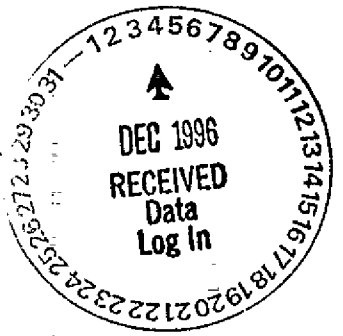
LK8205-LAS

0046812

LOCKHEED MARTIN

Lockheed Analytical Services



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

ANALYTICAL DATA REPORT

FOR

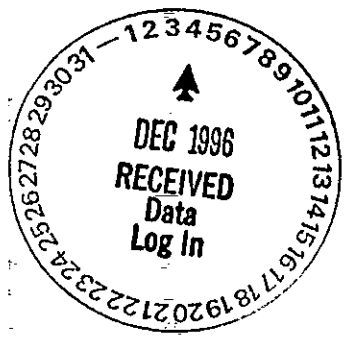
CHLORIDE, FLUORIDE, NITRATE, SULFATE, METALS, GROSS ALPHA/BETA, STRONTIUM-90 AND TRITIUM

LOG-IN NUMBER:	L8205
QUOTATION NUMBER:	Q400000-B
SAF:	B97-036
DOCUMENT FILE NUMBER:	1025596
BHI DOCUMENT FILE NO.:	409
SDG NUMBER:	LK8205

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



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RE:	Log-in No.:	L8205
	Quotation No.:	Q400000-B
	SAF:	B97-036
	Document File No.:	1025596
	BHI Document File No.:	409
	SDG No.:	LK8205

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on October 25, 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 ext. 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 Jenny L. Davis
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 LK8205 and analyzed in batch 1025 wh 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
BOJDY9	L8205-3	DUP, MS	300.0 Chloride, Fluoride, 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 4, 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 October 25 1996. The samples were logged in as L8205 and were prepared and analyzed in batches 1025 btT for total metals and 1025 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

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.

Gas Proportional Counter

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 Strontium-90

The strontium-90 analysis was performed using SOP, LAL-91-SOP-0065. The samples were analyzed in workgroups 43149 and 43582. The samples in workgroup 43149 were re-analyzed in workgroup 43582 due to out-of-criteria recoveries for the LCS and MS. No anlayses from workgroup 43199 were reported. 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. No other re-analyses were performed.

Liquid Scintillation Counter

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.

Yvonne M. Jacoby
Prepared By

November 22, 1996
Date

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST L8205	B97-036-22	Page 1 of 1

Collector M. Mehlhorn, R. Bowers	**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-D/DR	**Sampling Location** 100 D		**SAF No.** B97-036	
Ice Chest No. ER-20	**Field Logbook No.** EL-1352		**Method of Shipment** Federal Express	
Shipped To Lockheed	**Offsite Property No.** W97-0001-3		**Bill of Lading/Air Bill No.** 2771634363	

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
Maintain samples between 2 degrees C and 6 degrees C

Preservation	None	None	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2			
Type of Container	P	G	P	P	P	P	P			
No. of Container(s)	1	1	1	1	1	1	4			
Volume	20ml	500ml	500ml	500ml	1000ml	1000ml	1000ml			
SAMPLE ANALYSIS	Activity Scan	Tritium - H3	See item (1) in Special Instructions	ICP Metals - 6010A (TAL)	Gross Alpha	Gross Beta	Strontium-89,90 -- Total Sr			

Sample No.	Matrix *	Sample Date	Sample Time									
B0JDY9	Water	10-23-96	1118	X	X	X	X	X	X	X		
B0JDZ0	Water	10-23-96	1118				X					

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
Rong Bowers	10-23-96/1643	ER Kim Whitten Bechtel	1643 10-23-96
Relinquished By	Date/Time	Received By	Date/Time
Kim Whitten Bechtel	ER 0800 10-24-96		
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
** Sample analysis for 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 Activity Scan is for all samples listed on this form.

(1) IC Anions - 300 0 (Chloride, Fluoride, Nitrogen in Nitrate, Sulfate)

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 Paula Deluca	Title Sample Custodian	Date/Time 10-25-96/900	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: B0JDY9	Date Collected: 23-OCT-96
Matrix: Water	Date Received: 25-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	35.	0.020		25-OCT-96	42870	L8205-3
Fluoride	mg/L	300.0	0.026	0.10	B	28-OCT-96	42875	L8205-3
Nitrate-N	mg/L	300.0	18.	0.020		25-OCT-96	42871	L8205-3
Sulfate	mg/L	300.0	160	0.10		25-OCT-96	42874	L8205-3

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: B0JDY9	Date Collected: 23-OCT-96
Matrix: Water	Date Received: 25-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	< 0.040	0.040	0.20	U	1	15-NOV-96	43386	L8205-4
BARIUM, TOTAL	mg/l	6010	0.098	0.0020	0.20	B	1	15-NOV-96	43386	L8205-4
BERYLLIUM, TOTAL	mg/l	6010	< 0.0010	0.0010	0.0050	U	1	15-NOV-96	43386	L8205-4
CADMIUM, TOTAL	mg/l	6010	< 0.0040	0.0040	0.0050	U	1	15-NOV-96	43386	L8205-4
CALCIUM, TOTAL	mg/l	6010	100	0.024	5.0		1	15-NOV-96	43386	L8205-4
CHROMIUM, TOTAL	mg/l	6010	0.057	0.0040	0.010		1	15-NOV-96	43386	L8205-4
COBALT, TOTAL	mg/l	6010	< 0.0070	0.0070	0.050	U	1	15-NOV-96	43386	L8205-4
COPPER, TOTAL	mg/l	6010	< 0.0060	0.0060	0.025	U	1	15-NOV-96	43386	L8205-4
IRON, TOTAL	mg/l	6010	0.11	0.019	0.10		1	15-NOV-96	43386	L8205-4
MAGNESIUM, TOTAL	mg/l	6010	23.	0.071	5.0		1	15-NOV-96	43386	L8205-4
MANGANESE, TOTAL	mg/l	6010	0.0039	0.0020	0.015	B	1	15-NOV-96	43386	L8205-4
NICKEL, TOTAL	mg/l	6010	< 0.010	0.010	0.040	U	1	15-NOV-96	43386	L8205-4
POTASSIUM, TOTAL	mg/l	6010	4.5	1.2	5.0	B	1	15-NOV-96	43386	L8205-4
SILVER, TOTAL	mg/l	6010	< 0.0050	0.0050	0.010	U	1	15-NOV-96	43386	L8205-4
SODIUM, TOTAL	mg/l	6010	13.	0.075	5.0		1	15-NOV-96	43386	L8205-4
VANADIUM, TOTAL	mg/l	6010	0.0049	0.0040	0.050	B	1	15-NOV-96	43386	L8205-4
ZINC, TOTAL	mg/l	6010	0.0054	0.0030	0.020	B	1	15-NOV-96	43386	L8205-4
ANTIMONY, TOTAL	mg/l	6010	< 0.0030	0.0030	0.060	U	1	17-NOV-96	43390	L8205-4
ARSENIC, TOTAL	mg/l	6010	0.0033	0.0020	0.010	B	1	17-NOV-96	43390	L8205-4
LEAD, TOTAL	mg/l	6010	< 0.0010	0.0010	0.0030	U	1	17-NOV-96	43390	L8205-4
SELENIUM, TOTAL	mg/l	6010	0.0047	0.0020	0.0050	B	1	17-NOV-96	43390	L8205-4
THALLIUM, TOTAL	mg/l	6010	< 0.0030	0.0030	0.010	U	1	17-NOV-96	43390	L8205-4
MERCURY, TOTAL	mg/l	7470	< 0.00020	0.00020	0.00020	U	1	19-NOV-96	43395	L8205-4

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: B0JDZ0	Date Collected: 23-OCT-96
Matrix: Filt H2O	Date Received: 25-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	0.044	0.040	0.20	B	1	19-NOV-96	43387	L8205-5
BARIUM, DISSOLVED	mg/l	6010	0.10	0.0020	0.20	B	1	19-NOV-96	43387	L8205-5
BERYLLIUM, DISSOLVED	mg/l	6010	< 0.0010	0.0010	0.0050	U	1	19-NOV-96	43387	L8205-5
CADMIUM, DISSOLVED	mg/l	6010	< 0.0040	0.0040	0.0050	U	1	19-NOV-96	43387	L8205-5
CALCIUM, DISSOLVED	mg/l	6010	110	0.024	5.0		1	19-NOV-96	43387	L8205-5
CHROMIUM, DISSOLVED	mg/l	6010	0.059	0.0040	0.010		1	19-NOV-96	43387	L8205-5
COBALT, DISSOLVED	mg/l	6010	< 0.0070	0.0070	0.050	U	1	19-NOV-96	43387	L8205-5
COPPER, DISSOLVED	mg/l	6010	< 0.0060	0.0060	0.025	U	1	19-NOV-96	43387	L8205-5
IRON, DISSOLVED	mg/l	6010	< 0.019	0.019	0.10	U	1	19-NOV-96	43387	L8205-5
MAGNESIUM, DISSOLVED	mg/l	6010	23.	0.071	5.0		1	19-NOV-96	43387	L8205-5
MANGANESE, DISSOLVED	mg/l	6010	0.0024	0.0020	0.015	B	1	19-NOV-96	43387	L8205-5
NICKEL, DISSOLVED	mg/l	6010	< 0.010	0.010	0.040	U	1	19-NOV-96	43387	L8205-5
POTASSIUM, DISSOLVED	mg/l	6010	6.2	1.2	5.0		1	19-NOV-96	43387	L8205-5
SILVER, DISSOLVED	mg/l	6010	< 0.0050	0.0050	0.010	U	1	19-NOV-96	43387	L8205-5
SODIUM, DISSOLVED	mg/l	6010	13.	0.075	5.0		1	19-NOV-96	43387	L8205-5
VANADIUM, DISSOLVED	mg/l	6010	0.0080	0.0040	0.050	B	1	19-NOV-96	43387	L8205-5
ZINC, DISSOLVED	mg/l	6010	< 0.0030	0.0030	0.020	U	1	19-NOV-96	43387	L8205-5
ANTIMONY, DISSOLVED	mg/l	6010	< 0.0030	0.0030	0.060	U	1	26-NOV-96	43391	L8205-5
ARSENIC, DISSOLVED	mg/l	6010	0.0084	0.0020	0.010	B	1	26-NOV-96	43391	L8205-5
LEAD, DISSOLVED	mg/l	6010	< 0.0010	0.0010	0.0030	U	1	26-NOV-96	43391	L8205-5
SELENIUM, DISSOLVED	mg/l	6010	0.0038	0.0020	0.0050	B	1	26-NOV-96	43391	L8205-5
THALLIUM, DISSOLVED	mg/l	6010	< 0.0030	0.0030	0.010	U	1	26-NOV-96	43391	L8205-5
MERCURY, DISSOLVED	mg/l	7470	< 0.00020	0.00020	0.00020	U	1	19-NOV-96	43396	L8205-5

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: B0JDY9
Date Collected: 23-OCT-96
Matrix: Water

Login Number: L8205
Date Received: 25-OCT-96

Constituent	Method	Batch	Activity	Error	MDA	Qualifier	Units	Analyzed	Lab ID
H-3	LAL-0066	43158	17800	1200	210		pCi/L	07-NOV-96	L8205-2

0053

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: B0JDY9
Date Collected: 23-OCT-96
Matrix: Water

Login Number: L8205
Date Received: 25-OCT-96

Constituent	Method	Batch	Activity	Error	MDA	Qualifier	Units	Analyzed	Lab ID
Gross Alpha	LAL-0060	43133	0.9	1.9	3.6	C	pCi/L	13-NOV-96	L8205-6
Gross Beta	LAL-0060	43133	63.9	5.4	3.2		pCi/L	13-NOV-96	L8205-6

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: B0JDY9
Date Collected: 23-OCT-96
Matrix: Water

Login Number: L8205
Date Received: 25-OCT-96

Constituent	Method	Batch	Activity	Error	MDA	Qualifier	Units	Analyzed	Lab ID
Sr-89,90	LAL-0065	43582	25.7	1.6	0.53		pCi/L	19-NOV-96	L8205-8

0055