

0044364

LK 3999



Environmental Systems & Technologies Co.

Lockheed Analytical Services
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Las Vegas, Nevada 89119-3705

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April 10, 1995

Ms. Joan Kessner
Bechtel Hanford, Inc.
345 Hills
P.O. Box 969
Richland, WA 99352



RE: Log-in No.:	L3999
Quotation No.:	Q400000-B
SAF:	B95-030
Document File No.:	0307596
WHC Document File No.:	186
SDG No.:	LK3999

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 7 March 1995.

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 not received in time to meet the analytical holding time requirements. (See attached Sample Receiving Checklist). All discrepancies identified upon receipt of the samples have been forwarded to the client and are documented in the enclosed chain-of-custody records.

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 Hall at (509) 943-4423.

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,



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: 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

- One water and one filtered water sample were received for LK3999 and prepared as batch 307WH and analyzed for selected analytes as requested on the chain of custody.

Quality control analysis was performed on the following sample:

Client ID	LAL #		Method
BODX98	L3999-9	DUP	120.1 Conductivity
	L3999-10	DUP, MS	180.1 Turbidity
	L3999-11	DUP	9040 pH
BODX99	L3999-22	MS, DUP	300.0 Chloride, Fluoride, Nitrate-N, Nitrite-N, Orthophosphate, Sulfate

Holding Time Requirements

- All samples were analyzed within the specified holding time, except Method 180.1 Turbidity, Method 300.0 Nitrate-N, Nitrite-N and Orthophosphate which were received from the client out of holding time; and Method 9040 pH which was inadvertently analyzed outside of holding time. Analyses proceeded at the direction of the client and the applicable samples are 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

March 29, 1995
 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 March 7, 1995. The samples were logged in as L3999 and were prepared and analyzed in batches 307 bhT and 307 bhD.

Holding Times

All samples were analyzed within the method-specific holding times.

Method Blanks-

The method blanks were free of contamination.

Internal Quality Control-

All Internal Quality Control were within acceptance limits.

Shellee McGrath
Prepared By

March 31, 1995
Date

**CASE NARRATIVE
ORGANIC ANALYSES**

Analytical Method 413.1 Oil and Grease

Analytical Batch 032895-413.1

The samples were extracted and analyzed within holding time on March 28, 1995. Total Oil and Grease was not detected in the method blank (MB). The recoveries of Total Oil and Grease in the matrix spike (MS), matrix spike duplicate (MSD) and laboratory control sample (LCS) were within QC limits. The relative percent difference (RPD) between the MS and MSD recoveries was within QC limits.

Analytical Method 418.1 Total Recoverable Petroleum Hydrocarbons (TRPH)

Analytical Batch 032495-418.1

The samples were extracted within holding time on March 21, 1995 and analyzed within holding time on March 24, 1995. All initial and continuing calibrations were within QC criteria. TRPH was not detected in the method blank (MB). Due to insufficient sample volume, a laboratory control sample (LCS) and a laboratory control sample duplicate (LCSDUP) were extracted and analyzed in place of a matrix spike (MS) and a matrix spike duplicate (MSD). The TRPH recoveries in the LCS and LCSDUP were within QC limits. The relative percent difference (RPD) between the LCS and LCSDUP recoveries was within QC limits.

Lydia M. Coleman
Prepared By

April 10, 1995
Date

**CASE NARRATIVE
RADIOCHEMICAL ANALYSES**

The routine calibration and quality control 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, duplicate samples.

Holding Time Requirements

All holding times were met.

Chemical Recoveries and MDAs can be found on the preparation sheets and calculation sheets, respectively, on the attached raw data for each method.

Analytical Method

Gamma Spectrum Analysis

The gamma spectrum analysis was performed using LAL-91-SOP-0063. No problems were encountered during analysis. All QC criteria were met.

Gross Alpha Beta

The gross alpha beta analysis was performed using LAL-91-SOP-0060. The alpha matrix spike analysis was slightly below limits; however, since the LCS is within limits, the data is considered acceptable. All other QC criteria were met.

Strontium

The strontium analysis was performed using LAL-91-SOP-0196. No problems were encountered during analysis. All QC criteria were met.

Tritium

The tritium analysis was performed using LAL-91-SOP-0066. No problems were encountered during analysis. All QC criteria were met.

Yvonne M. Jacoby
Prepared By

April 10, 1995
Date

Lockheed Analytical Services
DATA QUALIFIERS FOR INORGANIC ANALYSES

[Revised 08/28/92]

For Use on the Analytical Data Reporting Forms	
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).
C	<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).
D	Presence of high levels of interfering constituents required dilution of sample which increased the RDL by the dilution factor.
E	Estimated value due to presence of interference.
H	Sample analysis performed outside of method-or client-specified maximum holding time requirement.
M	<i>For CLP Analyses Only</i> – Duplicate injection precision criterion was not met.
N	Matrix spike recovery exceeded acceptance limits.
S	Reported value was determined from the method of standard addition.
U	<i>For CLP Reporting Only</i> – Constituent was analyzed for but not detected (sample quantitation must be corrected for dilution and percent moisture).
W	<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.
X, Y, or Z	Analyst-defined qualifier.
*	Relative percent difference (RPD) for duplicate analysis exceeded acceptance limits.
+	Correlation coefficient (r) for the MSA is less than 0.995.
For Use on the QC Data Reporting Forms	
a¹	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.
b¹	The RPD cannot be computed because the sample and/or duplicate concentration was below the RDL.

¹ Used as footnote designations on the QC summary form.

Lockheed Analytical Services
DATA QUALIFIERS FOR ORGANIC ANALYSES

[Revised 01/19/1994]

For Use On The Analytical Data Reporting Forms	
A	<i>For CLP analyses Only</i> – The TIC is a suspected aldol-condensation product.
B	Any constituent that was also detected in the associated blank whose concentration was greater than the practical or reporting detection limit (PQL or RDL).
C	Constituent confirmed by GC/MS analysis. [<i>pesticide/PCB analyses only</i>]
D	Constituent detected in the diluted sample. It also indicates that an accurate quantitation is not possible due to <u>surrogates</u> being diluted out of the samples during the course of the analysis.
E	Constituent concentration exceeded the calibration range.
G	The quantitation is not gasoline or diesel but believed to be some other combination of hydrocarbons.
H	Sample analysis performed outside of method- or client-specified maximum holding time requirement.
J	<i>Estimated value</i> – (1) constituent detected at a level less than the RDL or PQL and greater than or equal to the MDL; (2) estimated concentration for TICs (<i>For CLP Reporting Only</i>).
N	<i>For CLP Reporting Only</i> – Tentatively identified constituents (TICs) identified based on mass spectral library search.
P	<i>For CLP Reporting Only</i> – The percent difference between the concentrations detected on both GC columns was greater than 25 percent [<i>pesticide/PCB analyses only</i>].
U	<i>For CLP Reporting Only</i> – Constituent was analyzed for but not detected (sample quantitation must be corrected for dilution and percent moisture).
X, Y, or Z	Analyst-defined qualifier.
N/A (% Moisture)	N/A in the % moisture cell indicates that data are reported on an "as received" basis. A value in the % moisture cell indicates that data are reported based on a "dry weight" basis. <i>For non-CLP work</i> , RDLs are not adjusted for % moisture even when data are reported on a "dry weight" basis.
For Use On The QC Data Reporting Forms	
*	QC data (i.e., percent recovery data for matrix spike, matrix spike duplicate, laboratory control standard, or surrogates; and RPD for matrix spike duplicate or unspiked duplicate) exceeded acceptance limits.
a¹	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.
b¹	The RPD cannot be computed because the sample and/or duplicate concentration was below the RDL.

¹ Used as footnote designations on the QC Summary Form.

Lockheed Analytical Services
DATA QUALIFIERS FOR RADIOCHEMICAL ANALYSES

[Revised 08/28/92]

For Use on the Analytical Data Reporting Forms	
B	Any constituent that was also detected in the associated blank whose concentration was greater than the reporting detection limit (RDL) and/or minimum detectable activity (MDA).
C	Presence of high TDS in sample required reduction of sample size which increased the MDA.
D	Constituent detected in the diluted sample.
E	Constituent concentration exceeded the calibration or attenuation curve range.
F	<i>For Alpha Spectrometry Only</i> -- FWHM exceeded acceptance limits.
H	Sample analysis performed outside of method-specified maximum holding time requirement.
Y	Chemical yield exceeded acceptance limits.
For Use on the QC Data Reporting Forms	
*	QC data (i.e., percent recovery data for laboratory control standard and matrix spike; and RPD for replicate analyses) exceeded acceptance limits.
a¹	The spike recovery and/or RPD for matrix spike and duplicates cannot be evaluated due to insufficient spiking level compared to the elevated sample analyte concentration.
b¹	The RPD cannot be computed because the sample and/or duplicate concentration was below the MDA.

¹ Used as foot note designations on the QC summary form.

LOGIN CHAIN OF CUSTODY REPORT (ln01)
 Mar 14 1995, 01:16 pm

Login Number: L3999
 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
L3999-1 TEMP 4 Location: RFG01-43 Water	B0DX98 "SAF # B95-030" 1 S SCREENING	03-MAR-95	07-MAR-95	11-APR-95
		Hold:30-AUG-95		
L3999-2 TEMP 4 Location: RFG01-7A Water	B0DX98 "SAF # B95-030" 1 S 6010 ICP METALS	03-MAR-95	07-MAR-95	11-APR-95
		Hold:30-AUG-95		
L3999-3 TEMP 4 Location: RFG01-7A Water Water Water Water Water Water	B0DX98 "SAF # B95-030" 1 S 300.0 CHLORIDE 1 S 300.0 FLUORIDE 1 S 300.0 NITRATE 1 S 300.0 NITRITE 1 S 300.0 PHOSPHATE 1 S 300.0 SULFATE	03-MAR-95	07-MAR-95	11-APR-95
		Hold:31-MAR-95 Hold:31-MAR-95 Hold:05-MAR-95 Hold:05-MAR-95 Hold:05-MAR-95 Hold:31-MAR-95		
L3999-4 TEMP 4 Location: RFG01-7A Water	B0DX98 "SAF # B95-030" 1 S 413.1 OIL AND GREASE	03-MAR-95	07-MAR-95	11-APR-95
		Hold:31-MAR-95		
L3999-5 TEMP 4 Location: RFG01-7A	B0DX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95
L3999-6 TEMP 4 Location: RFG01-7A	B0DX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95
L3999-7 TEMP 4 Location: RFG01-7A	B0DX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95
L3999-8 TEMP 4 Location: RFG01-7A Water	B0DX98 "SAF # B95-030" 1 S 418.1 TPH	03-MAR-95	07-MAR-95	11-APR-95
		Hold:31-MAR-95		

* CHANGED MATRIX TO 15 (FIL+H₂O) FOR ANALYSES 013
 300.0 FLUORIDE; NITRITE, PHOSPHATE ON SAMPLE L3999-2
 — LAB REQUEST —
 3-14-95
 0307596

LOGIN CHAIN OF CUSTODY REPORT (ln01)
 Mar 14 1995, 01:16 pm

Login Number: L3999
 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
L3999-9 TEMP 4 Location: RFG01-7A Water	B0DX98 "SAF # B95-030" 1 S 120.1 CONDUCTIVITY	03-MAR-95	07-MAR-95	11-APR-95
		Hold:31-MAR-95		
L3999-10 TEMP 4 Location: RFG01-7A Water	B0DX98 "SAF # B95-030" 1 S 180.1 TURBIDITY	03-MAR-95	07-MAR-95	11-APR-95
		Hold:05-MAR-95		
L3999-11 TEMP 4 Location: RFG01-7A Water	B0DX98 "SAF # B95-030" 1 S 9040 PH	03-MAR-95	07-MAR-95	11-APR-95
		Hold:10-MAR-95		
L3999-12 TEMP 4 Location: 156CART-5 Water	B0DX98 "SAF # B95-030" 1 S TRITIUM(H3) LAL-0066	03-MAR-95	07-MAR-95	11-APR-95
		Hold:30-AUG-95		
L3999-13 TEMP 4 Location: 142 Water Water Water	B0DX98 "SAF # B95-030" 1 S GAMMA SPEC LAL-0063 1 S GR ALP/BETA LAL-0060 1 S SR-90 LAL-0196	03-MAR-95	07-MAR-95	11-APR-95
		Hold:30-AUG-95 Hold:30-AUG-95 Hold:30-AUG-95		
L3999-14 TEMP 4 Location: 156CART-5	B0DX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95
L3999-15 TEMP 4 Location: 156CART-5	B0DX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95
L3999-16 TEMP 4 Location: 156CART-5	B0DX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95
L3999-17 TEMP 4 Location: 156CART-5	B0DX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95

030159

LOGIN CHAIN OF CUSTODY REPORT (ln01)
 Mar 14 1995, 01:16 pm

Login Number: L3999
 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
L3999-18 TEMP 4 "SAF # B95-030" Location: 156CART-5	BODX98	03-MAR-95	07-MAR-95	11-APR-95
L3999-19 TEMP 4 "SAF # B95-030" Location: 156CART-5	BODX98	03-MAR-95	07-MAR-95	11-APR-95
L3999-20 TEMP 4 "SAF # B95-030" Location: 156CART-5	BODX98	03-MAR-95	07-MAR-95	11-APR-95
L3999-21 TEMP 4 "SAF # B95-030" Location: RFG01-7A Filt H20 15 S 6010 ICP METALS	BODX99	03-MAR-95	07-MAR-95	11-APR-95
* L3999-22 TEMP 4 "SAF # B95-030" Location: RFG01-7A Filt H20 15 S 300.0 CHLORIDE Filt H20 15 S 300.0 FLUORIDE Filt H20 15 S 300.0 NITRATE Filt H20 15 S 300.0 NITRITE Filt H20 15 S 300.0 PHOSPHATE Filt H20 15 S 300.0 SULFATE	BODX99	03-MAR-95	07-MAR-95	11-APR-95
				Hold:30-AUG-95
				Hold:31-MAR-95
				Hold:31-MAR-95
				Hold:05-MAR-95
				Hold:05-MAR-95
L3999-23 Location: Water 1 S EDD - DISK DEL. Water 1 S INORG TYPE 2 RPT + Water 1 S RAD RPT TYPE 2	REPORT TYPE	07-MAR-95	07-MAR-95	11-APR-95

Signature: Paul D. [Signature]

Date: 3-14-95

015

030759

LOGIN CHAIN OF CUSTODY REPORT (1n01)
 Mar 07 1995, 05:36 pm

Login Number: L3999
 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
L3999-1 TEMP 4 Location: RFG01-43 Water	BODX98 "SAF # B95-030" 1 S SCREENING	03-MAR-95	07-MAR-95	11-APR-95
		Hold:30-AUG-95		
L3999-2 TEMP 4 Location: RFG01-7A Water	BODX98 "SAF # B95-030" 1 S 6010 ICP METALS	03-MAR-95	07-MAR-95	11-APR-95
		Hold:30-AUG-95		
L3999-3 TEMP 4 Location: RFG01-7A Water	BODX98 "SAF # B95-030" 1 S 300.0 CHLORIDE	03-MAR-95	07-MAR-95	11-APR-95
Water	1 S 300.0 FLUORIDE	Hold:31-MAR-95		
Water	1 S 300.0 NITRATE	Hold:05-MAR-95		
Water	1 S 300.0 NITRITE	Hold:05-MAR-95		
Water	1 S 300.0 PHOSPHATE	Hold:05-MAR-95		
Water	1 S 300.0 SULFATE	Hold:31-MAR-95		
L3999-4 TEMP 4 Location: RFG01-7A Water	BODX98 "SAF # B95-030" 1 S 413.1 OIL AND GREASE	03-MAR-95	07-MAR-95	11-APR-95
		Hold:31-MAR-95		
L3999-5 TEMP 4 Location: RFG01-7A	BODX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95
L3999-6 TEMP 4 Location: RFG01-7A	BODX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95
L3999-7 TEMP 4 Location: RFG01-7A	BODX98 "SAF # B95-030"	03-MAR-95	07-MAR-95	11-APR-95
L3999-8 TEMP 4 Location: RFG01-7A Water	BODX98 "SAF # B95-030" 1 S 418.1 TPH	03-MAR-95	07-MAR-95	11-APR-95
		Hold:31-MAR-95		

0307596

LOGIN CHAIN OF CUSTODY REPORT (ln01)
 Mar 07 1995, 05:36 pm

Login Number: L3999
 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
L3999-9 TEMP 4 Location: RFG01-7A Water	BODX98 "SAF # B95-030" RFG01-7A 1 S 120.1 CONDUCTIVITY	03-MAR-95	07-MAR-95	11-APR-95
		Hold:31-MAR-95		
L3999-10 TEMP 4 Location: RFG01-7A Water	BODX98 "SAF # B95-030" RFG01-7A 1 S 180.1 TURBIDITY	03-MAR-95	07-MAR-95	11-APR-95
		Hold:05-MAR-95		
L3999-11 TEMP 4 Location: RFG01-7A Water	BODX98 "SAF # B95-030" RFG01-7A 1 S 9040 PH	03-MAR-95	07-MAR-95	11-APR-95
		Hold:10-MAR-95		
L3999-12 TEMP 4 Location: 157 Water	BODX98 "SAF # B95-030" 157 1 S TRITIUM(H3) LAL-0066	03-MAR-95	07-MAR-95	11-APR-95
		Hold:30-AUG-95		
L3999-13 TEMP 4 Location: 157 Water Water Water	BODX98 "SAF # B95-030" 157 1 S GAMMA SPEC LAL-0063 1 S GR ALP/BETA LAL-0060 1 S SR-90 LAL-0196	03-MAR-95	07-MAR-95	11-APR-95
		Hold:30-AUG-95		
		Hold:30-AUG-95		
		Hold:30-AUG-95		
L3999-14 TEMP 4 Location: 157	BODX98 "SAF # B95-030" 157	03-MAR-95	07-MAR-95	11-APR-95
L3999-15 TEMP 4 Location: 157	BODX98 "SAF # B95-030" 157	03-MAR-95	07-MAR-95	11-APR-95
L3999-16 TEMP 4 Location: 157	BODX98 "SAF # B95-030" 157	03-MAR-95	07-MAR-95	11-APR-95
L3999-17 TEMP 4 Location: 157	BODX98 "SAF # B95-030" 157	03-MAR-95	07-MAR-95	11-APR-95

0307546

LOGIN CHAIN OF CUSTODY REPORT (ln01)
 Mar 07 1995, 05:36 pm

Login Number: L3999
 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
L3999-18 TEMP 4 "SAF # B95-030" Location: 157	BODX98	03-MAR-95	07-MAR-95	11-APR-95
L3999-19 TEMP 4 "SAF # B95-030" Location: 157	BODX98	03-MAR-95	07-MAR-95	11-APR-95
L3999-20 TEMP 4 "SAF # B95-030" Location: 157	BODX98	03-MAR-95	07-MAR-95	11-APR-95
L3999-21 TEMP 4 "SAF # B95-030" Location: RFG01-7A Filt H20 15 S 6010 ICP METALS	BODX99	03-MAR-95	07-MAR-95	11-APR-95
L3999-22 TEMP 4 "SAF # B95-030" Location: RFG01-7A Filt H20 15 S 300.0 CHLORIDE Water 1 S 300.0 FLUORIDE Filt H20 15 S 300.0 NITRATE Water 1 S 300.0 NITRITE Water 1 S 300.0 PHOSPHATE Filt H20 15 S 300.0 SULFATE	BODX99	03-MAR-95	07-MAR-95	11-APR-95
L3999-23 Location: Water 1 S EDD - DISK DEL. Water 1 S INORG TYPE 2 RPT + Water 1 S RAD RPT TYPE 2	REPORT TYPE	07-MAR-95	07-MAR-95	11-APR-95

Signature: Paul C. Davis 018
 Date: 3-07-95

030750

Bechtel Hanford Incorporated

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

L3999

Data Turnaround

Priority
 Normal

Collector <i>K. Lee / A. Rizzo</i>	Company Contact J. V. Borghese	Telephone No. (509) 372-9584
Project Designation 100-NR-2 Groundwater Sampling - Round 7	Sampling Location 100 N	SAF No. B95-030
Ice Chest No. <i>GW5-024</i>	Field Logbook No. <i>EFL-1CS8</i>	Method of Shipment Federal Express
Shipped To Lockheed	Offsite Property No. <i>W95-0-0204-19</i>	Bill of Lading/Air Bill No. <i>2904621246</i>

Possible Sample Hazards/Remarks	Preservative	HN03	Cool 4C	H2SO4	HCL	Cool 4C	HN03			HN03	Cool 4C				
		Type of Container	G	P/G	G	Gs*	P/G	P/G	P	P	P	G			G
	No. of Container(s)	1	1	4	1	1	1	1	1	1	8			1	1
Special Handling and/or Storage Maintain samples between 2C and 6C.	Volume	500ml	500ml	1L	1L	250ml	250ml	125ml	500ml	20ml	1L			500ml	500ml

SAMPLE ANALYSIS	ICP Metals-TAL	Anions (IC) F, Cl, SO4, PO4, NO2, NO3.	Oil and Grease	TPH	Conductivity	Turbidity	pH	Tritium	Activity Scan	Gross Alpha, Gross Beta, Sr-90, Gamma Spec			ICP Metals-TAL	Anions (IC) F, Cl, SO4, PO4, NO2, NO3.
	Unfiltered	Unfiltered											Filtered	Filtered

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0DX98	W	3-3-95	1059	X	X	X	X	X	X	X	X	X	X				
B0DX99	W	3-3-95	1059											X	X		

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix*
Relinquished By <i>AG Rizzo</i>	Date/Time 3-3-95 1225	Received By <i>David St. John</i>	Date/Time 3-3-95 1225
Relinquished By <i>David St. John</i>	Date/Time 3-3-95 1315	Received By <i>K. Trapp</i>	Date/Time 3/3/95
Relinquished By <i>K. Trapp</i>	Date/Time 3/6/95	Received By <i>K. Trapp</i>	Date/Time 3/6/95
Relinquished By <i>K. Trapp</i>	Date/Time 3-07-95	Received By <i>Paula Davis</i>	Date/Time 3-07-95 19:45 am

Sample analysis for PO4, NO2, and NO3 by EPA 300.0; turbidity by EPA 180.1; and pH by SW-846 9040 are being requested for information only. The ERC Contractor acknowledges that the hold times will not be met.

The Activity Scan is for all samples listed on this chain of custody.

Gs* = Glass with septum top. No head space.

Tritium provided in Serial Printer instead of GLASS 3-3-95 (TR)

LABORATORY SECTION	Received By <i>Paula Davis</i>	Title <i>Sample Custody</i>	Date/Time <i>3-07-95 19:45 am</i>
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

AMPLE STATUS REPORT FOR N 4871. RAD SCREEN 199-N-21 TIME: 3/ 6/95 8:30
DISPATCHED: 2/22/95 14:38 SAMPLE HAS NOT BEEN SLURPED PAGE 1
RECEIVED: 3/ 6/95 7:48

EXT. DETER. RESULTS OR STATUS
**** *****
4271 TOT-ACT < 5.00000E 01 pci/G

OUT OF GOOD CHARGE
RANGE? ANS? CODE
*** **
N Y XR5561

END OF REPORT

BODX48
BODX49
BODX98
BODX99

KT 3/6/95

Sample Login

Login Review Checklist

Lot Number L3999

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 an effective login review, as a minimum, five reports from the login process are required. These are the chain of custody (or equivalent), the login chain of custody report, the sample summary report, the sample receiving checklist, and the login quotation. Before beginning a review, ensure that these five components are available. For jobs with single component samples, the sample summary report may be omitted.

Sample Summary Report

Yes No

N/A

- | | | | | |
|----|--|-------------------------------------|--------------------------|--------------------------|
| 1. | Are all sample IDs correct? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Are all samples present? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Are all matrices correct?
(e.g., TCLP analyses should be on a TCLP leachate, field blanks should be water) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Are all analyses on the chain of custody/login quotation included? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Are analyses logged in for the correct container?
(e.g., analyses requiring preservation logged in for a preserved container and vice versa) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | Are samples logged in according to laboratory batching procedures?
(e.g., TCLP regular leaching and associated metals/semivolatile organics should be logged in on the same bottle) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Login Chain of Custody Report

- | | | | | |
|----|---|-------------------------------------|--------------------------|-------------------------------------|
| 1. | Are the Collect, Receive, and Due dates correct for every sample? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Have appropriate sample comments been included?
(e.g., MS/MSD designation, comments from the client concerning method modifications) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Sample Receiving Checklist

- | | | | | |
|--|---|--------------------------|--------------------------|-------------------------------------|
| 1. | Are any discrepancies between the chain of custody and the login noted? <u> </u> <u> </u> <u> </u> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <small>(e.g., client IDs different on chains of custody and bottle labels, samples not sent, samples lost from breakage)</small> | | | | |

[Signature]

3-07-95

[Signature]

3-07-95

Primary review signature

Date

Secondary review signature

Date

**Lockheed Analytical Services
Sample Receiving Checklist**

Client Name: W/HC

Job No. L3999

Cooler ID: N/A

COOLER CONDITION UPON RECEIPT

Temperature of cooler upon receipt: 4°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			<u>N/A</u>
are samples bi-phasic (if so, indicate sample ID'S):			<u>NUT</u>

MISCELLANEOUS ITEMS

	Yes	No	* Comments/Discrepancies
samples with short holding times	X		<u>PASSED Holding Times</u>
samples to subcontract			<u>nitrite / nitrate / Turbidity</u>

ADDITIONAL COMMENTS/DISCREPANCIES 300.0 Phosphate, nitrite and fluoride were not under The Filtered H₂O matrix in the Data Base. They were Logged into Data Base Under water matrix.

Completed by / date: Paulc Dang 3-07-99

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

C301591

023

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

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
BODX98	L3999-1		Water	- SCREENING
	L3999-2		Water	-6010 ICP METALS
	L3999-3		Water	-300.0 CHLORIDE
	L3999-3		Water	-300.0 FLUORIDE
	L3999-3		Water	-300.0 NITRATE
	L3999-3		Water	-300.0 NITRITE
	L3999-3		Water	-300.0 PHOSPHATE
	L3999-3		Water	-300.0 SULFATE
	L3999-4		Water	-413.1 OIL AND GRE
	L3999-8		Water	-418.1 TPH
	L3999-9		Water	-120.1 CONDUCTIVI
	L3999-10		Water	-180.1 TURBIDITY
	L3999-11		Water	.9040 PH
	L3999-12		Water	-TRITIUM(H3) LAL-C
	L3999-13		Water	-GAMMA SPEC LAL-00
L3999-13		Water	-GR ALP/BETA LAL-C	
L3999-13		Water	-SR-90 LAL-0196	
BODX99	L3999-21		Filt H2O	-6010 ICP METALS
	L3999-22		Filt H2O	-300.0 CHLORIDE
	L3999-22		Water	-300.0 FLUORIDE
	L3999-22		Filt H2O	-300.0 NITRATE
	L3999-22		Water	-300.0 NITRITE
	L3999-22		Water	-300.0 PHOSPHATE
	L3999-22		Filt H2O	-300.0 SULFATE
REPORT TYPE	L3999-23		Water	EDD - DISK DEL.
	L3999-23		Water	INORG TYPE 2 RPT
	L3999-23		Water	RAD RPT TYPE 2

LOCKHEED ANALYTICAL SERVICES
COMMON IONS AND ADDITIONAL ANALYTES

Sample Results

Client Sample ID: B0DX98	Date Collected: 03-MAR-95
Matrix: Water	Date Received: 07-MAR-95

Constituent	Units	Method	Result	Reporting Det Limit	Data Qualifier(s)	Date Analyzed	LAS Batch ID	LAS Sample ID
Specific Conductance	uS/cm	120.1	1200	1		20-MAR-95	20417	L3999-9
Turbidity	NTU	180.1	1.3	N/A	H	20-MAR-95	20418	L3999-10
Chloride	mg/L	300.0	22.	0.02		15-MAR-95	20415	L3999-3
Fluoride	mg/L	300.0	0.32	0.1		14-MAR-95	20413	L3999-3
Nitrate-N	mg/L	300.0	5.4	0.02	H	15-MAR-95	20411	L3999-3
Nitrite-N	mg/L	300.0	< 0.01	0.01	H	15-MAR-95	20412	L3999-3
Ortho Phosphate	mg/L	300.0	< 0.1	0.1	H	14-MAR-95	20414	L3999-3
Sulfate	mg/L	300.0	390	1	D(1:10)	15-MAR-95	20416	L3999-3
pH	pH Units	9040	7.9	0.1	H	20-MAR-95	20419	L3999-11

**LOCKHEED ANALYTICAL SERVICES
COMMON IONS AND ADDITIONAL ANALYTES**

Sample Results

Client Sample ID: BODX99	Date Collected: 03-MAR-95
Matrix: Filter H2O	Date Received: 07-MAR-95

Constituent	Units	Method	Result	Reporting DTG (Unit)	Date Qualification	Date Analyzed	LAV Batch ID	LAV Sample ID
Chloride	mg/L	300.0	22.	0.02		15-MAR-95	20415	L3999-22
Fluoride	mg/L	300.0	0.32	0.1		14-MAR-95	20413	L3999-22
Nitrate-N	mg/L	300.0	5.3	0.02	N	15-MAR-95	20411	L3999-22
Nitrite-N	mg/L	300.0	< 0.02	0.02	H	15-MAR-95	20412	L3999-22
Ortho Phosphate	mg/L	300.0	< 0.1	0.1	H	14-MAR-95	20414	L3999-22
Sulfate	mg/L	300.0	400	1	D(1:10)	15-MAR-95	20416	L3999-22

LOCKHEED ANALYTICAL SERVICES

COMMON IONS AND ADDITIONAL ANALYTES

QC Data Summary For Reagent Blank Analysis

Constituent	Units	Reporting Detection Limit	LAS Batch ID	Date Analyzed	Reagent Blank Result	Data Qualifier
Nitrate-N	mg/L	.02	20411	03/15/95	< .02	
Nitrite-N	mg/L	.01	20412	03/15/95	< .01	
Fluoride	mg/L	.1	20413	03/14/95	< .1	
Ortho Phosphate	mg/L	.1	20414	03/14/95	< .1	
Chloride	mg/L	.02	20415	03/15/95	< .02	
Sulfate	mg/L	.1	20416	03/15/95	< .1	
Turbidity	NTU	N/A	20418	03/20/95	0.0260	

LOCKHEED ANALYTICAL SERVICES

COMMON IONS AND ADDITIONAL ANALYTES

QC Data Summary For Laboratory Control Sample Analysis

Constituent	Units	LAS Batch ID	Date Analyzed	LCS True Value	LCS Result	(%) Recovery
Nitrate-N	mg/L	20411	03/15/95	12.5	13.4	107
Nitrite-N	mg/L	20412	03/15/95	15.0	15.0	100
Fluoride	mg/L	20413	03/14/95	1.00	1.08	108
Ortho Phosphate	mg/L	20414	03/14/95	1.00	0.953	95
Chloride	mg/L	20415	03/15/95	50.0	51.2	102
Sulfate	mg/L	20416	03/15/95	50.0	50.9	102
Turbidity	NTU	20418	03/20/95	5.04	5.08	101

LOCKHEED ANALYTICAL SERVICES

COMMON IONS AND ADDITIONAL ANALYTES

QC Data Summary For Matrix Spike Sample Analysis

Client Sample ID B0DX98

Constituent	Units	LAS Batch ID	LAS Sample ID	Date Analyzed	Matrix Spike Result	Sample Result	Spike Added	(%) Recovery	Data Qualifier
Turbidity	NTU	20418	L3999-10	03/20/95	6.54	1.30	5.04	104	

LOCKHEED ANALYTICAL SERVICES

COMMON IONS AND ADDITIONAL ANALYTES

QC Data Summary For Duplicate Sample Analysis

Client Sample ID B0DX98

Constituent	Units	LAS Batch ID	LAS Sample ID	Date Analyzed	Sample Result	Duplicate Result	Relative Percent Difference	Data Qualifier
Turbidity	NTU	20418	L3999-10	03/20/95	1.30	1.34	0	
pH	pH Units	20419	L3999-11	03/20/95	7.90	7.87	0	

TOTAL METALS RESULTS

Client Sample ID: BODX98	Date Collected: 03-03-95	Matrix: water
LAL Batch ID(s): 307 bHT	Date Received: 03-07-95	SAF 95-030

Constituents	Method	Concentration (mg/L)	IDL (mg/L)	RDL (mg/L)	Data Qualifier(s)	Date Analyzed	LAL ID
Aluminum	6010	<0.07	0.07	0.20	U	03-24-95	L3999-2
Antimony	6010	<0.05	0.05	0.060	U	03-24-95	L3999-2
Arsenic	6010	<0.05	0.05	0.20	U	03-24-95	L3999-2
Barium	6010	<0.03	0.03	0.20	U	03-24-95	L3999-2
Beryllium	6010	<0.001	0.001	0.005	U	03-24-95	L3999-2
Cadmium	6010	<0.004	0.004	0.005	U	03-24-95	L3999-2
Calcium	6010	88	0.05	5.0		03-24-95	L3999-2
Chromium	6010	<0.003	0.003	0.010	U	03-24-95	L3999-2
Cobalt	6010	<0.008	0.008	0.050	U	03-24-95	L3999-2
Copper	6010	<0.004	0.004	0.025	U	03-24-95	L3999-2
Iron	6010	0.13	0.010	0.10		03-24-95	L3999-2
Lead	6010	<0.09	0.09	0.10	U	03-24-95	L3999-2
Magnesium	6010	17	0.06	5.0		03-24-95	L3999-2
Manganese	6010	0.0061	0.002	0.015	B	03-24-95	L3999-2
Nickel	6010	<0.012	0.012	0.040	U	03-24-95	L3999-2
Potassium	6010	7.5	0.68	5.0		03-24-95	L3999-2
Selenium	6010	<0.09	0.09	0.30	U	03-24-95	L3999-2
Silver	6010	<0.008	0.008	0.010	U	03-24-95	L3999-2
Sodium	6010	150	0.03	5.0		03-24-95	L3999-2
Thallium	6010	<0.049	0.049	0.50	U	03-24-95	L3999-2
Vanadium	6010	<0.012	0.012	0.050	U	03-24-95	L3999-2
Zinc	6010	0.014	0.011	0.020	B	03-24-95	L3999-2

Comments:

DISSOLVED METALS RESULTS

Client Sample ID: BODX99	Date Collected: 03-03-95	Matrix: filtered water
LAL Batch ID(s): 307 bHD	Date Received: 03-07-95	SAF 95-030

Constituents	Method	Concentration (mg/L)	IDL (mg/L)	RDL (mg/L)	Data Qualifier(s)	Date Analyzed	LAL ID
Aluminum	6010	<0.07	0.07	0.20	U	03-24-95	L3999-21
Antimony	6010	<0.05	0.05	0.060	U	03-24-95	L3999-21
Arsenic	6010	<0.05	0.05	0.20	U	03-24-95	L3999-21
Barium	6010	<0.03	0.03	0.20	U	03-24-95	L3999-21
Beryllium	6010	<0.001	0.001	0.005	U	03-24-95	L3999-21
Cadmium	6010	<0.004	0.004	0.005	U	03-24-95	L3999-21
Calcium	6010	84	0.05	5.0		03-24-95	L3999-21
Chromium	6010	<0.003	0.003	0.010	U	03-24-95	L3999-21
Cobalt	6010	<0.008	0.008	0.050	U	03-24-95	L3999-21
Copper	6010	<0.004	0.004	0.025	U	03-24-95	L3999-21
Iron	6010	<0.010	0.010	0.10	U	03-24-95	L3999-21
Lead	6010	<0.09	0.09	0.10	U	03-24-95	L3999-21
Magnesium	6010	16	0.06	5.0		03-24-95	L3999-21
Manganese	6010	<0.002	0.002	0.015	U	03-24-95	L3999-21
Nickel	6010	<0.012	0.012	0.040	U	03-24-95	L3999-21
Potassium	6010	6.8	0.68	5.0		03-24-95	L3999-21
Selenium	6010	<0.09	0.09	0.30	U	03-24-95	L3999-21
Silver	6010	<0.008	0.008	0.010	U	03-24-95	L3999-21
Sodium	6010	140	0.03	5.0		03-24-95	L3999-21
Thallium	6010	<0.049	0.049	0.50	U	03-24-95	L3999-21
Vanadium	6010	<0.012	0.012	0.050	U	03-24-95	L3999-21
Zinc	6010	<0.011	0.011	0.020	U	03-24-95	L3999-21

Comments:

LOCKHEED ANALYTICAL SERVICES

OIL AND GREASE - GRAVIMETRIC METHOD
413.1 OIL AND GREASE

Client Sample ID:	BODX98	LAL Sample ID:	L3999-4
Date Collected:	03-MAR-95	Date Received:	07-MAR-95
Date Analyzed:	28-MAR-95	Date Extracted:	28-MAR-95
Matrix:	Water	Analytical Batch ID:	032895-413.1
QC Group:	413.1 OIL AND GREASE_20890	Dilution Factor:	1

CONSTITUENT	RESULT mg/L	PRACTICAL QUANTITATION LIMIT mg/L	DATA QUALIFIER(S)
Total Oil and Grease	<5.00	5.00	

LOCKHEED ANALYTICAL SERVICES

OIL AND GREASE - GRAVIMETRIC METHOD

413.1 OIL AND GREASE

Client Sample ID:	BODX98	LAL Sample ID:	20890MS
Date Collected:	03-MAR-95	Date Received:	24-MAR-95
Date Analyzed:	28-MAR-95	Date Extracted:	28-MAR-95
Matrix:	Water	Analytical Batch ID:	032895-413.1
QC Group:	413.1 OIL AND GREASE_20890	Dilution Factor:	1

CONSTITUENT	RESULT mg/L	PRACTICAL QUANTIFICATION LIMIT mg/L	DATA QUALIFIER(S)
Total Oil and Grease	191	5.00	

LOCKHEED ANALYTICAL SERVICES

OIL AND GREASE - GRAVIMETRIC METHOD

413.1 OIL AND GREASE

Client Sample ID:	BODX98	LAL Sample ID:	20890MSD
Date Collected:	03-MAR-95	Date Received:	24-MAR-95
Date Analyzed:	28-MAR-95	Date Extracted:	28-MAR-95
Matrix:	Water	Analytical Batch ID:	032895-413.1
QC Group:	413.1 OIL AND GREASE_20890	Dilution Factor:	1

CONSTITUENT	RESULT mg/L	PRACTICAL QUANTIFICATION LIMIT mg/L	DATA QUALIFIER (s)
Total Oil and Grease	186	5.00	

LOCKHEED ANALYTICAL SERVICES

MATRIX SPIKE DATA SUMMARY
OIL AND GREASE - GRAVIMETRIC METHOD
413.1 OIL AND GREASE

Client Sample ID:	BODX98	LAL Sample ID:	20890MS
Date Collected:	03-MAR-95	Date Received:	07-MAR-95
Date Analyzed:	28-MAR-95	Date Extracted:	28-MAR-95
Matrix:	Water	Analytical Batch ID:	032895-413.1
QC Group:	413.1 OIL AND GREASE_20890	Dilution Factor:	1

Constituent	Spike Added mg/L	Sample Concentration mg/L	Matrix Spike Concentration mg/L	% Recovery	QC Limits
					% Recovery
Total Oil and Grease	203	0.0100	191	94	70-120

LOCKHEED ANALYTICAL SERVICES

MATRIX SPIKE DUPLICATE DATA SUMMARY OIL AND GREASE - GRAVIMETRIC METHOD 413.1 OIL AND GREASE

Client Sample ID:	BODX98	LAL Sample ID:	20890MSD
Date Collected:	03-MAR-95	Date Received:	07-MAR-95
Date Analyzed:	28-MAR-95	Date Extracted:	28-MAR-95
Matrix:	Water	Analytical Batch ID:	032895-413.1
QC Group:	413.1 OIL AND GREASE_20890	Dilution Factor:	1

Constituent	Spike Added mg/L	Matrix Spike Duplicate Concentration mg/L	% Recovery	RPD	QC Limits	
					RPD	% Recovery
Total Oil and Grease	203	186	91	3	20	70-120

TRACKING SHEET DATA REPORT (bs10)
 EXTRACTION SHEET FOR: 413.1 OIL AND GREASE Extraction
 WORKSHEET NUMBER: 413.1 OIL AND GREASE_20890

HT=03/31
 DUE 04/11

LAL #	QC TYPE	CLIENT ID	DATE COLLECTED	DATE RECEIVED/CREATED	VOL/WT EXTR	MS MLS	TARE WEIGHT	FINAL WEIGHT	RESULT
L3999-4		B00X98	03-MAR-95	07-MAR-95	AG 3/28/95 1 lit		1.56769	1.56770g	.01 mg
L4089-1		NP-TR2B-031695	16-MAR-95	18-MAR-95	9/10		1.56581	1.56649g	.68 mg
20890MB	MB	Method Blank		24-MAR-95	1 lit		1.56735	1.56231g	∅
20890LCS	LCS	Lab Ctrl Sample		24-MAR-95	1 lit	2.0	1.56681	1.75467g	187.86 mg
20890MS L3999-5	MS	B00X98		24-MAR-95	1 lit	2.0	1.56500	1.75606g	191.06 mg
20890MSD L3999-6	MSD	B00X98		24-MAR-95	1 lit	2.0	1.56960	1.75555g	185.95 mg
SPIKELOT20890	SPIKELOT	Spike Lot Sample		24-MAR-95	1 lit	2.0	1.56960	1.75555g	185.95 mg

→ .01 mg / R
 → .75 mg / R
 → ∅
 → 187.86 mg / R
 → 191.06 mg / R
 → 185.95 mg / R

DATE STARTED: 3/28/95 DATE COMPLETED: 3/28/95
 QC BATCH# : 413.1 OIL AND GREASE_20890 LOT #/S
 MS ID # : 0606-94-3 CONC: 101.74 mg/l 33202 NA2SO4: N/A
 NARRATIVE

SIGNED: A.R. Ghodery
 SPIKE WITNESS: DAVE WITKOWSKI
 SIGNED: _____
 REVIEWED BY: DAVE WITKOWSKI 03-28-95

MS % R = $\frac{191.06 - .01}{203.48} = 94\%$ ✓

MSD % R = $\frac{185.95 - .01}{203.48} = 91\%$ ✓

LCS % R = $\frac{187.86}{203.48} = 92\%$ ✓

080

10.000
 4/3/95

LOCKHEED ANALYTICAL SERVICES

TOTAL PETROLEUM HYDROCARBONS BY FTIR
418.1 TPH

Client Sample ID:	B0DX98	LAL Sample ID:	L3999-8
Date Collected:	03-MAR-95	Date Received:	07-MAR-95
Date Analyzed:	24-MAR-95	Date Extracted:	21-MAR-95
Matrix:	Water	Analytical Batch ID:	032495-418.1
QC Group:	418.1 TPH_20712	Dilution Factor:	1

CONSTITUENT	RESULT mg/L	PRACTICAL QUANTITATION LIMIT mg/L	DATA QUALIFIER(s)
TRPH	<1.00	1.00	

TRACKING SHEET DATA REPORT (bs07)
 EXTRACTION SHEET FOR: 418.1 TPH Extraction
 WORKSHEET NUMBER: 418.1 TPH_20712

HT=03/31
 DUE 04/11

LAL #	QC TYPE	CLIENT ID	DATE COLLECTED	DATE RECEIVED/CREATED	VOL/WT EXTR	MS MLS	BROUGHT TO FINAL VOLUME OF	AMT GIVEN TO ANALYST
L3999-8		B00X98	03-MAR-95	07-MAR-95	100.0 ml		100.0 ml	75.0 ml
20712MB	MB	Method Blank		21-MAR-95				
20712LCS	LCS	Lab Ctrl Sample		21-MAR-95		0.5		
20712LCSDUP	LCSD	Lab Ctrl Sample Dup		21-MAR-95				
SPIKELOT20712	SPIKELOT	Spike Lot Sample		21-MAR-95			0.1 ml	03-21-95

DATE STARTED: 3-21-95

DATE COMPLETED: 3-21-95

SIGNED: [Signature]

QC BATCH# : 418.1 TPH_20712

LOT #'S

SILICA ID#: 6551

SPIKE WITNESS: [Signature]

MS ID # : 0107-53-2

CONC: 4246 ug/l FREON: 33202

NA2SO4: 146100

REVIEWED BY: [Signature] 03-21-95

NARRATIVE

Insufficient sample volume was sent to perform ms/nisp. Therefore, LCS/LCSDUP were performed as per CSR. VRB 03-21-95

RAD DATA REPORT (ra01)

Bechtel Hanford, Inc. * Richland, WA

Bechtel Hanford Project (Project BECTEL-HANFORD)

Client Sample ID: B0DX98

LAL Sample ID: L3999-13

Date Collected: 03-MAR-95

Date Received: 07-MAR-95

Matrix: Water

Login Number: L3999

SDG: LK3999

Constituent	Analyzed	Batch	Activity	Error	MDA	Database	Units
Ac-228(Ra-228)	30-MAR-95	GAMMA SPEC LAL-0063_20330	8.	25.	36.		pCi/L
Co-58	30-MAR-95	GAMMA SPEC LAL-0063_20330	-7.2	5.4	11.		pCi/L
Co-60	30-MAR-95	GAMMA SPEC LAL-0063_20330	-4.1	3.1	13.		pCi/L
Cs-137	30-MAR-95	GAMMA SPEC LAL-0063_20330	-3.8	5.6	10.		pCi/L
Eu-152	30-MAR-95	GAMMA SPEC LAL-0063_20330	-6.	12.	57.		pCi/L
Eu-154	30-MAR-95	GAMMA SPEC LAL-0063_20330	-11.	10.	43.		pCi/L
Eu-155	30-MAR-95	GAMMA SPEC LAL-0063_20330	2.	14.	18.		pCi/L
Fe-59	30-MAR-95	GAMMA SPEC LAL-0063_20330	-9.6	7.7	29.		pCi/L
Pb-212	30-MAR-95	GAMMA SPEC LAL-0063_20330	3.	12.	16.		pCi/L
Pb-214(Ra-226)	30-MAR-95	GAMMA SPEC LAL-0063_20330	6.	12.	18.		pCi/L
Ra-226(GAMMA)	30-MAR-95	GAMMA SPEC LAL-0063_20330	-40	120	190		pCi/L
U-235(GAMMA)	30-MAR-95	GAMMA SPEC LAL-0063_20330	-32.	22.	39.		pCi/L
Gross Alpha	31-MAR-95	GR ALP/BETA LAL-0060_20589	4.2	3.9	5.7	C	pCi/L
Gross Beta	31-MAR-95	GR ALP/BETA LAL-0060_20589	10.3	4.2	6.2	C	pCi/L
Total radio-strontium	06-APR-95	SR-90 LAL-0196_20603	0.75	0.94	1.6		pCi/L

RADIATION RESULTS CHECK REPORT

Workgroup Number: GR ALP/BETA LAL-0060_20589

Sample	Parameter	Value	Error	MDA
20589DUP1	Gross Alpha	7.28917	4.84383	6.25213
20589LCS1	Gross Alpha	36.6099	4.38969	1.2734
20589MBB1	Gross Alpha	-0.0221728	0.440799	0.963786
20589MS1	Gross Alpha	66.2706	12.0722	6.37814
L3999-13	Gross Alpha	4.18174	3.88047	5.72074
20589DUP1	Gross Beta	16.8351	4.60065	6.17274
20589LCS1	Gross Beta	44.7341	3.76502	2.04517
20589MBB1	Gross Beta	-0.573308	1.09054	2.00951
20589MS1	Gross Beta	107.164	9.58483	5.87126
L3999-13	Gross Beta	10.2621	4.18122	6.19089

