

START 9713534.2061

LOCKHEED MARTIN



LK8207-LAS¹²

0046813

Lockheed Analytical Services



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

ANALYTICAL DATA REPORT

FOR

CHLORIDE, NITRATE, NITRITE, SULFATE,
METALS, MERCURY, GROSS ALPHA/BETA, AND
TRITIUM

LOG-IN NUMBER:	<u>L8207</u>
QUOTATION NUMBER:	<u>Q400000-B</u>
SAF NUMBER:	<u>B97-037</u>
DOCUMENT FILE NUMBER:	<u>1026596</u>
BHI DOCUMENT FILE NO.:	<u>408</u>
SDG NUMBER:	<u>LK8207</u>

9713534.2062

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



December 2, 1996

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

RE: Log-in No.: L8207
Quotation No.: Q400000-B
SAF No.: B97-037
Document File No.: 1026596
BHI Document File No.: 408
SDG No.: LK8207



The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on October 26, 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.

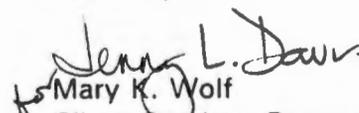
The case narratives included in the following attachments provide a detailed description of all events that occurred during sample preparation, analysis, and data review specific to the samples and analytical methods requested.

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 Wolf at (702) 361-3955, extension 311. If you are unable to contact the client services representative, please call Mary B. Ford, client services manager, at extension 326.

"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,


for Mary K. Wolf
Client Services Representative

cc: Client Services
Document Control

Lockheed Analytical Services

Log-in No.: L8207
 Quotation No.: Q400000-B
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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 LK8207 and analyzed in batch 1026 bh1 for selected analytes to be analyzed in client-specified order as requested on the chain of custody. Quality control analysis was performed on the following samples:

Client ID	LAL #		Method
BOJDQ9	L8207-2	DUP, MS	300.0 Chloride, Nitrate-Nitrogen, and Sulfate

Holding Time Requirements

- The samples were received and analyzed within method-specific 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.

Kay McCann
 Prepared By

November 5, 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 October 26 1996. The samples were logged in as L8207 and were prepared and analyzed in batches 1026 btT for total metals and 1026 btD for dissolved metals. The samples were analyzed by Method 6010 ICP Trace for antimony, arsenic, lead, selenium and thallium, Method 7470 Mercury and Method 6010 ICP Metals for all other analytes.

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

December 2, 1996
Date

Lockheed Analytical Services

Log-in No.: L8207
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CASE NARRATIVE RADIOCHEMISTRY ANALYSES

The routine calibration and quality control (QC) analyses performed for this batch include as applicable: instrument calibration, initial and continuing calibration verification, quench monitoring standards, instrument background analysis, method blanks, yield tracer, laboratory control samples, matrix spike samples, and duplicate samples.

NOTE: Chemical recoveries and minimum detectable activities (MDAs) can be found on the preparation sheets and calculation sheets on the attached raw data for each method.

Holding Time Requirements

All holding time requirements were met.

Analytical Method Gross Alpha/Beta

The gross alpha/beta analysis was performed using standard operating procedure (SOP), LAL-91-SOP-0060. The samples were analyzed in workgroup 43133. The instrument calibration verification met criteria. The method blank was within QC criteria. The beta laboratory control sample (LCS) recovery and the matrix spike (MS) recoveries were within QC criteria. The alpha LCS recovery was slightly out of QC criteria; since all other QC criteria were met, data quality is not believed to be adversely affected. The duplicate (DUP) recoveries were within QC criteria. The MDA exceeded the reporting detection limit due to the residue weight limitations forcing a volume reduction, the associated samples were flagged with a "C" qualifier. No re-analyses were performed.

Analytical Method Tritium

The tritium analysis was performed using SOP, LAL-91-SOP-0066. The samples were analyzed in workgroup 43158. The instrument calibration verification met criteria. The method blank was within QC criteria. The LCS and MS recoveries were within QC criteria. The DUP recoveries were within QC criteria. The quench value was within curve limitations. No re-analyses were performed.

Andrea Tippett
Prepared By

November 17, 1996
Date

0006

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST **L8207**

B97-037-19

Page 1 of 2

Collector <i>D. Bowers / M. Mehlhorn</i>	Company Contact R.E. Peterson	Telephone No. (509) 372-9638	Project Coordinator Koerner, CC	Data Turnaround 45 Days
Project Designation 100-HR-3 Groundwater Sampling - 100-H	Sampling Location 100 H	SAF No. B97-037		
Ice Chest No. <i>46-051</i>	Field Logbook No. <i>EL-1357</i>	Method of Shipment Federal Express		
Shipped To Lockheed	Offsite Property No. <i>W97-0001-4</i>	Bill of Lading/Air Bill No. <i>2771634397</i>		

POSSIBLE SAMPLE HAZARDS/REMARKS None	Preservation	None	Cool 4C	HNO3 to pH 2	HNO3 to pH 2	HNO3 to pH 2	None			
	Type of Container	P	P	P	P	P	G			
	No. of Container(s)	1	1	1	1	1	<i>18</i>			
Special Handling and/or Storage Maintain samples between 2 degrees C and 6 degrees C.	Volume	20ml	500ml	500ml	1000ml	1000ml	500ml			
SAMPLE ANALYSIS				Activity Scan	See item (1) in Special Instructions	ICP Metals - 6010A (TAL)	Gross Alpha	Gross Beta	Tritium - H3	

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	See item (1) in Special Instructions	ICP Metals - 6010A (TAL)	Gross Alpha	Gross Beta	Tritium - H3
BOJDQ9	Water	<i>10-24-96</i>	<i>1150</i>	X	X	X	X	X	X
BOJDR0	Water	<i>10-24-96</i>	<i>1150</i>			X			

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix * S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids T - Tissue W1 - Wipe L - Liquid V - Vegetation X - Other
	Relinquished By <i>D. Bowers</i>	Date/Time <i>10-24-96/11420</i>	Received By <i>Paula White</i>	Date/Time <i>10-24-96</i>	Nitrate by EPA 300 0 is being requested for Information Only. The ERC Contractor acknowledges the 48-hour holding time will not be met. The second sample number for ICP Metals is filtered. The Activity Scan is for all the samples listed on this form.		
	Relinquished By <i>Paula White</i>	Date/Time <i>0900</i>	Received By	Date/Time	(1) IC Anions - 300 0 (Chloride, Nitrogen in Nitrate, Sulfate)		
	Relinquished By <i>Paula White</i>	Date/Time <i>10-25-96</i>	Received By	Date/Time			

LABORATORY SECTION	Received By <i>Paula White</i>	Title <i>Sample Custodian</i>	Date/Time <i>10-25-96 10:30</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

D8207-51C

9713531-2066

9713534.2067

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: B0JDQ9	Date Collected: 24-OCT-96
Matrix: Water	Date Received: 26-OCT-96
Percent Solids: N/A	

Constituent	Units	Method	Result	Project Reporting Limit	Data Qualifier(s)	Date Analyzed	LAS Batch ID	LAS Sample ID
Chloride	mg/L	300.0	6.9	0.020		26-OCT-96	42889	L8207-2
Nitrate-N	mg/L	300.0	5.6	0.020		26-OCT-96	42891	L8207-2
Sulfate	mg/L	300.0	38.	0.10		26-OCT-96	42890	L8207-2

0018

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LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: B0JDQ9	Date Collected: 24-OCT-96
Matrix: Water	Date Received: 26-OCT-96
Percent Solids: N/A	

Constituent	Units	Method	Result	MDL	RDL	Data Qual	Dilution	Date Analyzed	LAS Batch ID	LAS Sample ID
ALUMINUM, TOTAL	mg/l	6010	0.044	0.040	0.20	B	1	15-NOV-96	43388	L8207-3
BARIUM, TOTAL	mg/l	6010	0.037	0.0020	0.20	B	1	15-NOV-96	43388	L8207-3
BERYLLIUM, TOTAL	mg/l	6010	< 0.0010	0.0010	0.0050	U	1	15-NOV-96	43388	L8207-3
CADMIUM, TOTAL	mg/l	6010	< 0.0040	0.0040	0.0050	U	1	15-NOV-96	43388	L8207-3
CALCIUM, TOTAL	mg/l	6010	54.	0.024	5.0		1	15-NOV-96	43388	L8207-3
CHROMIUM, TOTAL	mg/l	6010	0.030	0.0040	0.010		1	15-NOV-96	43388	L8207-3
COBALT, TOTAL	mg/l	6010	< 0.0070	0.0070	0.050	U	1	15-NOV-96	43388	L8207-3
COPPER, TOTAL	mg/l	6010	< 0.0060	0.0060	0.025	U	1	15-NOV-96	43388	L8207-3
IRON, TOTAL	mg/l	6010	< 0.019	0.019	0.10	U	1	15-NOV-96	43388	L8207-3
MAGNESIUM, TOTAL	mg/l	6010	8.0	0.071	5.0		1	15-NOV-96	43388	L8207-3
MANGANESE, TOTAL	mg/l	6010	< 0.0020	0.0020	0.015	U	1	15-NOV-96	43388	L8207-3
NICKEL, TOTAL	mg/l	6010	< 0.010	0.010	0.040	U	1	15-NOV-96	43388	L8207-3
POTASSIUM, TOTAL	mg/l	6010	3.7	1.2	5.0	B	1	15-NOV-96	43388	L8207-3
SILVER, TOTAL	mg/l	6010	< 0.0050	0.0050	0.010	U	1	15-NOV-96	43388	L8207-3
SODIUM, TOTAL	mg/l	6010	12.	0.075	5.0		1	15-NOV-96	43388	L8207-3
VANADIUM, TOTAL	mg/l	6010	0.0041	0.0040	0.050	B	1	15-NOV-96	43388	L8207-3
ZINC, TOTAL	mg/l	6010	0.069	0.0030	0.020		1	15-NOV-96	43388	L8207-3
ANTIMONY, TOTAL	mg/l	6010	< 0.0030	0.0030	0.060	U	1	17-NOV-96	43393	L8207-3
ARSENIC, TOTAL	mg/l	6010	0.0039	0.0020	0.010	B	1	17-NOV-96	43393	L8207-3
LEAD, TOTAL	mg/l	6010	< 0.0010	0.0010	0.0030	U	1	17-NOV-96	43393	L8207-3
SELENIUM, TOTAL	mg/l	6010	< 0.0020	0.0020	0.0050	U	1	17-NOV-96	43393	L8207-3
THALLIUM, TOTAL	mg/l	6010	< 0.0030	0.0030	0.010	U	1	17-NOV-96	43393	L8207-3
MERCURY, TOTAL	mg/l	7470	< 0.00020	0.00020	0.00020	U	1	21-NOV-96	43398	L8207-3

0026

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METALS

WATER

0035

9713534.2070

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: BOJDR0	Date Collected: 24-OCT-96
Matrix: Filt H2O	Date Received: 26-OCT-96
Percent Solids: N/A	

Constituent	Units	Method	Result	MDL	RDL	Data Qual	Dilution	Date Analyzed	LAS Batch ID	LAS Sample ID
ALUMINUM, DISSOLVED	mg/l	6010	< 0.040	0.040	0.20	U	1	20-NOV-96	43389	L8207-4
BARIUM, DISSOLVED	mg/l	6010	0.035	0.0020	0.20	B	1	20-NOV-96	43389	L8207-4
BERYLLIUM, DISSOLVED	mg/l	6010	< 0.0010	0.0010	0.0050	U	1	20-NOV-96	43389	L8207-4
CADMIUM, DISSOLVED	mg/l	6010	< 0.0040	0.0040	0.0050	U	1	20-NOV-96	43389	L8207-4
CALCIUM, DISSOLVED	mg/l	6010	52.	0.024	5.0		1	20-NOV-96	43389	L8207-4
CHROMIUM, DISSOLVED	mg/l	6010	0.025	0.0040	0.010		1	20-NOV-96	43389	L8207-4
COBALT, DISSOLVED	mg/l	6010	< 0.0070	0.0070	0.050	U	1	20-NOV-96	43389	L8207-4
COPPER, DISSOLVED	mg/l	6010	< 0.0060	0.0060	0.025	U	1	20-NOV-96	43389	L8207-4
IRON, DISSOLVED	mg/l	6010	< 0.019	0.019	0.10	U	1	20-NOV-96	43389	L8207-4
MAGNESIUM, DISSOLVED	mg/l	6010	7.7	0.071	5.0		1	20-NOV-96	43389	L8207-4
MANGANESE, DISSOLVED	mg/l	6010	< 0.0020	0.0020	0.015	U	1	20-NOV-96	43389	L8207-4
NICKEL, DISSOLVED	mg/l	6010	< 0.010	0.010	0.040	U	1	20-NOV-96	43389	L8207-4
POTASSIUM, DISSOLVED	mg/l	6010	3.1	1.2	5.0	B	1	20-NOV-96	43389	L8207-4
SILVER, DISSOLVED	mg/l	6010	< 0.0050	0.0050	0.010	U	1	20-NOV-96	43389	L8207-4
SODIUM, DISSOLVED	mg/l	6010	11.	0.075	5.0		1	20-NOV-96	43389	L8207-4
VANADIUM, DISSOLVED	mg/l	6010	0.0049	0.0040	0.050	B	1	20-NOV-96	43389	L8207-4
ZINC, DISSOLVED	mg/l	6010	< 0.0030	0.0030	0.020	U	1	20-NOV-96	43389	L8207-4
ANTIMONY, DISSOLVED	mg/l	6010	< 0.0030	0.0030	0.060	U	1	26-NOV-96	43394	L8207-4
ARSENIC, DISSOLVED	mg/l	6010	0.0065	0.0020	0.010	B	1	26-NOV-96	43394	L8207-4
LEAD, DISSOLVED	mg/l	6010	< 0.0010	0.0010	0.0030	U	1	26-NOV-96	43394	L8207-4
SELENIUM, DISSOLVED	mg/l	6010	< 0.0020	0.0020	0.0050	U	1	26-NOV-96	43394	L8207-4
THALLIUM, DISSOLVED	mg/l	6010	< 0.0030	0.0030	0.010	U	1	26-NOV-96	43394	L8207-4
MERCURY, DISSOLVED	mg/l	7470	< 0.00020	0.00020	0.00020	U	1	21-NOV-96	43399	L8207-4

0036

9713534.2071

LOCKHEED ANALYTICAL SERVICES

RADIOCHEMISTRY DATA REPORT

Account Name: Bechtel Hanford, Inc. * Richland, WA

Project Name: BECHTEL-HANFORD

Project Desc: Bechtel Hanford Project

Client Sample ID: BOJDQ9

Date Collected: 24-OCT-96

Matrix: Water

Login Number: L8207

Date Received: 26-OCT-96

Constituent	Method	Batch	Activity	Error	MDA	Qualifier	Units	Analyzed	Lab ID
Gross Alpha	LAL-0060	43133	3.2	1.8	2.1	C	pCi/L	13-NOV-96	L8207-5
Gross Beta	LAL-0060	43133	17.5	2.3	2.3		pCi/L	13-NOV-96	L8207-5

9713534.2072

LOCKHEED ANALYTICAL SERVICES

RADIOCHEMISTRY DATA REPORT

Account Name: Bechtel Hanford, Inc. * Richland, WA

Project Name: BECHTEL-HANFORD

Project Desc: Bechtel Hanford Project

Client Sample ID: BOJDQ9

Date Collected: 24-OCT-96

Matrix: Water

Login Number: L8207

Date Received: 26-OCT-96

Constituent	Method	Batch	Activity	Error	MDA	Qualifier	Units	Analyzed	Lab ID
H-3	LAL-0066	43158	2970	380	210		pCi/L	07-NOV-96	L8207-7