

**START**

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LK 7349-LAS

0046376

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**



July 25, 1996

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



RE:	Log-in No.:	L7349
	Quotation No.:	Q400000-B
	SAF:	B96-092
	Document File No.:	0629596
	BHI Document File No.:	382
	SDG No.:	LK7349

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 29 June 1996.

The temperature of the cooler upon receipt was 4°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,



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 LK7349 and analyzed in batch 629 bh for selected analytes as requested on the chain of custody. Quality control analysis was performed on the following samples:

Client ID	LAL #		Method
BOHD40	L7349-2	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 9, 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 June 29, 1996. The samples were logged in as L7349 and were prepared and analyzed in batch 629 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

9713523.0637

LOCKHEED ANALYTICAL SERVICES  
LOGIN CHAIN OF CUSTODY REPORT (ln01)  
Jun 29 1996, 12:01 pm

Login Number: L7349  
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
L7349-1 TEMP 4 Location: 157 Water 1 S SCREENING	BOHD40	27-JUN-96	29-JUN-96	03-AUG-96
L7349-2 TEMP 4 Location: RFG02-25A Water 1 S 7196 CHROMIUM (VI)	BOHD40	27-JUN-96	29-JUN-96	03-AUG-96
L7349-3 TEMP 4 Location: RFG02-25A Water 1 S 200.7 METALS	BOHD40	27-JUN-96	29-JUN-96	03-AUG-96
L7349-4 Location: Water 1 S EDD - DISK DEL. Water 1 S INORG TYPE 4A RPT	REPORT TYPE	29-JUN-96	29-JUN-96	03-AUG-96

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Signature:

*Paula Davis*

Date:

6-29-96 0009

71.10596

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

L7349

Page 1 of 1

Data Turnaround  
 Priority  
 Normal

Collector R. Fahberg	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. LRD-C10	Field Logbook No. EL-1309	Method of Shipment Hqnd Delivered
Shipped To Lockheed	Offsite Property No. NA-BW 496-0-0314-1	Bill of Lading/Air Bill No. NA-BW 2904659265

Possible Sample Hazards/Remarks	Preservation	HNO3	cool to 4c	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

Sample No.	Matrix*	Date Sampled	Time Sampled	ICP Metals, 2 Cr	Cr Hex	Activity Scan								
BOHD40	W	6/27/96	0935	X	X	X							EFF	SP 300

CHAIN OF POSSESSION	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 - Tissue WI - Wipe L - Liquid V - Vegetation X - Other		
	Relinquished By R. Fahberg	Date/Time 6-27-96			Received By M. Stankovich	Date/Time 6-27-96
	Relinquished By D. Whitten	Date/Time 6-27-96			Received By	Date/Time
	Relinquished By	Date/Time			Received By	Date/Time

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

7/13/96 06:30

06/28/96

Environmental  
Restoration  
Contractor **ERC Team**  
**Interoffice Memorandum**

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

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  $1.56 \times 10^6$  pCi/l H<sup>3</sup>.

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.

# LOCKHEED MARTIN



## Sample Login Login Review Checklist

Lot Number L7349

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 [Signature]  
primary review signature

6-29-96  
date

[Signature]  
secondary review signature

6-29-96  
date

001200 > 4590

### SAMPLE CHECK-IN LIST

Date/Time Received: 6-29-96 / 9:45

SDG#: 1112

Work Order Number: 1112

SAF #: B96-092

Shipping Container ID: 120-410

Chain of Custody #: 1112

- 1. Custody Seals on shipping container intact? Yes  No
- 2. Custody Seals dated and signed? Yes  No
- 3. Sample temperature 4°C
- 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: Shipping ID was missed it's 24hr Holding Time.

Sample Custodian/Laboratory: Paul C Davis / LMS Date: 6-29-96

Telephoned To: Kathleen Hill On 6-29-96 By Paul C Davis

Pos 6-29-96

**Lockheed Analytical Services  
Sample Receiving Checklist**

Client Name: *Packard Helicopters*

Job No. *27349*

Cooler ID: *1111*

**COOLER CONDITION UPON RECEIPT**

Temperature of cooler upon receipt: *4°C*

temperature of temp. blank upon receipt: *-*

	Yes	No	* Comments/Discrepancies
custody seals intact	<input checked="" type="checkbox"/>		
chain of custody present	<input checked="" type="checkbox"/>		
blue ice (or equiv.) present/frozen	<input checked="" type="checkbox"/>		
rad survey completed	<input checked="" type="checkbox"/>		

**SAMPLE CONDITION UPON RECEIPT**

	Yes	No	* Comments/Discrepancies
all bottles labeled	<input checked="" type="checkbox"/>		
samples intact	<input checked="" type="checkbox"/>		
proper container used for sample type	<input checked="" type="checkbox"/>		
sample volume sufficient for analysis	<input checked="" type="checkbox"/>		
proper pres. indicated on the COC	<input checked="" type="checkbox"/>		
VOA's contain headspace			
are samples bi-phasic (if so, indicate sample ID'S):			<i>not not</i>

**MISCELLANEOUS ITEMS**

	Yes	No	* Comments/Discrepancies
samples with short holding times	<input checked="" type="checkbox"/>		
samples to subcontract			<i>not not</i>

**ADDITIONAL COMMENTS/DISCREPANCIES**

*disc discrepancy*

Completed by / date:

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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001  
version 2.0 (11/11/94)

9713523.0643

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

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
BOHD40	L7349-1		Water	SCREENING
	L7349-2		Water	7196 CHROMIUM (V)
	L7349-3		Water	200.7 METALS
REPORT TYPE	L7349-4		Water	EDD - DISK DEL.
	L7349-4		Water	INORG TYPE 4A RI

0015

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## LOCKHEED ANALYTICAL SERVICES

## Sample Results

Client Sample ID: BOHD40	Date Collected: 27-JUN-96
Matrix: Water	Date Received: 29-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	< 0.003	0.020	HU	08-JUL-96	38718	L7349-2

0017

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

LAL Batch ID: 629-BH

Work Group: 7196 CHROMIUM (VI)\_38718

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	0.101	101
CCV	0.1	0.100	100

**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: 629-BH

Work Group: 7196 CHROMIUM (VI)\_38718

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	0.055	110
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
L7349-2	0.003 U	0.003 U		b

## Spiked Sample/Spike Duplicate Results (Recovery)

LAL Sample Identification	Sample Result (mg/L)	Analyte Added (mg/L)	Spike Result (mg/L)	Spike Recovery (%)	Flag
L7349-2S	0.003 U	0.05	0.056	112	

## 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: B0HD40	Date Collected: 27-JUN-96
Matrix: Water	Date Received: 29-JUN-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	0.0077	0.0060	0.010	B	1	16-JUL-96	38760	L7349-3