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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**



May 6, 1996

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

RE:	Log-in No:	L6750
	Quotation No:	Q400000-B
	SAF:	B96-083
	Document File No:	0405596
	WHC Document Control No:	348
	SDG No:	LK6750



The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 5 April 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 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.

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

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

Sincerely,

*Karen Hermann FOR*

Kathleen M. Hall  
 Client Services Representative

cc: Client Services  
 Document Control

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**CASE NARRATIVE  
ORGANIC ANALYSES**

**Analytical Method 8015M Total Petroleum Hydrocarbons (TPH)**

*Analytical Batch 040696-8015-L-7 (water)*

**NOTE:** Sample BOH886 (L6750-6) was the native sample used for the matrix spike (35716MS) and matrix spike duplicate (35716MSD) analyzed in this analytical batch. The MS and MSD were extracted and analyzed using the duplicate samples BOH886 (L6750-7) and BOH886 (L6750-8), respectively.

The associated samples were extracted within holding time on April 9, 1996 and analyzed within holding time on April 11, 1996. All initial and continuing calibrations met QC criteria except for Di-n-Octylphthalate in the ending continuing calibration, due to heavy matrix interference from the samples analyzed prior to the ending continuing calibration. Target compound Diesel Range Organics was not detected in the method blank (35716MB). The recovery of surrogate compound Di-n-Octylphthalate was within QC limits for all samples. The recovery of Diesel Range Organics was within QC limits in the MS, MSD, and LCS (35716LCS). The relative percent difference (RPD) between the MS and MSD recoveries was within QC limits.

**Analytical Method P & T Gasoline**

*Analytical Batch 040896-PTGAS-M-2*

**NOTE:** Sample BOH886 (L6750-2) was the native sample used for the matrix spike (L6750-2MS) and matrix spike duplicate (L6750-2MSD) analyzed in this analytical batch.

The associated samples were analyzed within holding time on April 10, 1996. All initial and continuing calibrations were within QC criteria except for aaaTFT in the beginning and ending continuing calibrations on the FID detector. The target compound Gasoline was not detected in the method blank (35808MB). Surrogate recoveries were within QC limits for all samples except for TFT in the laboratory control sample (35808LCS). The recovery of compound Gasoline was within QC limits in the MS, MSD, and LCS. The relative percent difference (RPD) between the MS and MSD recoveries was within QC limits.

LOCKHEED ANALYTICAL SERVICES  
 LOGIN CHAIN OF CUSTODY REPORT (ln01)  
 Apr 08 1996, 10:14 am

Login Number: L6750  
 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
L6750-1 TEMP 4 Location: 157 Water 1 S SCREENING	BOH886	03-APR-95	05-APR-96	10-MAY-96
		Hold:30-SEP-95		
* L6750-2 TEMP 4 "GAS", WTPH-G Location: RFG01-43A Water 1 S P&T GAS	BOH886	03-APR-95	05-APR-96	10-MAY-96
		Hold:17-APR-95		
* L6750-3 TEMP 4 "GAS", WTPH-G Location: RFG01-43A	BOH886	03-APR-95	05-APR-96	10-MAY-96
* L6750-4 TEMP 4 "GAS", WTPH-G Location: RFG01-43A	BOH886	03-APR-95	05-APR-96	10-MAY-96
* L6750-5 TEMP 4 "GAS", WTPH-G Location: RFG01-43A	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-6 TEMP 4 "DIESEL" Location: RFG01-7B Water 1 S 8015M - TPH	BOH886	03-APR-95	05-APR-96	10-MAY-96
		Hold:10-APR-95		
L6750-7 TEMP 4 "DIESEL" Location: RFG01-7B	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-8 TEMP 4 "DIESEL" Location: RFG01-7B	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-9 TEMP 4 "DIESEL" Location: RFG01-7B	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-10 Location: Water 1 S EDD - DISK DEL. Water 1 S GC2	REPORT TYPE	05-APR-95	05-APR-96	10-MAY-96

\* comments added

Page 1

Revised

Signature: *[Signature]*  
 Date: 4-8-96

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0405596

LOCKHEED ANALYTICAL SERVICES  
 LOGIN CHAIN OF CUSTODY REPORT (ln01)  
 Apr 05 1996, 04:23 pm

Login Number: L6750  
 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
L6750-1 TEMP 4 Location: 157 Water 1 S SCREENING	BOH886	03-APR-95	05-APR-96	10-MAY-96
		Hold:30-SEP-95		
L6750-2 TEMP 4 "GAS" Location: RFG01-43A Water 1 S P&T GAS	BOH886	03-APR-95	05-APR-96	10-MAY-96
		Hold:17-APR-95		
L6750-3 TEMP 4 "GAS" Location: RFG01-43A	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-4 TEMP 4 "GAS" Location: RFG01-43A	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-5 TEMP 4 "GAS" Location: RFG01-43A	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-6 TEMP 4 "DIESEL" Location: RFG01-7B Water 1 S 8015M - TPH	BOH886	03-APR-95	05-APR-96	10-MAY-96
		Hold:10-APR-95		
L6750-7 TEMP 4 "DIESEL" Location: RFG01-7B	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-8 TEMP 4 "DIESEL" Location: RFG01-7B	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-9 TEMP 4 "DIESEL" Location: RFG01-7B	BOH886	03-APR-95	05-APR-96	10-MAY-96
L6750-10 Location: Water 1 S EDD - DISK DEL. Water 1 S GC2	REPORT TYPE	05-APR-95	05-APR-96	10-MAY-96

Page 1

Signature: Paul J. Daus

Date: 4-5-96

000008

0405596

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

L6750

Data Turnaround  
 Priority  
 Normal

Collector: R. F. Hilber / D. St. John  
 Company Contact: L. C. Hulstrom  
 Telephone: (509) 372-9685  
 Project Designation: 300-FF-2 Groundwater Sampling  
 Sampling Location: 316-4 Crib, 618-10 and 618-11 Burial Ground  
 SAF No.: B96-083

Ice Chest No.: SML-219  
 Field Logbook No.:  
 Method of Shipment: Federal Express  
 Shipped To: Lockheed  
 Offsite Property No.: W96-0-0640-39  
 Bill of Lading/Air Bill No.: 2704654663

Possible Sample Hazards/Remarks	Preservation	Cool 4°C	H2SO4	None
	Type of Container	Gs	G	P/G
	No. of Container(s)	4 -3 RF 4 3/4	RF 4 1/2 -2	1
Special Handling and/or Storage Maintain samples between 2°C and 6°C	Volume	40mL	1L	20mL

SAMPLE ANALYSIS

Sample No.	Matrix*	Date Sampled	Time Sampled	TPH - Gasoline Range	TPH - Diesel Range	Activity Scan
BOH886	W	4/3/96	10:08	X	X	X

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By: R. F. Hilber / R. F. Hilber	Received By: K. Dray / K. Trapp
Relinquished By: K. Trapp / K. Trapp	Received By: K. Dray / K. Trapp
Relinquished By: K. Trapp / K. Trapp	Received By: K. Dray / K. Trapp
Relinquished By: K. Trapp / K. Trapp	Received By: K. Dray / K. Trapp

SPECIAL INSTRUCTIONS  
 Analysis changed to TPCN FA131

- 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: Paul... Title: Sample Custodian Date/Time: 4-25-96/19:30  
 FINAL SAMPLE DISPOSITION: Disposal Method: Disposed By: Date/Time: 4-25-96/19:30

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040554

VALIDATED RESULTS SHORT REPORT

04 Apr 19

Customer ID: EOH883  
 Lab Sample#: S96E000249

Sample Date: 04/03/96 10:08  
 Recv. Date: 04/03/96 14:27

PARAMETER	RESULTS	UNITS
Total Activity by LSC		
Total Act. by LSC: % Uncert.	8.31	%Uncertainty
Total Activity by LSC (Solid)	2.73e-5	uCi/g

*27.3 pc/g*

# SAMPLE CHECK-IN LIST

Date/Time Received: 4-05-96 / 9:20 am

SDG#: N/A

Work Order Number: N/A

SAF #: B96-083

Shipping Container ID: 5ml-214

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 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: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sample Custodian/Laboratory: Paul Dain/LAS Date: 4-05-96  
FXED  
Telephoned To: Kathleen Hall On 4-05-96 By Paul Dain  
FXD 4-05-96

# LOCKHEED ANALYTICAL SERVICES

TOTAL PETROLEUM HYDROCARBONS (TPH)  
8015M - TPH

Client Sample ID:	B0H886	LAL Sample ID:	L6750-6
Date Collected:	03-APR-95	Date Received:	05-APR-96
Date Analyzed:	11-APR-96	Analytical Batch ID:	040696-8015-L-7
Date Extracted:	09-APR-96	Analytical Dilution:	1
Matrix:	Water	Preparation Dilution:	1.0
		QC Group:	8015M - TPH_35716

SURROGATE	RECOVERY	QC Limits
DI-N-OCTYLPHTHALATE	144%	56-166

CONSTITUENT	CAS NO.	RESULT mg/L	PRACTICAL QUANTITATION LIMIT mg/L	DATA QUALIFIER (s)
Diesel Range Organics	TPH	2.2	1.0	

# LOCKHEED ANALYTICAL SERVICES

## TOTAL PETROLEUM HYDROCARBONS (TPH)

Client Sample ID:	Method Blank	LAL Sample ID:	35716MB
Date Collected:	N/A	Date Received:	N/A
Date Analyzed:	11-APR-96	Analytical Batch ID:	040696-8015-L-7
Date Extracted:	09-APR-96	Analytical Dilution:	1
		Preparation Dilution:	1.0
		QC Group:	8015M - TPH_35716

SURROGATE	RECOVERY	QC Limits
DI-N-OCTYLPHTHALATE	125%	56-166

CONSTITUENT	CAS NO.	RESULT mg/L	PRACTICAL QUANTITATION LIMIT mg/L	DATA QUALIFIER(:
Diesel Range Organics	TPH	<1.0	1.0	

# LOCKHEED ANALYTICAL SERVICES

## LCS DATA SUMMARY TOTAL PETROLEUM HYDROCARBONS (TPH)

Client Sample ID:	Lab Ctrl Sample	LAL Sample ID:	35716LCS
Date Collected:	N/A	Date Received:	N/A
Date Analyzed:	11-APR-96	Analytical Batch ID:	040696-8015-L-7
Date Extracted:	09-APR-96	Analytical Dilution:	1
		Preparation Dilution:	1.0
		QC Group:	8015M - TPH_35716

SURROGATE	RECOVERY	QC Limits
DI-N-OCTYLPHTHALATE	99%	56-166

Constituent	Spike Added mg/L	LCS Concentration mg/L	LCS % & Recovery	QC Limits
Diesel Range Organics	15.0	13.1	87	30-138

# LOCKHEED ANALYTICAL SERVICES

DETN. OF GAS. BY PURGE AND TRAP GC-FID  
P&T GAS

Client Sample ID:	BOH886	LAL Sample ID:	L6750-2
Date Collected:	03-APR-95	Date Received:	05-APR-96
Date Analyzed:	10-APR-96	Analytical Batch ID:	040896-PTGAS-M-2
Date Extracted:	N/A	Analytical Dilution:	1
Matrix:	Water	Preparation Dilution:	1.0

SURROGATE	RECOVERY	QC Limits
TFT	91%	70-130
BFB	101%	75-130

CONSTITUENT	CAS NO.	RESULT ug/L	PRACTICAL QUANTITATION LIMIT ug/L	DATA QUALIFIER
Gasoline	8006-61-9	150	100	