

LK 7659

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

0046717

**LOCKHEED MARTIN** 

September 11, 1996

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



RE: Log-in No.:	L7659
Quotation No.:	Q400000-B
SAF:	B96-092
Document File No.:	0810596
BHI Document File No.:	317
SDG No.:	LK7659

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 10 August 1996.

The temperature of the cooler upon receipt was 2°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 with the exception of Chromium VI determination.

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 at (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.

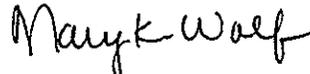
**Lockheed Analytical Services**

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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,



Mary K. Wolf  
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 LK7659 and analyzed in batch 810 bh for selected analytes as requested on the chain of custody. Quality control analysis was performed on the following samples:

Client ID	LAL #		Method
BOHYCO	L7659-3	DUP,MS	7196 Chromium (VI)

**Holding Time Requirements**

- The sample was received and analyzed outside of the method-specific holding time and the associated sample is 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

August 19, 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 August 10, 1996. The samples were logged in as L7659 and were prepared and analyzed in batch 810 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

September 11, 1996  
Date

LOCKHEED ANALYTICAL SERVICES  
 LOGIN CHAIN OF CUSTODY REPORT (ln01)  
 Aug 10 1996, 02:54 pm

Login Number: L7659  
 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
L7659-1 TEMP 2 Location: 157 Water 1 S SCREENING	BOHYCO	08-AUG-96	10-AUG-96	14-SEP-96
		Hold:04-FEB-97		
L7659-2 TEMP 2 Location: RFG02-36C Water 1 S 200.7 METALS	BOHYCO	08-AUG-96	10-AUG-96	14-SEP-96
		Hold:04-FEB-97		
L7659-3 TEMP 2 Location: RFG02-36C Water 1 S 7196 CHROMIUM (VI)	BOHYCO	08-AUG-96	10-AUG-96	14-SEP-96
		Hold:09-AUG-96		
L7659-4 Location: Water 1 S EDD - DISK DEL. Water 1 S INORG TYPE 2 RPT	REPORT TYPE	10-AUG-96	10-AUG-96	14-SEP-96

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Signature: *Paul Davis*  
 Date: 8-10-96 0009

0810596

Collector <i>R. Fahlberg</i>	Company Contact Mike Stankovich	Telephone No. 372-9626	Data Turnaround Regular
Project Designation 100-HR-3 Treatability Study for pump & treat process	Sampling Location 100-HR-3	SAF No. B96-092	
Ice Chest No. <i>80-JEM</i>	Field Logbook No. EL-1309	Method of Shipment	
Shipped To Lockheed	Offsite Property No. <i>W96-0-0314-5</i>	Bill of Lading/Air Bill No. <i>2904662275</i>	

POSSIBLE SAMPLE HAZARDS/REMARKS Unknown	Preservation	None	HNO3 to pH <2	None									
	Type of Container	P	P	P									
	No. of Container(s)	1	1	1									

Special Handling and/or Storage Cool to 4C.	Volume	20ml	500ml	500ml									
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SAMPLE ANALYSIS				Activity Scan	Metals & Trace Elements by ICP - 200.7 (Chromium)	Chromium Hex - 7196							
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Sample No.	Matrix *	Sample Date	Sample Time										
BOHYCO	Water	<i>8-8-96</i>	<i>1235</i>	<i>X</i>	<i>X</i>	<i>X</i>							

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 <i>R. Fahlberg</i>	Date/Time <i>8-8-96</i>	Received By <i>K. J. ... / K. ...</i>	Date/Time <i>8/8/96</i>											
	Relinquished By <i>h. ... / K. ...</i>	Date/Time <i>8/9/96</i>	Received By <i>...</i>	Date/Time <i>8-9-96</i>											
	Relinquished By <i>...</i>	Date/Time <i>8-9-96</i>	Received By	Date/Time											

LABORATORY SECTION	Received By <i>Paul ...</i>	Title <i>Sample Custodian</i>	Date/Time <i>8-10-96/9:30</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

0010 081059

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: SK0

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.

### SAMPLE CHECK-IN LIST

Date/Time Received: 8-10-96/9:30 SDG#: N/A  
Work Order Number: N/A SAF #: B96-092  
Shipping Container ID: 80-Tem Chain of Custody #: B96-092-11

- 1. Custody Seals on shipping container intact? Yes  No
- 2. Custody Seals dated and signed? Yes  No
- 3. Sample temperature 20
- 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: chromium VI was passed Holding Time for  
Sample BOKYCO (62659-3).

Sample Custodian/Laboratory: Paula Doms/LAS Date: 8-10-96  
 Telephoned To: Kathleen Hebl On 8-10-96 By Paula Doms  
 FA 8-10-96

# LOCKHEED MARTIN



## Sample Login Login Review Checklist

Lot Number L7659

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>	_____

Paulc Dan  
primary review signature

8-10-86  
date

Paulc Dan  
secondary review signature

8-10-86  
date 013

081059

Lockheed Analytical Services  
Sample Receiving Checklist

Client Name: Westinghouse

Job No. L7659

Cooler ID: 80 JEM

COOLER CONDITION UPON RECEIPT			
Temperature of cooler upon receipt:	<u>20C</u>		
temperature of temp. blank upon receipt:	<u>N/A</u>		
	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		X	
are samples bi-phasic (if so, indicate sample ID'S):		<u>N/A</u>	
MISCELLANEOUS ITEMS			
	Yes	No	* Comments/Discrepancies
samples with short holding times	X		<u>chromium III, THE sample (Bohlyco/L7659-3)</u>
samples to subcontract			<u>N/A was passed Holding Time. client acknowledges this discrepancy.</u>
ADDITIONAL COMMENTS/DISCREPANCIES			
Completed by / date:	<u>Paul Davis</u>	<u>8-10-76.</u>	
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			

08159

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

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
BOHYCO	L7659-1 L7659-2 L7659-3		Water Water Water	SCREENING 200.7 METALS 7196 CHROMIUM (V)
REPORT TYPE	L7659-4 L7659-4		Water Water	EDD - DISK DEL. INORG TYPE 2 RP

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LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: BOHYCO	Date Collected: 08-AUG-96
Matrix: Water	Date Received: 10-AUG-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	0.93	0.020	H	16-AUG-96	40352	L7659-3

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

LAL Batch ID: 810-BH  
 Work Group: 7196 CHROMIUM (VI)\_40352  
 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	0.020	0.020	0.025	101
0.050	0.040	0.040	0.050	99
0.100	0.080	0.080	0.099	99
0.200	0.163	0.163	0.201	100
0.250	0.203	0.203	0.250	100

Slope = 1.2279  
 Intercept = 0.0006  
 Correlation (r) = 1.0000

Measured Instrument Response: Absorbance (540 nm)

**Calibration Verification Results**

Sample Identification	True Concentration (mg/L)	Found Concentration (mg/L)	Analyte Recovery (%)
ICV	0.1	0.103	103
CCV	0.1	0.096	96

**Calibration Blank Results**

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

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

LAL Batch ID: 810-BH  
 Work Group: 7196 CHROMIUM (VI)\_40352  
 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	0.051	102
LCS D	(No LCS D analyzed)		

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

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

**Preparation Blank Results**

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

**Sample Duplicate Results (Difference)**

LAL Sample Identification	Sample Result (mg/L)	Duplicate Result (mg/L)	Relative Difference (%)	Flag
L7659-3	0.927	0.927	0	

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

LAL Sample Identification	Sample Result (mg/L)	Analyte Added (mg/L)	Spike Result (mg/L)	Spike Recovery (%)	Flag
L7659-3S	0.927	0.5	1.431	101	

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

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

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: BOHYCO	Date Collected: 08-AUG-96
Matrix: Water	Date Received: 10-AUG-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	0.89	0.0060	0.010		1	08-SEP-96	40687	L7659-2