following samples:

Client ID	LAL #		Method
BOHD45	L7417-3	DUP,MS	7196 Chromium (VI)

**Holding Time Requirements**

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

**Internal Quality Control**

- All Internal Quality Control were within acceptance limits.

Kay McCann  
 Prepared By

July 18, 1996  
 Date

**Lockheed Analytical Services**

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## **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 July 13, 1996. The samples were logged in as L7417 and were prepared and analyzed in batch 713 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.

Shellee McGrath  
Prepared By

July 24, 1996  
Date



Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

L7417

Data Turnaround

Priority Normal

Collector Doug Bowers, Company Contact Mike Stankovich, Telephone No. 372-9626, Project Designation 100-HR-3, Sampling Location 100-HR-3, SAF No. B96-092, Field Logbook No. EL-1309, Method of Shipment Air Freight, Shipped To Lockheed, Offsite Property No. W96-0-0314-2, Bill of Lading/Air Bill No. 2904659773

Table with columns: Preservation, Type of Container, No. of Container(s), Volume. Values: G, 1, 500ml.

Special Handling and/or Storage: Cool between 2 degrees and 4 degrees C.

SAMPLE ANALYSIS table with columns: Metals & Trace Elements by ICP - 200.7 (Chromium), Chromium Hex - 7196, Activity Scan.

Main data table with columns: Sample No., Matrix, Sample Date, Sample Time, and analysis results for sample B0HD45.

CHAIN OF POSSESSION table with columns: Relinquished By, Date/Time, Sign/Print Names.

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 - Titanium
WI - Wipe
L - Liquid
V - Vegetation
X - Other

LABORATORY SECTION Received By Paul D... Title Sample Custodian Disposed By Date/Time 7-13-96/0930

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7/13/96-0930

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# MESSAGE CONFIRMATION

SESSION NO. = 129

07/13/96 11:31  
ID=LOCKHEED LAB SAMPLE RECEIVING

DATE	TIME	S.R-TIME	DISTANT STATION ID	MODE	PAGES	RESULT
07/13	11:29	02'29"	5093754238	G3 -S	03	OK 0000

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### SAMPLE CHECK-IN LIST

Date/Time Received: 7-13-96 / 0930

SDG#: 1747

Work Order Number: 1747

SAF #: D96-097

Shipping Container ID: \_\_\_\_\_

Chain of Custody # 1747

- 1. Custody Seals on shipping container intact? Yes  No
- 2. Custody Seals dated and signed? Yes  No
- 3. Sample temperature 50
- 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:  
 tape  hazard labels  
 custody seals  appropriate sample labels

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

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

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Sample Custodian/Laboratory: FAFO / 6195 Date: 7-13-96

Telephoned To: Kathleen Hall On 7-13-96 By [Signature]

**LOCKHEED MARTIN**

**Sample Login  
Login Review Checklist**

Lot Number 67417

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 Davis  
primary review signature

2-15-96  
date

Paul Davis  
secondary review signature

2-15-96  
date

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**Lockheed Analytical Services  
Sample Receiving Checklist**

Client Name: *Bechtel Houston*

Job No. *6.7417*

Cooler ID: *1147*

**COOLER CONDITION UPON RECEIPT**

Temperature of cooler upon receipt: *5°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			<i>None</i>
are samples bi-phasic (if so, indicate sample ID'S):			<i>All X</i>

**MISCELLANEOUS ITEMS**

	Yes	No	* Comments/Discrepancies
samples with short holding times	X	<del>X</del>	<i>PLD 7-13-96</i>
samples to subcontract			<i>None</i>

**ADDITIONAL COMMENTS/DISCREPANCIES**

Completed by / date: *Paul Davis 7-13-96*

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

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

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
BOHD45	L7417-1		Water	SCREENING
	L7417-2		Water	200.7 METALS
	L7417-3		Water	7196 CHROMIUM (V
REPOT TYPE	L7417-4		Water	EDD - DISK DEL.
	L7417-4		Water	INORG TYPE 4A RF

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## LOCKHEED ANALYTICAL SERVICES

## Sample Results

Client Sample ID: B0HD45	Date Collected: 11-JUL-96
Matrix: Water	Date Received: 13-JUL-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	0.83	0.020	H	15-JUL-96	38891	L7417-3

0017

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

LAL Batch ID: 713-BH  
 Work Group: 7196 CHROMIUM (VI)\_38891  
 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	-0.001	
0.025	0.021	0.021	0.025	99
0.050	0.042	0.042	0.051	102
0.100	0.082	0.082	0.101	101
0.200	0.162	0.162	0.201	101
0.250	0.200	0.200	0.249	99

Slope = 1.2499  
 Intercept = -0.0015  
 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	0.106	106
CCV	0.1	0.101	101

**Calibration Blank Results**

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

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**Lockheed Analytical Laboratory**  
**Determination of Hexavalent Chromium**  
**Quality Control Results**

LAL Batch ID: 713-BH

Work Group: 7196 CHROMIUM (VI)\_38891

Method: 7196 (Hexavalent Chromium)

**Laboratory Control Sample/Duplicate Results (Recovery)**

Sample Identification	True Concentration (mg/L)	Found Concentration (mg/L)	Analyte Recovery (%)
LCS	0.05	0.052	105
LCSD	(No LCSD analyzed)		

**Laboratory Control Sample/Duplicate Results (Difference)**

LCS Result (mg/L)	LCSD Result (mg/L)	Relative Difference (%)	Flag
(No LCSD analyzed)			

**Preparation Blank Results**

Sample Identification	Analyte Found (mg/L)
PB	0.003 U

**Sample Duplicate Results (Difference)**

LAL Sample Identification	Sample Result (mg/L)	Duplicate Result (mg/L)	Relative Difference (%)	Flag
L7417-3	0.830	0.836	1	

**Spiked Sample/Spike Duplicate Results (Recovery)**

LAL Sample Identification	Sample Result (mg/L)	Analyte Added (mg/L)	Spike Result (mg/L)	Spike Recovery (%)	Flag
L7417-3S	0.830	0.25	1.086	102	

**Spiked Sample/Spike Duplicate Results (Difference)**

Spike Result (mg/L)	Spike Dup Result (mg/L)	Relative Difference (%)	Flag
(No spike duplicate analyzed)			

0020

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## LOCKHEED ANALYTICAL SERVICES

## Sample Results

Client Sample ID: B0HD45	Date Collected: 11-JUL-96
Matrix: Water	Date Received: 13-JUL-96
Percent Solids: N/A	

Constituent	Units	Method	Result	MDL	RDL	Data Qual	Dilution	Date Analyzed	LAS Batch ID	LAS Sample ID
CHROMIUM	mg/L	200.7	0.81	0.0060	0.010		1	16-JUL-96	38892	L7417-2