

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

LK6879-LAS  
0045079

LOCKHEED MARTIN 

May 9, 1996

Ms. Joan Kessner  
Bechtel Hanford, Inc.  
P.O. Box 969  
1022 Lee Boulevard  
Richland, WA 99352



RE: Log-in No.:	L6879
Quotation No.:	Q400000-B
SAF:	B96-102
Document File No.:	0423596
BHI Document File No.:	355
SDG No.:	LK6879



The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 23 April 1996. The temperature of the cooler upon receipt was 2°C. Sample containers received agree with the chain-of-custody documentation. 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.

The EDD is being sent on the Hanford Bulletin Board System.

If you have any questions concerning the analysis or the data please call Kathleen Hall at (509) 375-4741.

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**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,

A handwritten signature in cursive script that reads "Karen Hermann for".

Kathleen M. Hall  
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 oil sample was received for LK6879 and analyzed in batch 423 bh for selected analytes as requested on the chain of custody. Quality control analysis was performed on the following samples:

Client ID	LAL #		Method
BOHD75	L6879-2	MS, DUP	300.0 Sulfate

**Holding Time Requirements**

- All samples were received within method-specified holding time.

**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.

**Sample**

- For client sample BOHD75 (L6879-2), total sulfur was determined by combusting the oil sample in a calorimeter combustion bomb which converts organic and elemental sulfur to sulfate. The resulting sulfate was determined by ion chromatography. To determine total sulfur, the reported sulfate value must be multiplied by the factor 0.333.

Kay McCann  
Prepared By

May 8, 1996  
Date

**Lockheed Analytical Services**  
**DATA QUALIFIERS FOR INORGANIC ANALYSES**

[Revised 08/28/92]

<b>For Use on the Analytical Data Reporting Forms</b>	
<b>B</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).
<b>C</b>	<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).
<b>D</b>	Presence of high levels of interfering constituents required dilution of sample which increased the RDL by the dilution factor.
<b>E</b>	Estimated value due to presence of interference.
<b>H</b>	Sample analysis performed outside of method-or client-specified maximum holding time requirement.
<b>M</b>	<i>For CLP Analyses Only</i> -- Duplicate injection precision criterion was not met.
<b>N</b>	Matrix spike recovery exceeded acceptance limits.
<b>S</b>	Reported value was determined from the method of standard addition.
<b>U</b>	<i>For CLP Reporting Only</i> -- Constituent was analyzed for but not detected (sample quantitation must be corrected for dilution and percent moisture).
<b>W</b>	<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.
<b>X, Y, or Z</b>	Analyst-defined qualifier.
<b>*</b>	Relative percent difference (RPD) for duplicate analysis exceeded acceptance limits.
<b>+</b>	Correlation coefficient (r) for the MSA is less than 0.995.
<b>For Use on the QC Data Reporting Forms</b>	
<b>a<sup>1</sup></b>	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.
<b>b<sup>1</sup></b>	The RPD cannot be computed because the sample and/or duplicate concentration was below the RDL.

<sup>1</sup> Used as footnote designations on the QC summary form.

LOCKHEED ANALYTICAL SERVICES  
 LOGIN CHAIN OF CUSTODY REPORT (1n01)  
 Apr 23 1996, 02:20 pm

Login Number: L6879  
 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
L6879-1 temp 2 Location: 157 Oil	BOHD75 6 S SCREENING	15-APR-96	23-APR-96	08-MAY-96
L6879-2 temp 2; SULPHUR ANALYSIS Location: 157 Oil	BOHD75 6 S 300.0 SULFATE	15-APR-96	23-APR-96	08-MAY-96
L6879-3 Location: Water	REPORT TYPE 1 S EDD - DISK DEL. 1 S INORG TYPE 2 RPT	23-APR-96	23-APR-96	08-MAY-96

Signature: *A. Miller*  
 Date: 4-23-96  
 0423596 0007

Collector Doug Bowers	Company Contact Ron Pohjola	Telephone 373-6724	Data Turnaround <input checked="" type="checkbox"/> Priority Normal
Project Designation 100N Bunker Tank Oil (waste designation)	Sampling Location 100N	SAF No. B96-102	
Ice Chest No. <b>BROOKS</b>	Field Logbook No. <b>EFL 1133-1</b>	Method of Shipment Air freight (Fed X)	
Shipped To Lockheed	Offsite Property No. <b>W96-0-0640-41</b>	Bill of Lading/Air Bill No. <b>2904655485</b>	

Possible Sample Hazards/Remarks None known at this time	Preservation	cool to 4C	none											
	Type of Container	G/P	G/P											
	No. of Container(s)	1	1											
	Special Handling and/or Storage	Volume	250 ml	20 mL										

SAMPLE ANALYSIS				See item #1 below	Activity Scan									
Sample No.	Matrix*	Date Sampled	Time Sampled											
BOHD75	O	4-15-96	1233	X	X									EAL Box screen BOHD76 EAL02412

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix*
Relinquished By <i>Doug Bowers</i>	Date/Time 4-15-96/1353	Received By <i>ER</i>	Date/Time 1353
Relinquished By <i>ER</i>	Date/Time 1000	Received By <i>B Whitton</i>	Date/Time 4-15-96
Relinquished By <i>ER</i>	Date/Time 4-22-96	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
SPECIAL INSTRUCTIONS		Matrix*	
Item #1 IC Anions 300.0 Sulfate -- 375.4 Sulfur		S = Soil	
Sample matrix -- Oil.		SI = Sediment	
Analyze for Sulfate (EPA 300.0) -- after		SO = Solid	
"oxidation" preparation.		SL = Sludge	
Analyze for Sulfate (EPA 375) -- Report		W = Water	
value as sulfur not sulfate		O = Oil	
		A = Air	
		DS = Drum Solids	
		DL = Drum Liquids	
		T = Tissue	
		W1 = Wipe	
		L = Liquid	
		V = Vegetation	
		X = Other	

LABORATORY SECTION	Received By <i>ER</i>	Title Sample Custodian	Date/Time 4-23-96/095
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Post-It® Fax Note	7671	Date	4-22-96	# of pages	2
To	Bill Whitten	From	AI Davis		
Co./Dept.		Co.			
Phone #		Phone #	373-9731		
Fax #	376-8851	Fax #			

GROSS RADIONUCLIDE SCREENING SAMPL  
 Radiometric Laboratory  
 Environmental Analytical Laboratory  
 IT Hanford Co.

Customer ID: BOHD76 Bunker Oil  
 EAL ID: EAL02412  
*split of BOHD75*

SOILS  
 Pass screen (X)  
 Fail screen ( )  
 Other's at 50 pCi limit  
 Pass screen (X)  
 Fail screen ( )

3.25E+01	Calculated Beta Total Activity (pCi/g)	4.59E-02
1.57E-02	Calculated Alpha Total Activity (pCi/g)	2.99E-01
3.26E+01	Calculated total activity pCi/g	3.45E-01
5.59E+00	Calculated total activity error	6.37E-02
3.29E+00	Calculated total activity MDA	1.91E-01

Screen sample based on ( x ) 99-Tc or ( ) 90-Sr for beta activity.

The screening for other's is based on 50 pCi/g Beta and Alpha, and 2 pCi/g Alpha including the 2 sigma error.

A passed screen for Soils indicates that the soil sample contained less than 200 pCi/g total radioactivity of which less than 20 pCi/g is from alpha emitting radionuclides. For conservatism, a failed screen may also have one or more of the following characteristics: The sum of the total gamma activity detected in the soil is above 5 pCi/g; Beta emission from the bulk sample is found above the natural Hanford soil background (corresponding to approximately 5 pCi/g Sr-90 or 100 pCi/g Tc-99); or Alpha emission from the bulk soil is found above the natural Hanford soil background (corresponding to approximately 10 pCi/g Am-241). Naturally occurring radionuclides common to Hanford soil, tritium, and Carbon-14 are not included in the screening measurement.

*L E Matthews* by *AI D* 4-16-96  
 Rad Ctg Technician Date

*Albert I. Davis*  
 Albert I. Davis 22-Apr-96  
 Rad Ctg Mgr

*10ml Oil shaken with 10ml H<sub>2</sub>O.  
 H<sub>2</sub>O dried on planket, @ 90.*

0009

*C403596*



### SAMPLE CHECK-IN LIST

Date/Time Received: 4-23-96 SDG#: N/A

Work Order Number: N/A SAF #: B96-102

Shipping Container ID: Brooks Chain of Custody # N/A

- 1. Custody Seals on shipping container intact? Yes  No [ ]
- 2. Custody Seals dated and signed? Yes  No [ ]
- 3. Sample temperature 2°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  
         x   custody seals          x   appropriate sample labels

8. Samples are:  
         x   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: Admilla Date: 4-23-96

Telephoned To: Karshleen Hall On 4-23-96 By Anthony K. Miller

Lockheed Analytical Services  
Sample Receiving Checklist

Client Name: Bechtel - Hanford

Job No. LG879

Cooler ID:

COOLER CONDITION UPON RECEIPT			
Temperature of cooler upon receipt:	2°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			WJ
are samples bi-phasic (if so, indicate sample ID'S):			WJ
MISCELLANEOUS ITEMS			
	Yes	No	* Comments/Discrepancies
samples with short holding times		X	
samples to subcontract		X	
ADDITIONAL COMMENTS/DISCREPANCIES			
Completed by / date: <u>Adm... 4-15-96</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			

C433594

0012

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

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
BOHD75	L6879-1 L6879-2		Oil Oil	SCREENING - 300.0 SULFATE -
REPORT TYPE -	L6879-3 L6879-3		Water Water	EDD - DISK DEL. INORG TYPE 2 RP

0013

0423590

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: BOHD75	Date Collected: 15-APR-96
Matrix: Oil	Date Received: 23-APR-96
Percent Solids: N/A	

Constituent	Units	Method	Result	Project Reporting Limit	Data Qualifier(s)	Date Analyzed	LAS Batch ID	LAS Sample ID
Sulfate	mg/kg	300.0	31000	10.	D(1:10)	01-MAY-96	36335	L6879-2