APPENDIX C

APCL

Applied Physics & Chemistry Laboratory

13760 Magnolia Ave. Chino CA 91710
Tel. (909) 590-1828 Fax (909) 590-1498

July 09, 2003

GEOFON, Inc.
Attention: Leo Williamson
22632 Golden Spring Dr Ste 270
Diamond Bar CA 91765

Dear Leo Williamson,

This package contains samples in our Service ID 03-3465 and your project : 04-4428.10 JPL
Enclosed please find:

(1) Original analytical report.
(2) Original Chain of Custody.
(3) One diskette containing EDD deliverable.
(4) One original Level C Data Package Deliverable.

If anything is missing or you have any questions, please feel free to contact me.

Respectfully submitted,

Regina Kirakozova
Associate QA/QC Director
Applied P & Ch Laboratory

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
GEOFON, Inc.
Attention: Leo Williamson
22632 Golden Spring Dr Ste 270
Diamond Bar CA 91765
Tel: (909)396-7662 Fax: (909)396-1455

Service ID #: 801-033465
Collected by: Leo Williamson
Collected on: 05/30/03

Received: 05/30/03
Extracted: 06/06/03
Tested: 05/30-06/09/03
Reported: 06/11/03

Sample Description: Water
Project Description: 04-4428.10 JPL

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result MW-1 03-03465-1	MW-9 03-03465-2	MW-10 03-03465-3	TB-17-5/30/03 03-03465-4
BICARBONATE	SM2320B	mg/L	2	219	175	219	-
CARBONATE	SM2320B	mg-$CaCO_3$/L	2	<2	<2	<2	-
PH	9040B	pH unit	0.01	7.36	7.00	6.79	-
SOLIDS, TOTAL DISSOLVED (TDS)	160.1	mg/L	10	367	298	705	-
CHROMIUM (VI)	7196	mg/L	0.01	<0.01	<0.01	<0.01	-
Dilution Factor				1	1	1	1
PERCHLORATE	314.0	µg/L	4	<4	<4	17.5	-
Dilution Factor				1	1	1	1
ARSENIC	200.9	µg/L	5	<5	2.1J	<5	-
CALCIUM	200.7	µg/L	200	65,100	51,600	121,000	-
IRON	200.7	µg/L	50	72.0	832	43.6J	-
MAGNESIUM	200.7	µg/L	100	20,000	16,300	38,800	-
POTASSIUM	200.7	µg/L	400	2,730	2,750	3,130	-
SODIUM	200.7	µg/L	2000	24,600	19,400	26,200	-
Dilution Factor				4	2.5	10	1
CHLORIDE CL^-	300.0	mg/L	0.2	30.8	18.7	99.4	-
NITRATE AS N	300.0	mg/L	0.04	1.4	1.9	14.4	-
SULFATE SO_4^{--}	300.0	mg/L	0.5	59.5	42.5	141	-
VOLATILE ORGANIC COMPOUNDS							
Dilution Factor				1	1	1	1
BENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
BROMOBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
BROMOCHLOROMETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
BROMODICHLOROMETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
BROMOFORM	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
BROMOMETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
N BUTYLBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
SEC BUTYLBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TERT-BUTYLBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-BUTANONE	524.2	µg/L	10	<10	<10	<10	<10
CARBON TETRACHLORIDE	524.2	µg/L	0.5	<0.5	<0.5	0.2J	<0.5
CHLOROBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
CHLORODIBROMOMETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
CHLOROETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
CHLOROFORM	524.2	µg/L	0.5	<0.5	<0.5	1.1	<0.5
CHLOROMETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-CHLOROTOLUENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result MW-1 03-03465-1	MW-9 03-03465-2	MW-10 03-03465-3	TB-17-5/30/03 03-03465-4
4-CHLOROTOLUENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-DIBROMO-3-CHLOROPROPANE	524.2	µg/L	1.1 [a]	<1.1	<1.1	<1.1	<1.1
1,2-DIBROMOETHANE (EDB)	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
DIBROMOMETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-DICHLOROBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-DICHLOROBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-DICHLOROBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
DICHLORODIFLUOROMETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-DICHLOROETHANE	524.2	µg/L	0.5	<0.5	<0.5	0.8	<0.5
1,2-DICHLOROETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-DICHLOROETHENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
CIS-1,2-DICHLOROETHENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TRANS-1,2-DICHLOROETHENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-DICHLOROPROPANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-DICHLOROPROPANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2,2-DICHLOROPROPANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-DICHLOROPROPENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
CIS-1,3-DICHLOROPROPENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TRANS-1,3-DICHLOROPROPENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
ETHYLBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
HEXACHLOROBUTADIENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
ISOPROPYLBENZENE (CUMENE)	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
P-ISOPROPYLTOLUENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
METHYLENE CHLORIDE	524.2	µg/L	1.8 [a]	<1.8	<1.8	<1.8	3.5
METHYL-T-BUTYL ETHER (MTBE)	524.2	µg/L	1	<1	<1	<1	<1
4-METHYL-2-PENTANONE (MIBK)	524.2	µg/L	10	2J	5J	6J	7J
NAPHTHALENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
N-PROPYLBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
STYRENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1,2-TETRACHLOROETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-TETRACHLOROETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TETRACHLOROETHENE	524.2	µg/L	0.5	<0.5	<0.5	1.3	<0.5
TOLUENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-TRICHLOROBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-TRICHLOROBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-TRICHLOROETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-TRICHLOROETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TRICHLOROETHENE	524.2	µg/L	0.5	<0.5	<0.5	11.2	<0.5
TRICHLOROFLUOROMETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-TRICHLOROPROPANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
112TRICHLORO-122TRIFLUOROETHANE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-TRIMETHYLBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3,5-TRIMETHYLBENZENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
VINYL CHLORIDE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
O-XYLENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
M/P-XYLENE	524.2	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result MW-10 03-03465-3
Dilution Factor				1
1,4-DIOXANE	8270-SIM	μg/L	1	1

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

[a] MDL reported.

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & Ch Laboratory

Level C Data Package Deliverables

General Information

Project: 04-4428.10 JPL

APCL Service ID: 03-3465

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Case Narrative

Project: JPL/04-4428.10

For GEOFON, Inc.

APCL Service No: 03-3465

1. Sample Identification

The sample identifications are listed in the following table:

GEOFON, Inc. Sample ID	APCL Sample ID
MW-10	03-03465-3
MW-1	03-03465-1
MW-9	03-03465-2
TB-17-5/30/03	03-03465-4

2. Analytical Methodology

Samples are analyzed by EPA methods

524.2 (Volatile Organic Compounds),
7196A (Chromium (VI)),
314.0 (Perchlorate, low level),
300.0 (Anions, by IC),
SM2320B (Bicarbonate, Carbonate),
9040B (pH),
160.1 (Solids, Total Dissolved (TDS)),
200.7 (Metals, by ICP),
200.9 (Arsenic, As, by GFAA),
8270C-SIM (1,4-Dioxane),

3. Holding Time

All samples were extracted, digested and analyzed within the holding times defined by the appropriate EPA methods of the analyses.

4. Preservation

All samples were preserved and stored according to the appropriate EPA methods.

5. Tele-log

None

6. Anomaly

(1) 200.8:

Calcium and Megnesium recoveries in the MS/MSD spiked on the sample MW-6 were outside of control limits, due to high level of spiking elements in the parent sample.

"I certify that these data are technically accurate, complete, and in compliance with the terms and conditions of the contract, for other than the conditions detailed above. Release of the data contained in the hardcopy data package and its electronic data deliverable submitted on diskette had been authorized by the Laboratory Manager or her/his designee, as verified by the following signature."

Respectfully submitted,

Regina Kirakozova
Associate QA/QC Director
Applied P & Ch Laboratory

GEOFON INCORPORATED
22632 GOLDEN SPRINGS DR., SUITE 270
DIAMOND BAR, CA 91765 • (909) 396-7662 • FAX (909) 396-1455

CHAIN-OF-CUSTODY RECORD

LABORATORY COPY

SHALLOW WELLS 0040

GEOFON's LAB COORDINATOR	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
Brad Shojaee	(909) 396-7662	(909) 396-1455	—	Kenny Chan	GEOFON, INC.

PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY PHONE	LABORATORY FAX	RECIPIENT NAME
JPL GW MON-2903	MW-10/MW-9/MW-1	04-4428.10	(909) 590-1828	(909) 590-1498	Leo W. Williamson

PROJECT CONTACT	PROJECT PHONE NUMBER	PROJECT FAX	LABORATORY ADDRESS	ADDRESS
Leo W. Williamson	(714) 920-8729	(909) 396-7455	13760 Magnolia Ave.	22632 Golden Springs Dr #270

PROJECT ADDRESS	CITY, STATE AND ZIPCODE	CLIENT	CITY, STATE AND ZIPCODE	CITY, STATE AND ZIPCODE
4800 Oak Grove Dr.	Pasadena, CA.	US NAVY SWDIV	Chino, CA. 91710	Diamond Bar, CA. 91765

PROJECT MANAGER	PROJECT MANAGER'S PHONE	PROJECT MANAGER'S FAX
Asrar Faheem	(909) 396-7662	(909) 396-1455

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont	QC Level	T.A.T.	Analyses: 524.2 (VOCs)	200.7 & 200.9 (Minerals)	7196 (Hex Chrome)	SM 2320B (Carb/Bicarb)	300.0 (Cl/SO4/NO3)	314.0 (Perchlorate)	160.1 (TDS) +9040B	200.8 (Cr+Pb)	Comments
1	MW-10	H_2O	5/30/03	735	HCl NONE HNO_3	3+1+1+1	III	NORMAL	X	X	X	X	X	X	X	X	
2	MW-1	↓	↓	950	↓	↓	↓	↓	X	X	X	X	X	X	X	X	
3	MW-9	↓	↓	1150	↓	↓	↓	↓	X	X	X	X	X	X	X	X	3465
4																	
5	TB-17 - 5/30/03	H_2O	5/30/03	—	HCl	2	III	NORMAL	X								
6																	
7																	
8																	
9																	
10																	

SAMPLES COLLECTED BY: Leo W. Williamson

COURIER AND AIR BILL NUMBER.

COOLER TEMPERATURE UPON RECEIPT

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
Leo W. Williamson	G. [signature]	5-30-03	12:50	
G. [signature]	[signature]	5/30/03	2:30	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

GEOFON INCORPORATED

22632 GOLDEN SPRINGS DR., SUITE 270
DIAMOND BAR, CA 91765 • (909) 396-7662 • FAX (909) 396-1455

CHAIN-OF-CUSTODY RECORD

LABORATORY COPY

SHALLOW WELLS 0039

GEOFON's LAB COORDINATOR	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
Brad Shojaee	(909) 396-7662	(909) 396-1455	—	Kenny Chan	GEOFON, INC
PROJECT NAME	**PROJECT LOCATION**	**PROJECT NUMBER**	**LABORATORY PHONE**	**LABORATORY FAX**	**RECIPIENT NAME**
JPL LW MON-2903	MW-10	04-4428.10	(909) 590-1828	(909) 590-1498	Leo W. Williamson
PROJECT CONTACT	**PROJECT PHONE NUMBER**	**PROJECT FAX**	**LABORATORY ADDRESS**		**ADDRESS**
Leo W. Williamson	(714) 920-8729	(909) 396-1455	13760 Magnolia Ave		22632 Golden Springs Dr. #270
PROJECT ADDRESS	**CITY, STATE AND ZIPCODE**	**CLIENT**	**CITY, STATE AND ZIPCODE**		**CITY, STATE AND ZIPCODE**
4900 Oak Grove Dr.	Pasadena, CA.	US NAVY, SWDIV	Chino, CA. 91710		Diamond Bar, CA. 91765
PROJECT MANAGER	**PROJECT MANAGER'S PHONE**	**PROJECT MANAGER'S FAX**			
Asrar Faheem	(909) 396-7662	(909) 396-1455			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont	QC Level	T.A.T	Analyses: 8270SIM (1,4-Dioxane)								Comments
1	MW-10	H_2O	5/30/03	735	NONE	2	III	NORMAL	X								
2																	
3																	
4																	
5																	3465
6																	
7																	
8																	
9																	
10																	

SAMPLES COLLECTED BY: Leo W. Williamson

COURIER AND AIR BILL NUMBER.

COOLER TEMPERATURE UPON RECEIPT

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
Leo W. Williamson	[illegible]	5-30-03	12:50	
[illegible]	[illegible]	5-31-03	2:30	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Applied P & Ch Laboratory
13760 Magnolia Ave., Chino CA 91710
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Sample Receiving Checklist

APCL ServiceID: 3465 Client Name/Project: Geotor/JPL

1. Sample Arrival

Date/Time Received 5/30/03 230 Date/Time Opened 5/30/03 230 By (name): Kenny Chen

Custody Transfer: ☐ Client ☐ Golden State ☐ UPS ☐ US Mail ☐ FedEx ☑ APCL Empl: Scott B.

2. Chain-of-Custody (CoC)

☑ With Samples? ☐ Faxed? ☑ Client has Copy? ☐ Signed, dated? By:
☑ Project ID? ☑ Analyses Clear? ☐ Hold Samples? #on Hold # Received 4
☑ CoC/Docs Zip-Locked under lid? ☐ Compos.#: ☑ #Samples OK?
☐ Discrepancies? ☐ Client notified? ☐ Response (attach docs):

3. Shipping Container/Cooler

☑ Cooler Used? # of 1 Cooled by: ☑ Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Temp °C 3.6

(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).

Cooler Custody Seal? ☐ Absent ☐ Intact ☐ Tampered?

4. Sample Preservation

☐ **pH <2** ☐ pH >12

If Not, pH = _____ Preserved by: ☐ Client ☐ APCL ☐ Third Party

5. Holding-time Requirements

☐ pH 24hr ☐ BACT 6/24hr ☑ Cr^{VI} 24hr ☐ NO_3^- 48hr ☐ BOD 48hr
☐ Cl_2 ASAP ☐ Turbidity 48hr ☐ DO ASAP ☐ Fe(II) ASAP
☐ HT Expired? ☐ Client notified?

6. Sample Container Condition

☑ Intact? ☐ Broken? ☐ Documented? Number:

Type: ☑ plastic ☑ glass ☐ Tube: brass/SS ☐ Tedlar Bag
☑ Quantity OK? ☐ Leaking? ☐ Anomaly?
☑ Caps tight? ☐ Air Bubbles? ☐ Anomaly?

Labels: ☑ Unique ID? ☑ Date/Time ☐ Preserved?

7. Turn Around Time

☐ RUSH TAT: _____ ☑ Std (7-10 days) ☐ Not Marked

8. Sample Matrix

☐ Drinking H_2O ☐ Other Liq ☐ Soil ☐ Wipe ☐ Polymer ☐ Air ☐ Other:
☑ Ground H_2O ☐ Sludge ☐ Filter ☐ Oil/Petro ☐ Paint ☐ W. Water ☐ Extract ☐ Unknown

9. Pre-Login Check List Completed & OK?

☑ ALL OK? (if not, attach docs) ☐ Client Contact? (Name:_____)Date/Time:_____

Received/Checked by: [signature] Date: 30 May 2003 Time: 7:38 a.m.

*HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.

DocumentFile: [ncal.texfiles]smprcl.tex.

Applied P & Ch Laboratory
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Sample Login: Check List

03-03465 (0470_ 153) (2202777_ 153)

05/30/03

Part 1: General Information

☐	Company Information	Name:	*GEOFON, Inc.*
		Address:	*22632 Golden Spring Dr Ste 270 ,Diamond Bar ,CA 91765*
☐	Project Information	Project Description:	*JPL*
		Project #:	*04-4428.10*
☐	Billing Information	P.O. #:	
		Bill Address:	*22632 Golden Spring Dr Ste 270 ,Diamond Bar ,CA 91765*
		Lab Project ID:	
		Client Database #:	*3*
☐	Receiving Information	Who Received Sample?	*Kenny Chan*
		Receiving Date/Time:	*05/30/03 1430*
		COC No.	
☐	Shipping Information	Shipping Company	*APCL pick up*
		Packing Information:	*Cooler/Ice Chester*
		Cooler Temperature:	*3.6 °C*
☐	Container Information	Container Provider:	*Client*
☐	Sampling Information	Sampling Person:	
		Sampling Company:	*Client*
☐	Turn-Around-Time Option:		*Rush 5 working day(s)*
☐	QC Option:		*NEESA C*
☐	Disposal Option:		*Not specify*

Part 2: Sample Information

Seq. #	Sample ID (on COC)	Sample Sub-ID	APCL Sample ID	Matrix	Cont-tainer	Preser-vative	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmddyy	Hold ?	Composite Group	TAT Days	
1	MW-10	VOC	03-03465-3-α	W	V	C	40	3	G	053003	N	0	7	☐
	MW-10	Metal	03-03465-3-β	W	P	N	500	1	G	053003	N	0	7	☐
	MW-10	300	03-03465-3-γ	W	P		1000	1	G	053003	N	0	7	☐
	MW-10	Dioxane	03-03465-3-δ	W	G		1000	2	G	053003	N	0	7	☐
2	MW-1	VOC	03-03465-1-α	W	V	C	40	3	G	053003	N	0	7	☐
	MW-1	Metal	03-03465-1-β	W	P	N	500	1	G	053003	N	0	7	☐
	MW-1	300	03-03465-1-γ	W	P		1000	1	G	053003	N	0	7	☐
3	MW-9	VOC	03-03465-2-α	W	V	C	40	3	G	053003	N	0	7	☐
	MW-9	Metal	03-03465-2-β	W	P	N	500	1	G	053003	N	0	7	☐
	MW-9	300	03-03465-2-γ	W	P		1000	1	G	053003	N	0	7	☐
4	TB-17-5/30/03	VOC	03-03465-4	W	V	C	40	2	G	053003	N	0	7	☐

Part 3: Analysis Information

Test Items:

- ☐ *524.2* Volatile Organic Compounds
- ☐ *7196A* Chromium (VI)
- ☐ *314.0/300.0* Perchlorate, low level
- ☐ *300.0* Chloride Cl^- by IC
- ☐ *300.0* Sulfate (SO_4^{--}), by IC
- ☐ *300.0/SM4500NO3* Nitrate (NO_3^-) as N by IC
- ☐ *SM2320B* Carbonate
- ☐ *SM2320B* Bicarbonate
- ☐ *9040B/150.1* pH
- ☐ *160.1* Solids, Total Dissolved (TDS)
- ☐ *200.7/6010B* Sodium, Na, by ICP
- ☐ *200.7/6010B* Calcium, Ca, by ICP
- ☐ *200.7/6010B* Potassium, K, by ICP
- ☐ *200.7/6010B* Magnesium, Mg, by ICP
- ☐ *200.7/6010B* Iron, Fe, by ICP
- ☐ *206.2/7060A* Arsenic, As, by GFAA
- ☐ *8270-SIM* 1,4-Dioxane

Seq. #	Client"s Sample ID (as given on COC)	Sample Sub-ID	APCL Sample ID	Matrix	524.2	CHROMIUM	PERCH	CL	SO4	NO3	CARBON	BICARB	
1	MW-10	VOC	03-03465-3-α	W	X								☐

Level C Data Package Deliverables

Volatile Organics

Applied P & Ch Laboratory

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	06/02/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03G2810-MB-01	Received Date:	06/02/2003
Sample ID:	**03G2810-MB-01**	Sample Matrix	Water	Moisture %:	–
Sample Type:	Method Blank	Prep. Method:	5030	Instrument ID:	ICP: M
Anal. Method:	524.2	Prep. Date:	06/05/03	Anal. Date:	06/05/03
Batch No:	03G2810	Prep. No:	–	Anal. Time:	15:46
Data File Name:	G2810K01	Sample Amount:	25.0 mL	Dilution Factor:	1
Methanol Vol.	–				
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N) N	

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	ACETONE	67-64-1	µg/L	2000	<2000	UP
2	BENZENE	71-43-2	µg/L	0.5	<0.5	U
3	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
4	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
5	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
6	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
7	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
8	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
9	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
10	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
11	2-BUTANONE	78-93-3	µg/L	10	<10	U
12	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	<0.5	U
13	CHLOROBENZENE	108-90-7	µg/L	0.5	<0.5	U
14	CHLORODIBROMOMETHANE	124-48-1	µg/L	0.5	<0.5	U
15	CHLOROETHANE	75-00-3	µg/L	0.5	<0.5	U
16	CHLOROFORM	67-66-3	µg/L	0.5	<0.5	U
17	CHLOROMETHANE	74-87-3	µg/L	0.5	<0.5	U
18	2-CHLOROTOLUENE	95-49-8	µg/L	0.5	<0.5	U
19	4-CHLOROTOLUENE	106-43-4	µg/L	0.5	<0.5	U
20	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	µg/L	1.1	<1.1	U
21	1,2-DIBROMOETHANE (EDB)	106-93-4	µg/L	0.5	<0.5	U
22	DIBROMOMETHANE	74-95-3	µg/L	0.5	<0.5	U
23	1,2-DICHLOROBENZENE	95-50-1	µg/L	0.5	<0.5	U
24	1,3-DICHLOROBENZENE	541-73-1	µg/L	0.5	<0.5	U
25	1,4-DICHLOROBENZENE	106-46-7	µg/L	0.5	<0.5	U
26	DICHLORODIFLUOROMETHANE	75-71-8	µg/L	0.5	<0.5	U
27	1,1-DICHLOROETHANE	75-34-3	µg/L	0.5	<0.5	U
28	1,2-DICHLOROETHANE	107-06-2	µg/L	0.5	<0.5	U
29	1,1-DICHLOROETHENE	75-35-4	µg/L	0.5	<0.5	U
30	CIS-1,2-DICHLOROETHENE	156-59-2	µg/L	0.5	<0.5	U
31	TRANS-1,2-DICHLOROETHENE	156-60-5	µg/L	0.5	<0.5	U
32	1,2-DICHLOROPROPANE	78-87-5	µg/L	0.5	<0.5	U
33	1,3-DICHLOROPROPANE	142-28-9	µg/L	0.5	<0.5	U
34	2,2-DICHLOROPROPANE	594-20-7	µg/L	0.5	<0.5	U
35	1,1-DICHLOROPROPENE	563-58-6	µg/L	0.5	<0.5	U
36	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
37	TRANS-1,3-DICHLOROPROPENE	10061-02-6	µg/L	0.5	<0.5	U
38	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
39	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U
41	P-ISOPROPYLTOLUENE	99-87-6	µg/L	0.5	<0.5	U
42	METHYLENE CHLORIDE	75-09-2	µg/L	1.8	<1.8	U
43	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	µg/L	1	<1	U
44	4-METHYL-2-PENTANONE (MIBK)	108-10-1	µg/L	10	<10	U
45	NAPHTHALENE	91-20-3	µg/L	0.5	<0.5	U
46	N-PROPYLBENZENE	103-65-1	µg/L	0.5	<0.5	U
47	STYRENE	100-42-5	µg/L	0.5	<0.5	U
48	1,1,1,2-TETRACHLOROETHANE	630-20-6	µg/L	0.5	<0.5	U
49	1,1,2,2-TETRACHLOROETHANE	79-34-5	µg/L	0.5	<0.5	U
50	TETRACHLOROETHENE	127-18-4	µg/L	0.5	<0.5	U
51	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
52	1,2,3-TRICHLOROBENZENE	87-61-6	µg/L	0.5	<0.5	U
53	1,2,4-TRICHLOROBENZENE	120-82-1	µg/L	0.5	<0.5	U
54	1,1,1-TRICHLOROETHANE	71-55-6	µg/L	0.5	<0.5	U
55	1,1,2-TRICHLOROETHANE	79-00-5	µg/L	0.5	<0.5	U
56	TRICHLOROETHENE	79-01-6	µg/L	0.5	<0.5	U
57	TRICHLOROFLUOROMETHANE	75-69-4	µg/L	0.5	<0.5	U
58	1,2,3-TRICHLOROPROPANE	96-18-4	µg/L	0.5	<0.5	U
59	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	µg/L	0.5	<0.5	U
60	1,2,4-TRIMETHYLBENZENE	95-63-6	µg/L	0.5	<0.5	U
61	1,3,5-TRIMETHYLBENZENE	108-67-8	µg/L	0.5	<0.5	U
62	VINYL CHLORIDE	75-01-4	µg/L	0.5	<0.5	U
63	O-XYLENE	95-47-6	µg/L	0.5	<0.5	U
64	M/P-XYLENE	108-38-3	µg/L	0.5	<0.5	U

Surrogates			Control Limit, %	Surro. Rec.%
1	4-BROMO-FLUOROBENZENE (BFB)	460-00-4	70-129	109
2	1,2-DICHLOROETHANE-D4	17060-07-0	70-129	86
3	DIBROMOFLUOROMETHANE	1868-53-7	70-122	100
4	TOLUENE-D8	2037-26-5	73-129	109
# of out-of-control				0

Internal Standard			Control Limit, %	IS Rec.%
1	CHLOROBENZENE-D5	3114-55-4	50-200	85
2	1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	92
3	FLUOROBENZENE	462-06-6	50-200	88
# of out-of-control				0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/30/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03-3465-1	Received Date:	05/30/2003
Sample ID:	MW-1	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample	Prep. Method:	5030	Instrument ID:	GC/MS: G
Anal. Method:	524.2	Prep. Date:	06/05/03	Anal. Date:	06/05/03
Batch No:	03G2810	Prep. No:	–	Anal. Time:	17:13
Data File Name:	3465-01	Sample Amount:	25 mL	Dilution Factor:	1
Methanol Vol.	–				
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	μg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	μg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	μg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	μg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	μg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	μg/L	0.5	<0.5	U
7	N-BUTYLBENZENE	104-51-8	μg/L	0.5	<0.5	U
8	SEC-BUTYLBENZENE	135-98-8	μg/L	0.5	<0.5	U
9	TERT-BUTYLBENZENE	98-06-6	μg/L	0.5	<0.5	U
10	2-BUTANONE	78-93-3	μg/L	10	<10	U
11	CARBON TETRACHLORIDE	56-23-5	μg/L	0.5	<0.5	U
12	CHLOROBENZENE	108-90-7	μg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	μg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	μg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	μg/L	0.5	<0.5	U
16	CHLOROMETHANE	74-87-3	μg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	μg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	μg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	μg/L	1.1[a]	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	μg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	μg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	μg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	μg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	μg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	μg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	μg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	μg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	μg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	μg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	μg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	μg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	μg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	μg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	μg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	μg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	μg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	μg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	μg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	μg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	μg/L	0.5	<0.5	U
41	METHYLENE CHLORIDE	75-09-2	μg/L	1.8[a]	<1.8	U
42	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	μg/L	1	<1	U
43	4-METHYL-2-PENTANONE (MIBK)	108-10-1	μg/L	10	2	J
44	NAPHTHALENE	91-20-3	μg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	μg/L	0.5	<0.5	U
46	STYRENE	100-42-5	μg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	μg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	μg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	μg/L	0.5	<0.5	U
50	TOLUENE	108-88-3	μg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	μg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	μg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	μg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	μg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	μg/L	0.5	<0.5	U
56	TRICHLOROFLUOROMETHANE	75-69-4	μg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	μg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	μg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	μg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	μg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	μg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	μg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	μg/L	0.5	<0.5	U

Surrogates			Control Limit, %	Surro. Rec.%
1	1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	108
2	1,2-DICHLOROETHANE-D4	17060-07-0	70-129	84
3	DIBROMOFLUOROMETHANE	1868-53-7	70-122	94
4	TOLUENE-D8	2037-26-5	73-129	101
# of out-of-control				0

Internal Standard			Control Limit, %	IS Rec.%
1	CHLOROBENZENE-D5	3114-55-4	50-200	94
2	1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	95
3	FLUOROBENZENE	462-06-6	50-200	97
# of out-of-control				0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.
[a] MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/30/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03-3465-2	Received Date:	05/30/2003
Sample ID:	MW-9	Sample Matrix	Water	Moisture %:	-
Sample Type:	Field Sample	Prep. Method:	5030	Instrument ID:	GC/MS: G
Anal. Method:	524.2	Prep. Date:	06/05/03	Anal. Date:	06/05/03
Batch No:	03G2810	Prep. No:	-	Anal. Time:	17:42
Data File Name:	3465-02	Sample Amount:	25 mL	Dilution Factor:	1
Methanol Vol.	-				
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N) N	

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	μg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	μg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	μg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	μg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	μg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	μg/L	0.5	<0.5	U
7	N-BUTYLBENZENE	104-51-8	μg/L	0.5	<0.5	U
8	SEC-BUTYLBENZENE	135-98-8	μg/L	0.5	<0.5	U
9	TERT-BUTYLBENZENE	98-06-6	μg/L	0.5	<0.5	U
10	2-BUTANONE	78-93-3	μg/L	10	<10	U
11	CARBON TETRACHLORIDE	56-23-5	μg/L	0.5	<0.5	U
12	CHLOROBENZENE	108-90-7	μg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	μg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	μg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	μg/L	0.5	<0.5	U
16	CHLOROMETHANE	74-87-3	μg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	μg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	μg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	μg/L	1.1[a]	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	μg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	μg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	μg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	μg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	μg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	μg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	μg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	μg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	μg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	μg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	μg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	μg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	μg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	μg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	μg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	μg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	μg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	μg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	μg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	μg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	μg/L	0.5	<0.5	U
41	METHYLENE CHLORIDE	75-09-2	μg/L	1.8[a]	<1.8	U
42	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	μg/L	1	<1	U
43	4-METHYL-2-PENTANONE (MIBK)	108-10-1	μg/L	10	5	J
44	NAPHTHALENE	91-20-3	μg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	μg/L	0.5	<0.5	U
46	STYRENE	100-42-5	μg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	μg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	μg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	μg/L	0.5	<0.5	U
50	TOLUENE	108-88-3	μg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	μg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	μg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	μg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	μg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	μg/L	0.5	<0.5	U
56	TRICHLOROFLUOROMETHANE	75-69-4	μg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	μg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	μg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	μg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	μg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	μg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	μg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	μg/L	0.5	<0.5	U

Surrogates			Control Limit, %	Surro. Rec.%
1	1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	110
2	1,2-DICHLOROETHANE-D4	17060-07-0	70-129	84
3	DIBROMOFLUOROMETHANE	1868-53-7	70-122	97
4	TOLUENE-D8	2037-26-5	73-129	103
# of out-of-control				0

Internal Standard			Control Limit, %	IS Rec.%
1	CHLOROBENZENE-D5	3114-55-4	50-200	92
2	1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	93
3	FLUOROBENZENE	462-06-6	50-200	95
# of out-of-control				0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.
[a] MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/30/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03-3465-3	Received Date:	05/30/2003
Sample ID:	**MW-10**	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample	Prep. Method:	5030	Instrument ID:	GC/MS: G
Anal. Method:	524.2	Prep. Date:	06/05/03	Anal. Date:	06/05/03
Batch No:	03G2810	Prep. No:	–	Anal. Time:	18:11
Data File Name:	3465-03	Sample Amount:	25 mL	Dilution Factor:	1
Methanol Vol.	–				
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
7	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
8	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
9	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
10	2-BUTANONE	78-93-3	µg/L	10	<10	U
11	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	0.2	J
12	CHLOROBENZENE	108-90-7	µg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	µg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	µg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	µg/L	0.5	1.1	
16	CHLOROMETHANE	74-87-3	µg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	µg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	µg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	µg/L	1.1[a]	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	µg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	µg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	µg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	µg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	µg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	µg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	µg/L	0.5	0.8	
27	1,2-DICHLOROETHANE	107-06-2	µg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	µg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	µg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	µg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	µg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	µg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	µg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	µg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	µg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	μg/L	0.5	<0.5	U
41	METHYLENE CHLORIDE	75-09-2	μg/L	1.8[a]	<1.8	U
42	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	μg/L	1	<1	U
43	4-METHYL-2-PENTANONE (MIBK)	108-10-1	μg/L	10	6	J
44	NAPHTHALENE	91-20-3	μg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	μg/L	0.5	<0.5	U
46	STYRENE	100-42-5	μg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	μg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	μg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	μg/L	0.5	1.3	
50	TOLUENE	108-88-3	μg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	μg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	μg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	μg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	μg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	μg/L	0.5	11.2	
56	TRICHLOROFLUOROMETHANE	75-69-4	μg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	μg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	μg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	μg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	μg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	μg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	μg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	μg/L	0.5	<0.5	U

Surrogates			Control Limit, %	Surro. Rec.%
1	1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	112
2	1,2-DICHLOROETHANE-D4	17060-07-0	70-129	81
3	DIBROMOFLUOROMETHANE	1868-53-7	70-122	93
4	TOLUENE-D8	2037-26-5	73-129	101
# of out-of-control				0

Internal Standard			Control Limit, %	IS Rec.%
1	CHLOROBENZENE-D5	3114-55-4	50-200	94
2	1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	95
3	FLUOROBENZENE	462-06-6	50-200	97
# of out-of-control				0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.
[a] MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/30/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03-3465-4	Received Date:	05/30/2003
Sample ID:	**TB-17-5/30/03**	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample	Prep. Method:	5030	Instrument ID:	GC/MS: G
Anal. Method:	524.2	Prep. Date:	06/05/03	Anal. Date:	06/05/03
Batch No:	03G2810	Prep. No:	–	Anal. Time:	16:15
Data File Name:	3465-04	Sample Amount:	25 mL	Dilution Factor:	1
Methanol Vol.	–				
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N) N	

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	μg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	μg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	μg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	μg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	μg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	μg/L	0.5	<0.5	U
7	N-BUTYLBENZENE	104-51-8	μg/L	0.5	<0.5	U
8	SEC-BUTYLBENZENE	135-98-8	μg/L	0.5	<0.5	U
9	TERT-BUTYLBENZENE	98-06-6	μg/L	0.5	<0.5	U
10	2-BUTANONE	78-93-3	μg/L	10	<10	U
11	CARBON TETRACHLORIDE	56-23-5	μg/L	0.5	<0.5	U
12	CHLOROBENZENE	108-90-7	μg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	μg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	μg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	μg/L	0.5	<0.5	U
16	CHLOROMETHANE	74-87-3	μg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	μg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	μg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	μg/L	1.1[a]	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	μg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	μg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	μg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	μg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	μg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	μg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	μg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	μg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	μg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	μg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	μg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	μg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	μg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	μg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	μg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	μg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	μg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	μg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	μg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	μg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	μg/L	0.5	<0.5	U
41	METHYLENE CHLORIDE	75-09-2	μg/L	1.8[a]	3.46	
42	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	μg/L	1	<1	U
43	4-METHYL-2-PENTANONE (MIBK)	108-10-1	μg/L	10	7	J
44	NAPHTHALENE	91-20-3	μg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	μg/L	0.5	<0.5	U
46	STYRENE	100-42-5	μg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	μg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	μg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	μg/L	0.5	<0.5	U
50	TOLUENE	108-88-3	μg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	μg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	μg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	μg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	μg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	μg/L	0.5	<0.5	U
56	TRICHLOROFLUOROMETHANE	75-69-4	μg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	μg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	μg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	μg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	μg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	μg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	μg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	μg/L	0.5	<0.5	U

Surrogates			Control Limit, %	Surro. Rec.%
1	1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	106
2	1,2-DICHLOROETHANE-D4	17060-07-0	70-129	89
3	DIBROMOFLUOROMETHANE	1868-53-7	70-122	100
4	TOLUENE-D8	2037-26-5	73-129	108
# of out-of-control				0

Internal Standard			Control Limit, %	IS Rec.%
1	CHLOROBENZENE-D5	3114-55-4	50-200	86
2	1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	93
3	FLUOROBENZENE	462-06-6	50-200	87
# of out-of-control				0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.
[a] MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

FORM-2C

Applied P & Ch Laboratory

Surrogate Recovery Summary for Method 524.2

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		SDG Number:	033465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		Batch No:	03G2810		

#	Client Sample No	Lab Sample ID	S1 % #	S2 % #	S3 % #	S4 % #	TOT OUT
1	03G2810-LCS-01	03G2810-LCS-01	98	90	95	95	0
2	MW-6MS	03-3444-1MS	109	102	108	109	0
3	MW-6MSD	03-3444-1MSD	104	99	103	106	0
4	03G2810-MB-01	03G2810-MB-01	109	86	100	109	0
5	TB-17-5/30/03	03-3465-4	106	89	100	108	0
6	MW-1	03-3465-1	108	84	94	101	0
7	MW-9	03-3465-2	110	84	97	103	0
8	MW-10	03-3465-3	112	81	93	101	0
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

	QC Control Limit
S1 = 1-BROMO-4-FLUOROBENZENE (4-BROMOFL	70-129
S2 = 1,2-DICHLOROETHANE-D4	70-129
S3 = DIBROMOFLUOROMETHANE	70-122
S4 = TOLUENE-D8	73-129

Column to be used to flag recovery values:

* – Values outside of contract required QC Limits D – Surrogate diluted out I – Matrix Interference

FORM-3A

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 524.2

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	33465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		Batch No:	03G2810		
LCS Filename:	G2810L01	Date Analyzed:	060503	Time Analyzed:	12:19
LCSD Filename:	–	Date Analyzed:	–	Time Analyzed:	–

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration LCS	LCS Rec% #	QC Limit, % REC
BENZENE	μg/L	20	0	19.3	97	65-120
CHLOROBENZENE	μg/L	20	0	20.9	105	65-134
1,1-DICHLOROETHENE	μg/L	20	0	18.1	91	65-127
TOLUENE	μg/L	20	0	18.7	94	65-134
TRICHLOROETHENE	μg/L	20	0	19.0	95	67-122
# of Out-of-control					0	

Column to be used to flag recovery and RPD values:

* – Values outside of contract required QC Limits D – Spiked components diluted out

Comments: _____

FORM-3A

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 524.2

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	33465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		Batch No:	03G2810		
MS Filename:	G2810M01	Date Analyzed:	060503	Time Analyzed:	12:49
MSD Filename:	G2810N01	Date Analyzed:	060503	Time Analyzed:	13:18
MS Sample No:	**MW-6**	Sample Lab ID:	03-3444-1		

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration MS	MS Rec% #	QC Limit, % REC
BENZENE	μg/L	20	0	21.5	108	65-121
CHLOROBENZENE	μg/L	20	0	23.8	119	65-134
1,1-DICHLOROETHENE	μg/L	20	4.18	25.1	105	65-127
TOLUENE	μg/L	20	0	21.3	107	65-134
TRICHLOROETHENE	μg/L	20	8.13	30.7	113	65-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD	QC Limit, % REC
BENZENE	μg/L	20	20.5	103	5	28	65-121
CHLOROBENZENE	μg/L	20	22.0	110	8	35	65-134
1,1-DICHLOROETHENE	μg/L	20	23.9	99	6	31	65-127
TOLUENE	μg/L	20	20.6	103	4	35	65-134
TRICHLOROETHENE	μg/L	20	29.0	104	8	30	65-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* – Values outside of contract required QC Limits D – Spiked components diluted out

Comments: _____

FORM-4A

Applied P & Ch Laboratory

Method Blank Summary for Method 524.2

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	033465
Project ID:	JPL	Project No:	04-4428.10	Analysis Date:	06/09/03
		Sample Matrix:	Water	Analysis Time:	15:46
Sample ID:	**03G2810-MB-01**	Batch No:	03G2810	Instrument ID:	GC/MS: G
Lab Sample ID:	03G2810-MB-01	Data File Name:	G2810K01	GC Column:	DB-VEX
		Heated Purge: (Y/N)	N	Column ID:	0.45 mm

This Method Blank applies to the following samples and QC samples:

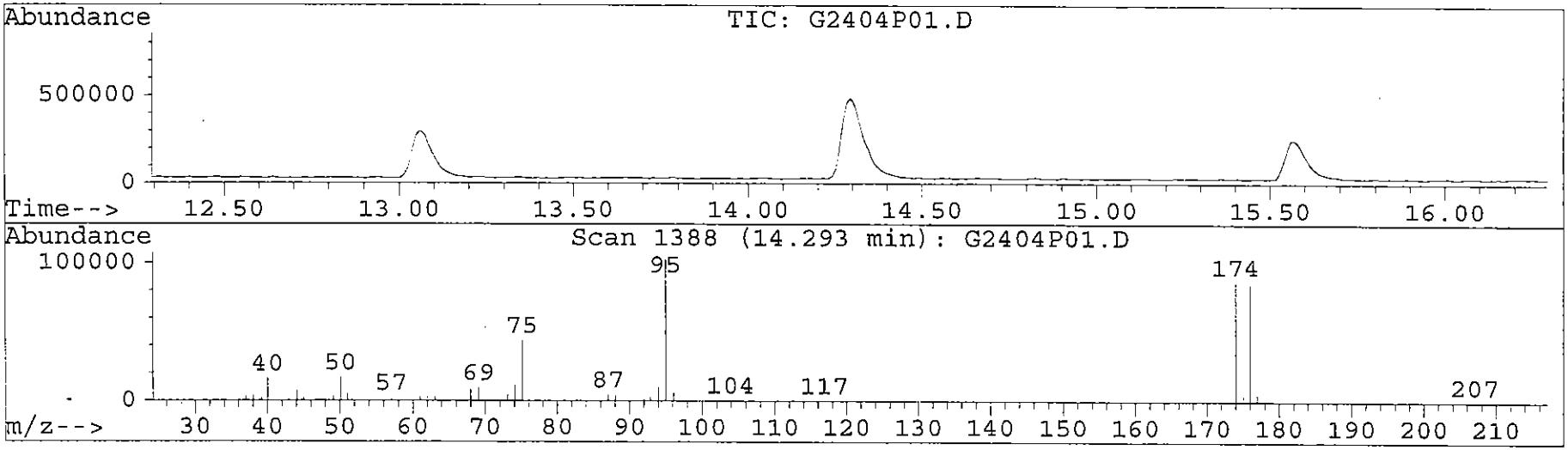
#	Client Sample No	Lab Sample ID	Sample Type	Data Filename	Analysis Date	Analysis Time
1	03G2810-LCS-01	03G2810-LCS-01	Lab Control Spike	G2810L01	06/05/03	12:19
2	MW-6MS	03-3444-1MS	Matrix Spike	G2810M01	06/05/03	12:49
3	MW-6MSD	03-3444-1MSD	Matrix Spike Duplicate	G2810N01	06/05/03	13:18
4	TB-17-5/30/03	03-3465-4	Field Sample	3465-04	06/05/03	16:15
5	MW-1	03-3465-1	Field Sample	3465-01	06/05/03	17:13
6	MW-9	03-3465-2	Field Sample	3465-02	06/05/03	17:42
7	MW-10	03-3465-3	Field Sample	3465-03	06/05/03	18:11
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						

BFB

Data File : C:\HPCHEM\1\DATA\03G2404\G2404P01.D
Acq On : 15 May 03 10:18 am
Sample : ##03g2404, w
Misc :

Vial: 18
Operator: Eddie
Inst : GCMS-G
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2



Peak Apex is scan: 1388

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	16.7	17208	PASS
75	95	30	60	43.0	44184	PASS
95	95	100	100	100.0	102784	PASS
96	95	5	9	6.1	6301	PASS
173	174	0	2	0.0	0	PASS
174	95	50	100	84.8	87112	PASS
175	174	5	9	7.7	6735	PASS
176	174	95	101	97.9	85240	PASS
177	176	5	9	6.8	5764	PASS

G2404P01.D E524G004.M Thu May 15 17:23:19 2003

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

BROMOFLUOROBENZENE (BFB)

Lab Name : APPLIED P & CH LAB Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 033465

Lab File ID: G2404 P01 BFB Injection Date: 05/15/2003

Instrument ID: GCMS-G BFB Injection Time: 1018

GC Column: VOCOL ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.7
75	30.0 - 60.0% of mass 95	43.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.1
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	84.8
175	5.0 - 9.0% of mass 174	6.6 (7.7)1
176	95.0 - 101.0% of mass 174	82.9 (97.9)1
177	5.0 - 9.0% of mass 176	5.6 (6.8)2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following SAMPLES, MS, MSD, BLANKS and STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD003	004-003	004-0003.D	05/15/03	1047
02	VSTD002	004-002	004-0002.D	05/15/03	1145
03	VSTD010	004-0010	004-0010.D	05/15/03	1214
04	VSTD020	004-0020	004-0020.D	05/15/03	1243
05	VSTD040	004-0040	004-0040.D	05/15/03	1312
06	VSTD080	004-0080	004-0080.D	05/15/03	1341
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

822

Response Factor Report GCMS-G

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2
Last Update : Fri May 16 10:36:26 2003
Response via : Initial Calibration

Calibration Files
0.3 =4-003.D 2 =4-002.D 10 =4-010.D
20 =4-020.D 40 =4-040.D 80 =4-080.D

			Compound	0.3	2	10	20	40	80	Avg	%RSD	r^2
1)	I	1	Fluorobenzene I1	----------	----------	----------	ISTD	----------	----------	----------		
2)		3	di-Cl-di-F-metha	0.171	0.222	0.204	0.210	0.231	0.234	0.212	10.90	
3)	P	4	Chloromethane	0.070	0.124	0.124	0.165	0.175	0.194	0.142	31.72#	0.996
4)		9	F114 85 135	0.172	0.280	0.268	0.259	0.268	0.282	0.255	16.33	0.999
5)	C	5	vinyl chloride	0.137	0.213	0.196	0.201	0.203	0.212	0.194	14.66	
6)		6	bromomethane	0.179	0.169	0.157	0.179	0.170	0.181	0.172	5.36	
7)		7	Chloroethane	0.130	0.163	0.150	0.158	0.156	0.158	0.153	7.81	
8)		8	tri-Cl-F-methane	0.366	0.403	0.359	0.398	0.414	0.434	0.396	7.24	
9)		111	isopropyl alcoh		0.004	0.004	0.005	0.004	0.004	0.004#	11.13	
10)		100	ethyl ether x5	0.217	0.166	0.139	0.146	0.139	0.143	0.158	19.19	1.000
11)		102	Acrolein x10		0.010	0.015	0.011	0.010	0.012	0.011#	19.61	0.986
12)		119	methyl acetate		0.218	0.114	0.220	0.172	0.163	0.177	24.90	0.980
13)		104	Carbon disulfid	0.628	0.679	0.571	0.619	0.614	0.625	0.623	5.60	
14)		103	Acrylonitrilex1		0.024	0.015	0.027	0.025	0.026	0.023#	20.79	0.996
15)		95	Acetone x10		0.026	0.018	0.018	0.017	0.017	0.019#	20.91	1.000
16)		108	F-113	0.327	0.354	0.314	0.345	0.359	0.367	0.344	5.90	
17)	M,C	13	11-dichloroethen	0.351	0.377	0.345	0.359	0.364	0.375	0.362	3.55	
18)		101	Acetonnitrilex1	0.012	0.006	0.004	0.007	0.006	0.007	0.007#	36.67	0.996
19)		109	Iodomethane	0.283	0.470	0.408	0.421	0.394	0.417	0.399	15.58	0.999
20)		113	Tert butyl alco		0.012	0.009	0.009	0.009	0.007	0.009#	17.87	
21)		18	methylene chlori		0.303	0.224	0.238	0.228	0.234	0.245	13.30	
22)		112	Allyl chloride	0.550	0.482	0.402	0.412	0.376	0.358	0.430	16.86	0.998
23)		200	Nitro methane x	0.026	0.042	0.039	0.044	0.041	0.043	0.039#	17.19	~~0.9~~
24)		10	t-Bu-Me-ether	0.471	0.570	0.445	0.484	0.491	0.512	0.496	8.64	
25)		19	t-12-di-Cl-ethen	0.215	0.278	0.262	0.283	0.262	0.281	0.263	9.69	
26)		98	Vinyl acetate x5	0.030	0.209	0.071	0.180	0.195	0.210	0.149	52.56	0.993
27)	P	21	11-dichloroethan	0.455	0.556	0.500	0.558	0.539	0.544	0.525	7.65	
28)		91	2-butanone MEKx1	0.105	0.096	0.078	0.096	0.092	0.096	0.094	9.52	

(#) = Out of Range

Response Factor Report GCMS-G

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2
Last Update : Fri May 16 10:36:26 2003
Response via : Initial Calibration

Calibration Files
0.3 =4-003.D 2 =4-002.D 10 =4-010.D
20 =4-020.D 40 =4-040.D 80 =4-080.D

		Compound	0.3	2	10	20	40	80	Avg	%RSD	r^2
29)		115 Di isoprop ethe	1.669	1.454	1.309	1.380	1.335	1.380	1.421	9.23	
30)		22 c-12-di-Cl-ethen	0.275	0.280	0.270	0.289	0.279	0.294	0.281	3.24	
31)		23 22-Dichloropropa	0.465	0.447	0.394	0.421	0.415	0.426	0.428	5.85	
32)		24 Br-Cl-methane	0.025	0.123	0.114	0.121	0.119	0.123	0.104	37.24	1.000
33)	C	25 chloroform	0.619	0.510	0.463	0.496	0.484	0.502	0.512	10.68	
34)		201 Ethyl acetate x		0.144	0.083	0.119	0.115	0.129	0.118	19.14	0.996
35)		116 ETBE	1.371	0.901	0.781	0.834	0.797	0.813	0.916	24.75	1.000
36)		117 Iso-butyl alcoh	0.004	0.039	0.016	0.024	0.023	0.026	0.022#	52.71	0.995
37)		26 tetrahydrofuranx		0.010	0.011	0.011	0.011	0.011	0.011#	3.25	
38)	S	27 Di-Br-F-Methane		0.380	0.351	0.381	0.368	0.376	0.371	3.31	
39)		34 111-tri-Cl-ethan	0.366	0.411	0.378	0.402	0.405	0.435	0.399	6.16	
40)		30 12-dichloroethan	0.074	0.208	0.187	0.208	0.207	0.220	0.184	29.91	0.999
41)		35 11-Di-Cl-propene	0.355	0.363	0.334	0.357	0.353	0.364	0.354	3.01	
42)	S	29 1,2-di-Cl-ethane		0.165	0.163	0.175	0.165	0.175	0.169	3.41	
43)	M	36 benzene	0.826	0.894	0.811	0.872	0.843	0.862	0.851	3.59	
44)		37 CCl4	0.347	0.365	0.332	0.364	0.371	0.376	0.359	4.61	
45)		97 thiophene	0.386	0.470	0.403	0.435	0.422	0.430	0.424	6.80	
46)		118 TAME	0.099	0.714	0.540	0.599	0.561	0.580	0.515	41.29	0.999
47)	C	39 12-di-Cl-propane	0.218	0.262	0.251	0.262	0.254	0.262	0.251	6.77	
48)	M	40 trichloroethene	0.308	0.320	0.283	0.304	0.303	0.307	0.304	3.93	
49)		96 Me-methacrylate	0.059	0.096	0.058	0.108	0.097	0.107	0.087	26.49	0.994
50)		42 Br-di-Cl-methane	0.518	0.343	0.313	0.341	0.323	0.334	0.362	21.31	1.000
51)		41 dibromomethane	0.025	0.121	0.113	0.131	0.128	0.134	0.109	38.23	0.999
52)		45 c-13-di-Cl-prope	0.311	0.306	0.290	0.320	0.310	0.319	0.309	3.48	
53)	S	55 toluene-d8(S2)		0.521	0.473	0.514	0.498	0.513	0.504	3.76	
54)		92 2-ClEt-Vi-ether1	0.022	0.026	0.025	0.028	0.027	0.028	0.026#	9.04	
55)	M C	56 toluene	0.984	0.797	0.743	0.790	0.785	0.806	0.817	10.33	
56)		107 Et methacrylate	0.142	0.150	0.065	0.144	0.145	0.149	0.132	24.94	0.995
57)		93 2-Hexanone x5	0.012	0.054	0.035	0.058	0.056	0.057	0.045#	40.36	0.998

(#) = Out of Range

Response Factor Report GCMS-G

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2
Last Update : Fri May 16 10:36:26 2003
Response via : Initial Calibration

Calibration Files
0.3 =4-003.D 2 =4-002.D 10 =4-010.D
20 =4-020.D 40 =4-040.D 80 =4-080.D

		Compound	0.3	2	10	20	40	80	Avg	%RSD	r2
58)		48 112-tri-Cl-Et	0.037	0.121	0.133	0.123	0.120	0.126	0.110	32.76	0.999
59)		58 1,2-di-br-ethane	0.075	0.130	0.120	0.133	0.129	0.136	0.121	19.23	0.999
60)		51 di-Br-Cl-methane	0.300	0.209	0.189	0.201	0.198	0.206	0.217	19.04	1.000
61)		46 t-13-di-cl-prope	0.311	0.306	0.290	0.320	0.310	0.319	0.309	3.48	
62)		105 1-Chlorohexane	0.488	0.346	0.252	0.263	0.270	0.270	0.315	28.95	1.000
63)	I	47 Cl-benzene-d5, I2	----------ISTD----------								
64)		54 MIBK	0.633	0.040	0.247	0.366	0.338	0.311	0.323	59.49	0.993
65)		49 1,3-di-cl-propan	0.725	0.760	0.715	0.750	0.665	0.635	0.708	6.87	
66)		59 tetra-Cl-ethene	0.811	0.964	0.829	0.894	0.834	0.805	0.856	7.16	
67)	M P	60 chlorobenzene	1.600	1.774	1.582	1.689	1.517	1.449	1.602	7.29	
68)		61 1112-tetra-Cl-Et	0.638	0.778	0.713	0.773	0.713	0.712	0.721	7.07	
69)	C	64 ethylbenzene	3.112	3.172	2.684	2.849	2.633	2.571	2.837	8.96	
70)		65 m/p-Xylenes x2	2.217	2.435	2.037	2.212	2.003	1.913	2.136	8.86	
71)		99 1-4-di-Cl-butane	0.969	0.802	0.614	0.676	0.587	0.566	0.702	22.19	0.997
72)	P	52 bromoform	0.362	0.339	0.280	0.305	0.286	0.278	0.308	11.37	
73)		66 styrene	2.237	1.851	1.535	1.703	1.551	1.494	1.729	16.33	0.998
74)		67 o-xylene	2.181	2.365	1.964	2.141	1.905	1.793	2.058	10.15	
75)	P	68 1122-Tetra-Cl-Et	0.341	0.373	0.327	0.383	0.339	0.319	0.347	7.35	
76)		110 t-1,4-dichloro-	0.086	0.113	0.071	0.082	0.060	0.057	0.078	26.49	
77)		106 Cl-benzyl	0.246	0.767	0.523	0.553	0.506	0.475	0.512	32.62	0.997
78)	I	62 1,4-DCB-d4 150 152	----------ISTD----------								
79)		69 123-tri-Cl-Pr		0.105	0.115	0.118	0.118	0.125	0.116	6.41	
80)	S	70 4-Br-1-F-Bz (S3)		0.861	0.783	0.843	0.816	0.816	0.824	3.60	
81)		71 isopropylbenzene	3.079	3.655	3.123	3.352	3.453	3.483	3.357	6.61	
82)		72 bromobenzene	0.550	0.760	0.702	0.768	0.754	0.770	0.717	11.96	
83)		73 n-propylbenzene	0.826	1.098	0.966	0.997	1.023	1.018	0.988	9.16	
84)		74 2-Cl-Tl 126	0.510	0.613	0.554	0.631	0.615	0.632	0.592	8.39	

(#) = Out of Range

Response Factor Report GCMS-G

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2
Last Update : Fri May 16 10:36:26 2003
Response via : Initial Calibration

Calibration Files
0.3 =4-003.D 2 =4-002.D 10 =4-010.D
20 =4-020.D 40 =4-040.D 80 =4-080.D

		Compound		0.3	2	10	20	40	80	Avg	%RSD	
85)	75	4-Cl-Tl	126	0.646	0.992	0.902	0.940	0.923	0.929	0.889	13.80	
86)	76	135-tri-Me-Bz		2.583	2.784	2.472	2.572	2.629	2.663	2.617	3.99	
87)	79	tert-butylbenzen		2.451	3.316	2.795	2.985	3.080	3.051	2.946	10.01	
88)	78	124-tri-Me-Bz		2.118	2.346	2.022	2.129	2.199	2.305	2.186	5.60	
89)	80	13-di-Cl-Bz	146	1.262	1.255	1.050	1.148	1.115	1.139	1.161	7.11	
90)	82	14-di-Cl-Bz	146	1.380	1.832	1.652	1.737	1.724	1.689	1.669	9.21	
91)	81	sec-butylbenzene		4.172	4.470	3.703	4.002	4.222	4.106	4.113	6.19	
92)	77	4-iso-Pr-toluene		3.010	3.461	3.029	3.031	3.111	3.052	3.116	5.54	
93)	84	12-di-Cl-benzene		0.984	1.231	1.072	1.148	1.101	1.160	1.116	7.57	
94)	85	n-butylbenzene		2.607	2.971	2.467	2.570	2.758	2.798	2.695	6.77	
95)	86	12-diBr-3-Cl-Pra			0.043	0.068	0.073	0.072	0.080	0.067	20.80	0.998
96)	87	124-tri-Cl-Bz		0.442	0.729	0.620	0.663	0.738	0.731	0.654	17.40	0.999
97)	88	naphthalene		0.296	0.631	0.492	0.594	0.764	0.719	0.583	29.17	0.994
98)	90	123-tri-Cl-Bz		0.194	0.523	0.464	0.520	0.571	0.542	0.469	29.72	0.999
99)	89	hx-Cl-butadiene		0.701	0.767	0.617	0.649	0.688	0.662	0.681	7.59	

(#) = Out of Range

INITIAL CALIBRATION SUMMARY

Method File E524G004
Last Calibration Update Fri May 16 10:36:26 2003

Level 1 File Name	4-003.D	**Level 1 ID**	0.3
Level 2 File Name	4-002.D	**Level 2 ID**	2
Level 3 File Name	4-010.D	**Level 3 ID**	10
Level 4 File Name	4-020.D	**Level 4 ID**	20
Level 5 File Name	4-040.D	**Level 5 ID**	40
Level 6 File Name	4-080.D	**Level 6 ID**	80
Level 7 File Name	4-020.D	**Level 7 ID**	cc

Compound Name	Level 1 Response	Level 2 Response	Level 3 Response	Level 4 Response	Level 5 Response	Level 6 Response	Level 7 Response	Coeff X^0	Coeff X^1 / ave RF	Coeff X^2	R^2 / RSD
1 Fluorobenzene I1 1	815158	799651	824804	746757	764394	689688	-1	------	------	------	------
3 di-Cl-di-F-methane 85 87	4181	35493	168476	314256	706635	1288384	-1	0.0000	0.2120	0.0000	0.1090
4 Chloromethane 50 52	1706	19850	102587	246113	534218	1069891	-1	-0.0408	0.1954	0.0000	0.9966
9 F114 85 135	4199	44804	220942	386132	819274	1556249	-1	-0.0188	0.2815	0.0000	0.9991
5 vinyl chloride 62 64	3355	33999	162051	300841	621901	1167862	-1	0.0000	0.1938	0.0000	0.1466
6 bromomethane 94 96	4372	26980	129267	267214	519945	1000442	-1	0.0000	0.1724	0.0000	0.0536
7 Chloroethane 64 66	3179	26106	123679	236431	478026	873637	-1	0.0000	0.1527	0.0000	0.0781
8 tri-Cl-F-methane 101 103	8951	64415	295972	594414	1265977	2395096	-1	0.0000	0.3956	0.0000	0.0724
111 isopropyl alcohol x10	3587	6299	29925	70395	111196	226721	-1	0.0000	0.0040	0.0000	0.1113
100 ethyl ether x5	26492	132391	571623	1090032	2124645	3947698	-1	0.0028	0.1423	0.0000	0.9997
102 Acrolein x10	1454	15421	124387	164659	294058	649263	-1	-0.0048	0.0115	0.0000	0.9858
119 methyl acetate	7468	34881	93789	329077	525452	898426	-1	0.0239	0.1624	0.0000	0.9860
104 Carbon disulfide	15360	108670	470593	924294	1876377	3448920	-1	0.0000	0.6226	0.0000	0.0560
103 Acrylonitrilex10	4460	38141	123788	403095	766254	1455017	-1	-0.0461	0.0268	0.0000	0.9965
95 Acetone x10	18003	42021	146218	266351	522927	928171	-1	0.0183	0.0166	0.0000	0.9999
108 F-113	7993	56604	258951	515229	1098171	2025833	-1	0.0000	0.3443	0.0000	0.0590
13 11-dichloroethene 61 96	8587	60316	284348	535921	1112083	2068506	-1	0.0000	0.3617	0.0000	0.0355
101 Acetonnitrilex10	2831	10077	31282	102405	196047	363830	-1	-0.0063	0.0067	0.0000	0.9966
109 Iodomethane	6929	75147	336586	628909	1205092	2300947	-1	-0.0067	0.4140	0.0000	0.9991
113 Tert butyl alcohol x10	1373	18588	77974	138129	265783	388696	-1	0.0000	0.0092	0.0000	0.1787
18 methylene chloride 49 84	-1	48402	184549	355095	696481	1289109	-1	0.0000	0.2451	0.0000	0.1330

112 Allyl chloride	13441	77142	331252	615063	1148799	1977528	-1	0.0468	0.3564	0.0000	0.9986
200 Nitro methane x10	6304	66437	325452	650702	1254351	2397871	-1	0.0000	0.0391	0.0000	0.1719
10 t-Bu-Me-ether 73 57	11529	91189	366763	722425	1502372	2824413	-1	0.0000	0.4955	0.0000	0.0864
19 t-12-di-Cl-ethene 96 61	5258	44435	215839	423127	799696	1549462	-1	0.0000	0.2634	0.0000	0.0969
98 Vinyl acetate x5	3645	167151	292003	1342007	2982123	5784036	-1	-0.2666	0.2134	0.0000	0.9933
21 11-dichloroethane 63 83	11126	88915	412703	833014	1647004	3000180	-1	0.0000	0.5252	0.0000	0.0765
91 2-butanone MEKx10	25733	153111	642126	1432839	2827847	5285771	-1	0.0000	0.0938	0.0000	0.0952
115 Di isoprop ether	40820	232542	1079994	2060781	4081017	7613956	-1	0.0000	1.4212	0.0000	0.0923
22 c-12-di-Cl-ethene 96 61	6716	44823	222557	432230	852613	1623067	-1	0.0000	0.2812	0.0000	0.0324
23 22-Dichloropropane 77 97	11379	71432	324674	629042	1268689	2353196	-1	0.0000	0.4280	0.0000	0.0585
24 Br-Cl-methane 128 130	619	19664	94361	180264	365219	680793	-1	-0.0056	0.1234	0.0000	0.9997
25 chloroform 83 85	15134	81585	381866	741343	1478585	2772452	-1	0.0000	0.5124	0.0000	0.1068
201 Ethyl acetate x2	2846	46100	136924	355515	703484	1425799	-1	-0.0563	0.1306	0.0000	0.9958
116 ETBE	33538	144136	644550	1245123	2437411	4486393	-1	0.0049	0.8099	0.0000	0.9998
117 Iso-butyl alcohol X10	940	62706	135151	357401	710558	1430613	-1	-0.0353	0.0259	0.0000	0.9953
26 tetrahydrofuranx5	257	8307	43847	84254	161549	290888	-1	0.0000	0.0107	0.0000	0.0325
27 Di-Br-F-Methane (S1) 111 1	8284	60816	289627	568312	1126216	2075916	-1	0.0000	0.3713	0.0000	0.0331
34 111-tri-Cl-ethane 97 99	8942	65770	311389	599971	1237882	2397744	-1	0.0000	0.3993	0.0000	0.0616
30 12-dichloroethane 64 62	1802	33229	153871	310815	631494	1211777	-1	-0.0194	0.2197	0.0000	0.9990
35 11-Di-Cl-propene 75 110	8689	58001	275836	532605	1078521	2009125	-1	0.0000	0.3543	0.0000	0.0301
29 1,2-di-Cl-ethane-d4 [Surr] 10	4884	26465	134448	261823	505671	963545	-1	0.0000	0.1688	0.0000	0.0341
36 benzene 78 52	20191	142907	668867	1302042	2578473	4754791	-1	0.0000	0.8512	0.0000	0.0359
37 CCl4 117 119	8483	58348	273728	543038	1134691	2073848	-1	0.0000	0.3590	0.0000	0.0461
97 thiophene	9443	75171	331986	649163	1291816	2373848	-1	0.0000	0.4243	0.0000	0.0680
118 TAME	2423	114119	445234	894867	1715454	3200762	-1	-0.0058	0.5780	0.0000	0.9994
39 12-di-Cl-propane 63 76	5331	41840	206799	390600	777542	1446554	-1	0.0000	0.2514	0.0000	0.0677
40 trichloroethene 130 132	7533	51222	233771	454200	926225	1695738	-1	0.0000	0.3044	0.0000	0.0393
96 Me-methacrylate	1437	15341	47596	161499	295494	591170	-1	-0.0168	0.1076	0.0000	0.9949
42 Br-di-Cl-methane 83 85	12659	54887	257854	508851	988624	1842908	-1	-0.0042	0.3328	0.0000	0.9996
41 dibromomethane 174 172	618	19288	93298	195812	390733	738622	-1	-0.0102	0.1342	0.0000	0.9994

Compound Name	Level 1 Response	Level 2 Response	Level 3 Response	Level 4 Response	Level 5 Response	Level 6 Response	Level 7 Response	Coeff X^0	Coeff X^1 / ave RF	Coeff X^2	R^2 / RSD
45 c-13-di-Cl-propene 75 110	7615	48884	239463	477602	948616	1759634	-1	------	------	------	------
55 toluene-d8(S2) 100 99	13666	83281	390496	768293	1521774	2828221	-1	0.0000	0.5038	0.0000	0.0376
92 2-ClEt-Vi-ether10	5311	41678	205749	413282	830636	1543091	-1	0.0000	0.0259	0.0000	0.0904
56 toluene 91 92	24063	127484	612856	1179183	2400670	4445368	-1	0.0000	0.8174	0.0000	0.1033

107 Et methacrylate	3479	23955	53825	215372	441923	820108	-1	-0.0241	0.1510	0.0000	0.9952
93 2-Hexanone x5	1510	42848	144809	430950	860345	1584358	-1	-0.0326	0.0581	0.0000	0.9977
48 112-tri-Cl-Et 97 83	906	19429	109523	184224	367637	694437	-1	-0.0023	0.1252	0.0000	0.9994
58 1,2-di-br-ethane 107 109	1824	20769	99010	199115	395372	752280	-1	-0.0087	0.1362	0.0000	0.9993
51 di-Br-Cl-methane 129 127	7347	33435	155803	299945	605212	1137349	-1	-0.0082	0.2056	0.0000	0.9995
46 t-13-di-cl-propene 75 110	7615	48884	239463	477602	948616	1759634	-1	0.0000	0.3094	0.0000	0.0348
105 1-Chlorohexane	11922	55414	207900	393247	824539	1487258	-1	-0.0003	0.2692	0.0000	0.9998
47 Cl-benzene-d5, I2	231880	227963	249245	222899	243736	235423	-1	0.0000	1.0000	0.0000	0.0000
54 MIBK	4406	1842	61603	163289	329191	585241	-1	0.0022	0.3172	0.0000	0.9942
49 1,3-di-cl-propane 76 78	5042	34635	178128	334360	648825	1196619	-1	0.0000	0.7083	0.0000	0.0687
59 tetra-Cl-ethene 166 168	5645	43932	206527	398332	812967	1516368	-1	0.0000	0.8560	0.0000	0.0716

Compound Name	Level 1 Response	Level 2 Response	Level 3 Response	Level 4 Response	Level 5 Response	Level 6 Response	Level 7 Response	Coeff X^0	Coeff X^1 / ave RF	Coeff X^2	R^2 / RSD
60 chlorobenzene 112 77	11129	80876	394322	752942	1478617	2729365	-1	0.0000	------	------	------
61 1112-tetra-Cl-Et 131 133	4438	35454	177813	344569	695345	1340863	-1	0.0000	0.7212	0.0000	0.0707
64 ethylbenzene 91 106	21645	144618	668986	1270086	2566878	4842788	-1	0.0000	2.8368	0.0000	0.0896
65 m/p-Xylenes x2	30844	222047	1015495	1972002	3905278	7205695	-1	0.0000	2.1361	0.0000	0.0886
99 1-4-di-Cl-butane	6740	36572	153006	301374	572112	1066373	-1	0.0798	0.5616	0.0000	0.9979
52 bromoform 173 175	2520	15462	69675	136091	278788	522738	-1	0.0000	0.3083	0.0000	0.1137
66 styrene 104 78	15564	84384	382712	759242	1511886	2814241	-1	0.1396	1.4904	0.0000	0.9987
67 o-xylene 91 106	15170	107821	489526	954644	1857499	3377446	-1	0.0000	2.0583	0.0000	0.1015
68 1122-Tetra-Cl-Et 83 85	2369	17006	81453	170717	330326	601304	-1	0.0000	0.3469	0.0000	0.0735
110 t-1,4-dichloro-2-butene	598	5155	17689	36488	58046	107382	-1	0.0000	0.0781	0.0000	0.2649
106 Cl-benzyl	1709	34984	130453	246745	493146	894786	-1	0.0686	0.4730	0.0000	0.9980
62 1,4-DCB-d4 150 152 I3	220209	211064	218269	198057	195846	179706	-1	0.0000	1.0000	0.0000	0.0000
69 123-tri-Cl-Pr 110 97	247	4417	25007	46613	92169	179941	-1	0.0000	0.1159	0.0000	0.0641
70 4-Br-1-F-Bz (S3) 174 95	7551	36349	170967	334015	639559	1173651	-1	0.0000	0.8241	0.0000	0.0360
71 isopropylbenzene 105 120	20338	154289	681700	1327629	2705126	5006864	-1	0.0000	3.3574	0.0000	0.0661
72 bromobenzene 156 158	3634	32102	153148	304357	590583	1107164	-1	0.0000	0.7174	0.0000	0.1196
73 n-propylbenzene 120 78	5459	46356	210844	394872	801684	1463801	-1	0.0000	0.9881	0.0000	0.0916
74 2-Cl-Tl 126 128	3366	25894	120864	249899	481903	908178	-1	0.0000	0.5924	0.0000	0.0839
75 4-Cl-Tl 126 128	4268	41895	196931	372201	722805	1334882	-1	0.0000	0.8886	0.0000	0.1380
76 135-tri-Me-Bz 105 120	17066	117538	539476	1018963	2059638	3828683	-1	0.0000	2.6173	0.0000	0.0399
79 tert-butylbenzene 119 91	16192	139975	610164	1182229	2412602	4386919	-1	0.0000	2.9464	0.0000	0.1001
78 124-tri-Me-Bz 105 120	13993	99021	441266	843153	1722397	3314335	-1	0.0000	2.1864	0.0000	0.0560
80 13-di-Cl-Bz 146 148	8334	52974	229141	454607	873397	1637769	-1	0.0000	1.1613	0.0000	0.0711

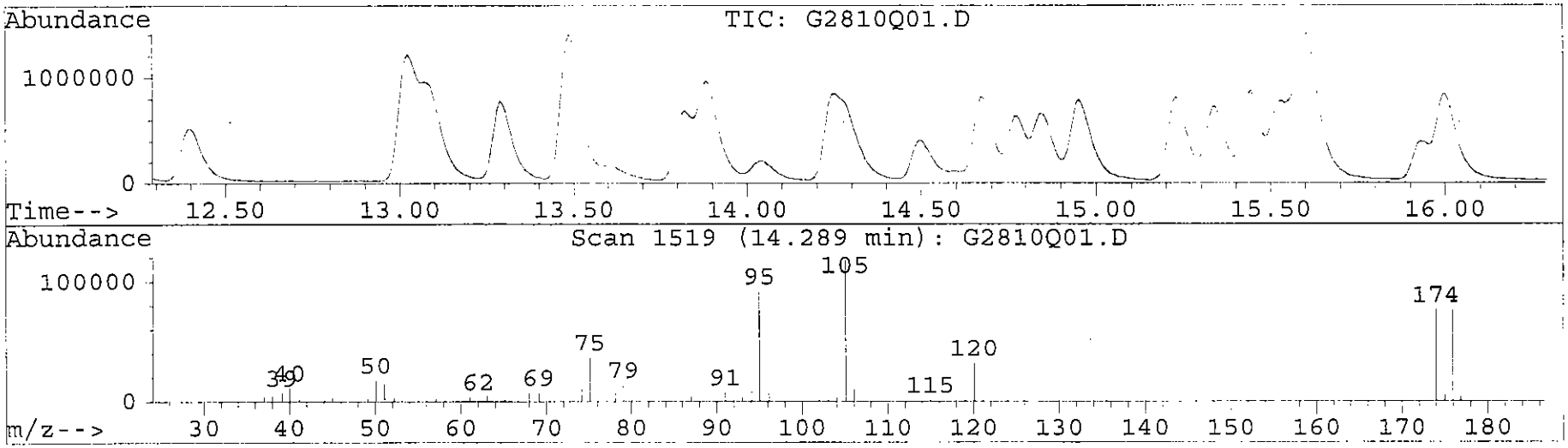
82	14-di-Cl-Bz	146 148	9119	77324	360564	688087	1350534	2427479	-1	0.0000	1.6689	0.0000	0.0921
81	sec-butylbenzene	105 134	27562	188712	808141	1585357	3307792	5902646	-1	0.0000	4.1126	0.0000	0.0619
77	4-iso-Pr-toluene	119 134	19882	146089	661221	1200767	2437020	4387114	-1	0.0000	3.1156	0.0000	0.0554
84	12-di-Cl-benzene	146 148	6500	51953	234009	454651	862171	1667156	-1	0.0000	1.1158	0.0000	0.0757
85	n-butylbenzene	91 134	17225	125422	538366	1017966	2160614	4022017	-1	0.0000	2.6951	0.0000	0.0677
86	12-diBr-3-Cl-Pra	157 155	-1	1829	14905	28995	56245	114486	-1	-0.0147	0.0803	0.0000	0.9979
87	124-tri-Cl-Bz	180 182	2922	30767	135221	262726	578192	1051545	-1	-0.0553	0.7381	0.0000	0.9992
88	naphthalene	128 129	1954	26649	107459	235161	598470	1033706	-1	-0.0995	0.7367	0.0000	0.9955
90	123-tri-Cl-Bz	180 182	1279	22090	101362	206041	447433	779205	-1	-0.0222	0.5495	0.0000	0.9986
89	hx-Cl-butadiene	225 260	4633	32362	134569	257067	538819	952000	-1	0.0000	0.6806	0.0000	0.0759

BFB

Data File : C:\HPCHEM\1\DATA\03G2810\G2810Q01.D
Acq On : 5 Jun 03 11:50 am
Sample : f=1 ccv
Misc :

Vial: 17
Operator: Eddie
Inst : GCMS-G
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2



Peak Apex is scan: 1519

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	19.2	17736	PASS
75	95	30	60	39.9	36824	PASS
95	95	100	100	100.0	92216	PASS
96	95	5	9	7.3	6735	PASS
173	174	0	2	0.0	0	PASS
174	95	50	100	82.9	76472	PASS
175	174	5	9	7.6	5796	PASS
176	174	95	101	99.2	75848	PASS
177	176	5	9	5.9	4456	PASS

FORM-5A

Applied P & Ch Laboratory

Volatile Organic Instrument Performance Check for Method 524.2

Bromofluorobenzene (BFB), Part II

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	033465
Project ID:	JPL	BFB Inj. Date:	06/05/03	Batch No:	03G2810
		BFB Inj. Time:	11:50	Sequence No:	03G2810
Project No:	04-4428.10	Instrument ID:	G	GC Column:	DB-VEX
Data File Name:	G2810P01	Heated Purge: (Y/N)	N	Column ID:	0.45 mm

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

#	Client Sample No	Lab Sample ID	Data File Name	Date Analyzed	Time Analyzed
1	03G2810-CCV-01	03G2810-CCV-01	G2810Q01	06/05/03	11:50
2	03G2810-LCS-01	03G2810-LCS-01	G2810L01	06/05/03	12:19
3	MW-6MS	03-3444-1MS	G2810M01	06/05/03	12:49
4	MW-6MSD	03-3444-1MSD	G2810N01	06/05/03	13:18
5	03G2810-MB-01	03G2810-MB-01	G2810K01	06/05/03	15:46
6	TB-17-5/30/03	03-3465-4	3465-04	06/05/03	16:15
7	MW-1	03-3465-1	3465-01	06/05/03	17:13
8	MW-9	03-3465-2	3465-02	06/05/03	17:42
9	MW-10	03-3465-3	3465-03	06/05/03	18:11
10					
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26					

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\03G2810\G2810Q01.D Vial: 17
Acq On : 5 Jun 03 11:50 am Operator: Eddie
Sample : f=1 ccv Inst : GCMS-G
Misc : Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2
Last Update : Fri May 16 10:36:26 2003
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 35% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1 Fluorobenzene I1 1	1.000	1.000	0.0	105	0.00
2		3 di-Cl-di-F-methane 85 8	0.212	0.206	2.9	103	0.00
3	P	4 Chloromethane 50 5	0.142	0.182	-28.4#	116	0.00
4		9 F114 85 135	0.255	0.248	2.7	101	0.00
5	C	5 vinyl chloride 62 6	0.194	0.207	-6.7	108	0.00
6		6 bromomethane 94 9	0.172	0.182	-5.7	107	0.00
7		7 Chloroethane 64 66	0.153	0.161	-5.2	107	0.00
8		8 tri-Cl-F-methane 101 10	0.396	0.383	3.1	101	0.00
9		111 isopropyl alcohol x10	0.004	0.006#	-39.2#	124	0.00
10		100 ethyl ether x5	0.158	0.149	5.9	107	0.00
11		102 Acrolein x10	0.011	0.013#	-12.4	122	0.00
12		119 methyl acetate	0.177	0.118	33.7#	56	0.00
13		104 Carbon disulfide	0.623	0.589	5.4	100	0.00
14		103 Acrylonitrilex10	0.023	0.028#	-18.9	108	0.00
15		95 Acetone x10	0.019	0.021#	-12.1	126	0.00
16		108 F-113	0.344	0.355	-3.0	108	0.00
17	M,C	13 11-dichloroethene 61 9	0.362	0.354	2.1	104	0.00
18		101 Acetonnitrilex10	0.007	0.008#	-17.0	124	0.00
19		109 Iodomethane	0.399	0.294	26.2#	73	0.00
20		113 Tert butyl alcohol x10	0.009	0.011#	-15.9	121	0.00
21		18 methylene chloride 49 8	0.245	0.266	-8.4	117	0.00
22		112 Allyl chloride	0.430	0.408	5.0	104	0.00
23		200 Nitro methane x10	0.039	0.043#	-8.9	103	0.00
24		10 t-Bu-Me-ether 73 57	0.496	0.490	1.0	106	0.00
25		19 t-12-di-Cl-ethene 96 6	0.263	0.284	-7.7	105	0.00
26		98 Vinyl acetate x5	0.149	0.339	-127.4#	198#	0.00
27	P	21 11-dichloroethane 63 8	0.525	0.543	-3.5	102	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\03G2810\G2810Q01.D Vial: 17
Acq On : 5 Jun 03 11:50 am Operator: Eddie
Sample : f=1 ccv Inst : GCMS-G
Misc : Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2
Last Update : Fri May 16 10:36:26 2003
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 35% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound			AvgRF	CCRF	%Dev	Area%	Dev(min)
28		91 2-butanone MEKx10			0.094	0.100	-6.6	109	0.00
29		115 Di isoprop ether			1.421	1.424	-0.2	108	0.00
30		22 c-12-di-Cl-ethene	96	6	0.281	0.296	-5.2	107	0.00
31		23 22-Dichloropropane	77	9	0.428	0.436	-1.9	109	0.00
32		24 Br-Cl-methane	128	13	0.104	0.128	-22.7#	111	0.00
33	C	25 chloroform	83	8	0.512	0.492	3.9	104	0.00
34		201 Ethyl acetate x2			0.118	0.160	-35.4#	141	0.00
35		116 ETBE			0.916	0.851	7.1	107	0.00
36		117 Iso-butyl alcohol X10			0.022	0.032#	-44.7#	140	0.00
37		26 tetrahydrofuranx5			0.011	0.012#	-10.0	109	0.00
38	S	27 Di-Br-F-Methane (S1)		11	0.371	0.388	-4.4	107	0.00
39		34 111-tri-Cl-ethane	97	9	0.399	0.397	0.6	104	0.00
40		30 12-dichloroethane	64	6	0.184	0.202	-9.9	102	0.00
41		35 11-Di-Cl-propene	75	11	0.354	0.351	0.8	103	0.00
42	S	29 1,2-di-Cl-ethane-d4 [Sur			0.169	0.165	2.0	99	0.00
43	M	36 benzene	78	5	0.851	0.879	-3.3	106	0.00
44		37 CCl4	117	11	0.359	0.355	1.0	103	0.00
45		97 thiophene			0.424	0.445	-4.9	108	0.00
46		118 TAME			0.515	0.619	-20.1#	108	0.00
47	C	39 12-di-Cl-propane	63	7	0.251	0.270	-7.4	108	0.00
48	M	40 trichloroethene	130	13	0.304	0.312	-2.4	108	0.00
49		96 Me-methacrylate			0.087	0.102	-16.5	99	0.00
50		42 Br-di-Cl-methane	83	8	0.362	0.327	9.7	101	0.00
51		41 dibromomethane	174	17	0.109	0.134	-23.2#	107	0.00
52		45 c-13-di-Cl-propene	75	11	0.309	0.317	-2.6	104	0.00
53	S	55 toluene-d8(S2)		100	0.504	0.519	-3.0	106	0.00
54		92 2-ClEt-Vi-ether10			0.026	0.027#	-3.2	101	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\03G2810\G2810Q01.D Vial: 17
Acq On : 5 Jun 03 11:50 am Operator: Eddie
Sample : f=1 ccv Inst : GCMS-G
Misc : Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2
Last Update : Fri May 16 10:36:26 2003
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 35% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound		AvgRF	CCRF	%Dev	Area%	Dev(min)
55	M C	56 toluene	91 9	0.817	0.807	1.3	107	0.00
56		107 Et methacrylate		0.132	0.211	-59.0#	153#	0.00
57		93 2-Hexanone x5		0.045	0.064	-41.0#	116	0.00
58		48 112-tri-Cl-Et	97 8	0.110	0.124	-12.2	105	0.00
59		58 1,2-di-br-ethane	107 109	0.121	0.133	-10.1	105	0.00
60		51 di-Br-Cl-methane	129 12	0.217	0.200	7.9	105	0.00
61		46 t-13-di-cl-propene	75 11	0.309	0.317	-2.6	104	0.00
62		105 1-Chlorohexane		0.315	0.260	17.4	104	0.00
63	I	47 Cl-benzene-d5, I2		1.000	1.000	0.0	99	0.00
64		54 MIBK		0.323	0.423	-31.1#	114	0.00
65		49 1,3-di-cl-propane	76 78	0.708	0.786	-10.9	103	0.00
66		59 tetra-Cl-ethene	166 16	0.856	0.965	-12.8	107	0.00
67	M P	60 chlorobenzene	112 7	1.602	1.805	-12.7	105	0.00
68		61 1112-tetra-Cl-Et	131 13	0.721	0.819	-13.6	105	0.00
69	C	64 ethylbenzene	91 10	2.837	2.993	-5.5	104	0.00
70		65 m/p-Xylenes x2		2.136	2.284	-6.9	102	0.00
71		99 1-4-di-Cl-butane		0.702	0.702	0.0	102	0.00
72	P	52 bromoform	173 17	0.308	0.337	-9.2	109	0.00
73		66 styrene	104 7	1.729	1.752	-1.3	101	0.00
74		67 o-xylene	91 10	2.058	2.183	-6.1	101	0.00
75	P	68 1122-Tetra-Cl-Et	83 8	0.347	0.418	-20.5#	108	0.00
76		110 t-1,4-dichloro-2-butene		0.078	0.082	-4.5	98	0.00
77		106 Cl-benzyl		0.512	0.632	-23.5#	113	0.00
78	I	62 1,4-DCB-d4 150 152 I3		1.000	1.000	0.0	99	0.00
79		69 123-tri-Cl-Pr	110 9	0.116	0.130	-11.9	109	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\03G2810\G2810Q01.D Vial: 17
Acq On : 5 Jun 03 11:50 am Operator: Eddie
Sample : f=1 ccv Inst : GCMS-G
Misc : Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\E524G004.M
Title : **Applied P &Ch Lab** EPA 524.2
Last Update : Fri May 16 10:36:26 2003
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 35% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound			AvgRF	CCRF	%Dev	Area%	Dev(min)
80	S	70 4-Br-1-F-Bz (S3)	174	9	0.824	0.869	-5.4	102	0.00
81		71 isopropylbenzene	105	12	3.357	3.477	-3.6	103	0.00
82		72 bromobenzene	156	15	0.717	0.795	-10.9	103	0.00
83		73 n-propylbenzene	120	7	0.988	1.050	-6.3	104	0.00
84		74 2-Cl-Tl 126 128			0.592	0.646	-9.0	101	0.00
85		75 4-Cl-Tl 126 128			0.889	0.961	-8.2	101	0.00
86		76 135-tri-Me-Bz	105	12	2.617	2.624	-0.3	101	0.00
87		79 tert-butylbenzene	119	9	2.946	3.059	-3.8	102	0.00
88		78 124-tri-Me-Bz	105	12	2.186	2.248	-2.8	105	0.00
89		80 13-di-Cl-Bz 146 148			1.161	1.200	-3.3	104	0.00
90		82 14-di-Cl-Bz 146 148			1.669	1.809	-8.4	103	0.00
91		81 sec-butylbenzene	105	13	4.113	4.264	-3.7	106	0.00
92		77 4-iso-Pr-toluene	119	13	3.116	3.163	-1.5	103	0.00
93		84 12-di-Cl-benzene	146	14	1.116	1.184	-6.1	102	0.00
94		85 n-butylbenzene	91	13	2.695	2.801	-3.9	108	0.00
95		86 12-diBr-3-Cl-Pra	157	15	0.067	0.085	-25.7#	114	0.00
96		87 124-tri-Cl-Bz	180	18	0.654	0.740	-13.1	110	0.00
97		88 naphthalene	128	12	0.583	0.672	-15.3	112	0.00
98		90 123-tri-Cl-Bz	180	18	0.469	0.556	-18.5	106	0.00
99		89 hx-Cl-butadiene	225	26	0.681	0.683	-0.4	104	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Continuing Calibration Concentration Summary

Data File G2810Q01.D
Method File E524G004

Compound Name	Amount	Actual	Units	%Dev	Target Response
1 Fluorobenzene I1 1	10	10.00	ppb	0.00	783807
3 di-Cl-di-F-methane 85 87	20	19.41	ppb	2.95	322583
4 Chloromethane 50 52	20	20.75	ppb	3.75	285797
9 F114 85 135	20	18.28	ppb	8.61	388528
5 vinyl chloride 62 64	20	21.35	ppb	6.73	324245
6 bromomethane 94 96	20	21.13	ppb	5.66	285575
7 Chloroethane 64 66	20	21.05	ppb	5.23	251890
8 tri-Cl-F-methane 101 103	20	19.38	ppb	3.11	600902
111 isopropyl alcohol x10	200	278.31	ppb	39.15	87369
100 ethyl ether x5	100	104.34	ppb	4.34	1166114
102 Acrolein x10	200	228.57	ppb	14.28	201401
119 methyl acetate	20	13.01	ppb	34.96	184299
104 Carbon disulfide	20	18.92	ppb	5.40	923349
103 Acrylonitrilex10	200	224.96	ppb	12.48	437199
95 Acetone x10	200	247.54	ppb	23.77	336638
108 F-113	20	20.61	ppb	3.04	556188
13 11-dichloroethene 61 96	20	19.59	ppb	2.07	555350
101 Acetonnitrilex10	200	253.02	ppb	26.51	126960
109 Iodomethane	20	14.38	ppb	28.08	461562
113 Tert butyl alcohol x10	200	231.83	ppb	15.91	167399
18 methylene chloride 49 84	20	21.68	ppb	8.39	416498
112 Allyl chloride	20	21.61	ppb	8.04	640237
200 Nitro methane x10	200	217.88	ppb	8.94	668400
10 t-Bu-Me-ether 73 57	20	19.79	ppb	1.04	768735
19 t-12-di-Cl-ethene 96 61	20	21.53	ppb	7.66	444487
98 Vinyl acetate x5	100	171.25	ppb	71.25	2655799
21 11-dichloroethane 63 83	20	20.69	ppb	3.47	851931
91 2-butanone MEKx10	200	213.21	ppb	6.60	1568195
115 Di isoprop ether	20	20.04	ppb	0.22	2232676
22 c-12-di-Cl-ethene 96 61	20	21.04	ppb	5.18	463630
23 22-Dichloropropane 77 97	20	20.38	ppb	1.90	683772
24 Br-Cl-methane 128 130	20	21.21	ppb	6.06	200802
25 chloroform 83 85	20	19.22	ppb	3.89	772024
201 Ethyl acetate x2	40	53.28	ppb	33.21	501118
116 ETBE	20	20.97	ppb	4.83	1334759
117 Iso-butyl alcohol X10	200	260.93	ppb	30.47	501118
26 tetrahydrofuranx5	100	110.04	ppb	10.04	92144
27 Di-Br-F-Methane (S1) 111 1	20	20.89	ppb	4.43	607867
34 111-tri-Cl-ethane 97 99	20	19.88	ppb	0.61	622084
30 12-dichloroethane 64 62	20	19.27	ppb	3.65	316641
35 11-Di-Cl-propene 75 110	20	19.84	ppb	0.82	550858
29 1,2-di-Cl-ethane-d4 [Surr] 10	20	19.59	ppb	2.03	259189
36 benzene 78 52	20	20.66	ppb	3.31	1378440
37 CCl4 117 119	20	19.79	ppb	1.03	557032

97 thiophene	20	20.98	ppb	4.91	697877
118 TAME	20	21.52	ppb	7.62	970647
39 12-di-Cl-propane 63 76	20	21.48	ppb	7.38	423166
40 trichloroethene 130 132	20	20.48	ppb	2.39	488502
96 Me-methacrylate	20	20.47	ppb	2.36	159572
42 Br-di-Cl-methane 83 85	20	19.76	ppb	1.21	512101
41 dibromomethane 174 172	20	20.71	ppb	3.57	209863
45 c-13-di-Cl-propene 75 110	20	20.52	ppb	2.61	497669
55 toluene-d8(S2) 100 99	20	20.60	ppb	2.99	813304
92 2-ClEt-Vi-ether10	200	206.34	ppb	3.17	419237

Compound Name	Amount	Actual	Units	%Dev	Target Response
56 toluene 91 92	20	19.75	ppb	1.26	1265226
107 Et methacrylate	20	29.49	ppb	47.45	330146
93 2-Hexanone x5	100	115.80	ppb	15.80	502027
48 112-tri-Cl-Et 97 83	20	19.93	ppb	0.37	193723
58 1,2-di-br-ethane 107 109	20	20.13	ppb	0.63	208118
51 di-Br-Cl-methane 129 127	20	19.86	ppb	0.71	313599
46 t-13-di-cl-propene 75 110	20	20.52	ppb	2.61	497669
105 1-Chlorohexane	20	19.33	ppb	3.37	407510
47 Cl-benzene-d5, I2	10	10.00	ppb	0.00	219755
54 MIBK	20	26.60	ppb	33.01	185887
49 1,3-di-cl-propane 76 78	20	22.19	ppb	10.94	345387
59 tetra-Cl-ethene 166 168	20	22.56	ppb	12.78	424304
60 chlorobenzene 112 77	20	22.53	ppb	12.67	793160
61 1112-tetra-Cl-Et 131 133	20	22.72	ppb	13.60	360080
64 ethylbenzene 91 106	20	21.10	ppb	5.51	1315542

Compound Name	Amount	Actual	Units	%Dev	Target Response
65 m/p-Xylenes x2	40	42.77	ppb	6.93	2007747
99 1-4-di-Cl-butane	20	23.58	ppb	17.92	308601
52 bromoform 173 175	20	21.84	ppb	9.21	147968
66 styrene 104 78	20	22.57	ppb	12.86	769958
67 o-xylene 91 106	20	21.22	ppb	6.08	959644
68 1122-Tetra-Cl-Et 83 85	20	24.10	ppb	20.49	183710
110 t-1,4-dichloro-2-butene	20	20.89	ppb	4.47	35845
106 Cl-benzyl	20	25.29	ppb	26.43	277906
62 1,4-DCB-d4 150 152 I3	10	10.00	ppb	0.00	196133
69 123-tri-Cl-Pr 110 97	20	22.39	ppb	11.93	50904
70 4-Br-1-F-Bz (S3) 174 95	20	21.08	ppb	5.40	340722
71 isopropylbenzene 105 120	20	20.72	ppb	3.58	1364079
72 bromobenzene 156 158	20	22.17	ppb	10.86	311978
73 n-propylbenzene 120 78	20	21.26	ppb	6.29	411986
74 2-Cl-Tl 126 128	20	21.80	ppb	9.01	253307
75 4-Cl-Tl 126 128	20	21.63	ppb	8.15	376989
76 135-tri-Me-Bz 105 120	20	20.05	ppb	0.27	1029451
79 tert-butylbenzene 119 91	20	20.77	ppb	3.84	1200093
78 124-tri-Me-Bz 105 120	20	20.57	ppb	2.83	881932
80 13-di-Cl-Bz 146 148	20	20.66	ppb	3.29	470563
82 14-di-Cl-Bz 146 148	20	21.67	ppb	8.37	709475
81 sec-butylbenzene 105 134	20	20.74	ppb	3.69	1672695

77 4-iso-Pr-toluene	119 134	20	20.30	ppb	1.51	1240581
84 12-di-Cl-benzene	146 148	20	21.22	ppb	6.10	464406
85 n-butylbenzene	91 134	20	20.78	ppb	3.91	1098567
86 12-diBr-3-Cl-Pra	157 155	20	22.88	ppb	14.39	33167
87 124-tri-Cl-Bz	180 182	20	20.79	ppb	3.95	290102
88 naphthalene	128 129	20	19.59	ppb	2.07	263473
90 123-tri-Cl-Bz	180 182	20	20.64	ppb	3.22	218145
				Ave.% Dev	8.76	

FORM-8A

Applied P & Ch Laboratory

Internal Standard Area and RT Summary for Method 524.2

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	033465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		CCV Data File:	G2810Q01	Instrument ID:	G

Batch No: 03G2810

#	Client Sample No	Lab Sample ID	Analysis Date & Time	IS-1 Area #	IS-1 RT #	IS-2 Area #	IS-2 RT #	IS-3 Area #	IS-3 RT #
12 Hour CCV STD			06/05/03 11:50	783807	9.46	219755	13.06	196133	15.56
CCV Upper Limit				1567614	9.96	439510	13.56	392266	16.06
CCV Lower Limit				391903	8.96	109877	12.56	98066	15.06
1	03G2810-LCS-01	03G2810-LCS-01	06/05/03 12:19	792564	9.45	230675	13.05	206357	15.55
2	MW-6MS	03-3444-1MS	06/05/03 12:49	698409	9.44	201957	13.06	182084	15.56
3	MW-6MSD	03-3444-1MSD	06/05/03 13:18	719973	9.44	215809	13.06	194967	15.55
4	03G2810-MB-01	03G2810-MB-01	06/05/03 15:46	692934	9.45	187232	13.04	179560	15.56
5	TB-17-5/30/03	03-3465-4	06/05/03 16:15	683343	9.45	188494	13.06	182303	15.55
6	MW-1	03-3465-1	06/05/03 17:13	761209	9.45	206200	13.05	187179	15.56
7	MW-9	03-3465-2	06/05/03 17:42	748010	9.45	202950	13.06	181782	15.55
8	MW-10	03-3465-3	06/05/03 18:11	763191	9.45	207144	13.05	186233	15.55
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									

IS-1 = FLUOROBENZENE
IS-2 = CHLOROBENZENE-D5
IS-3 = 1,4-DICHLOROBENZENE-D4

Area Upper Limit = +100% of CCV internal standard area
Area Lower Limit = - 50% of CCV internal standard area
RT Upper Limit = +0.50 minutes of CCV internal standard RT
RT Lower Limit = - 0.50 minutes of CCV internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

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VOC-096

VOC Analysis General Logbook

Sequence # 03G2810 Batch # 03G2810 Matrix: W Date: 6-5-03 Analyst: Eddie

IS/Surrogate: GC15114/15115 Methanol(mark-M): _____ PEG (mark-PEG): _____ Defoaming(mark-DF): _____

Ini. Batch ☑ Initial Batch; ☐ Middle Batch; ☐ Final Batch. ☐ Internal Study Datafile Path: _____

	Type	Sample ID	Method	$V/X=f_1$	$V_f/V_i=f_2$	$V_{spg}/V_{inj}=f_3$	F	A-#	Datafile	Note	pH
[illegible]	SP	G2810P01	E524G	25/25 = 1	/ =	/ =	1		G2810P01		
[illegible]	SW	Q01	004	/ =	/ =	/ =			Q01	6-5-03 11:50AM	GC15214
[illegible]	MS	L01		/ =	/ =	/ =			L01		
[illegible]	MS	M01		/ =	/ =	/ =			M01	§3444-1	
[illegible]	MSD	N01		/ =	/ =	/ =			N01	§3444-1	
4046	MS	M02		/ =	/ =	/ =			M02	§3444-2	
4047	MSD	N02		/ =	/ =	/ =			N02	§3444-2	
4048	MB	K01		/ =	/ =	/ =			K01		
4049	Sample	3465-04		/ =	/ =	/ =			3465-04		<2
4050		3444-04		/ =	/ =	/ =			3444-04		
4051		3465-01		/ =	/ =	/ =			3465-01		
4052		02		/ =	/ =	/ =			02		
4053		03		/ =	/ =	/ =			03		
4054		3444-01		/ =	/ =	/ =			3444-01		
4055		02		/ =	/ =	/ =			02		
4056		03		/ =	/ =	/ =			03		
4057				/ =	/ =	/ =					
4058				/ =	/ =	/ =					
4059				/ =	/ =	/ =					
4060				/ =	/ =	/ =					
4061				/ =	/ =	/ =					
4062				/ =	/ =	/ =					
4063				/ =	/ =	/ =					
4064				/ =	/ =	/ =					
4065				/ =	/ =	/ =					
4066				/ =	/ =	/ =					
4067				/ =	/ =	/ =					
4068				/ =	/ =	/ =					
4069				/ =	/ =	/ =					
4070				/ =	/ =	/ =					
4071				/ =	/ =	/ =					
4072				/ =	/ =	/ =					

Type	Op #	STD Lot #	$C_{std}(ng/\mu L)\times V_{std}(\mu L)/X(g \text{ or } mL)=T$	Op #	STD Lot #	$C_{std}(ng/\mu L)\times V_{std}(\mu L)/X(g \text{ or } mL)=T$
CS/LCSD	4043	GC-	× /X= ppb		GC-	× /X= ppb
MS/MSD	4044/4045	GC15215	200 × 2.5 /X= 20 ppb		GC-	× /X= ppb

Footnote/Anomaly:

LE: [CUST.DOC.GC]VOC_LOG .TEX Root-File: VOC_LOG_ROOT.TEX 1-Page-File:[CUST.DOC.GC]VOC_LOG1.TEX; pH for field water sample only.
CL form 7-201, April 03, 1996; Ver 4.1 No pencil. Use blue pen for record. Use red pen for correction. Supervisor Initial

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VOC Analysis General Logbook

Batch # 03G2404 Batch # 03G2404 Matrix: W Date: 5-15-03 Analyst: Eddie

IS/Surrogate: GC-15114/15115 Methanol(mark-M): PEG (mark-PEG): Defoaming(mark-DF):

Calib. + Ini. Batch ☑ Initial Batch; ☐ Middle Batch; ☐ Final Batch. ☐ Internal Study Datafile Path:

#	Type	Sample ID	Method	$V/X=f_1$	$V_f/V_i=f_2$	$V_{epg}/V_{inj}=f_3$	F	A-#	Datafile	Note	pH
3817	SP	G2404P01	E5246	25/25 = 1	1 =	1 =	1		G2404P01	5-15-03 10:18AM GC15137	
3818	calib	4-003	004	1 =	1 =	1 =			4-003	gc15137	
3819		4-002		1 =	1 =	1 =			4-002		
3820		4-010		1 =	1 =	1 =			4-010		
3821		4-020		1 =	1 =	1 =			4-020		
3822		4-040		1 =	1 =	1 =			4-040		
3823		4-080		1 =	1 =	1 =			4-080		
3824	CW	G2404Q01		1 =	1 =	1 =			G2404Q01	CW/ICW 5-16-03 10:08AM	
3825	LY	L01		1 =	1 =	1 =			L01	GC15138	
3826	M3	M01		1 =	1 =	1 =			M01	G3082-04 <2	
3827	M3D	N01		1 =	1 =	1 =			N01	G3082-04 <2	
3828	M3	K01		1 =	1 =	1 =			K01		
3829	sample	3082-01		1 =	1 =	1 =			3082-01		<2
3830		02		1 =	1 =	1 =			02		
3831		03		1 =	1 =	1 =			03		
		04		1 =	1 =	1 =			04	MS	
		05		1 =	1 =	1 =			05		
3834		06		1 =	1 =	1 =			06		
3835		07		1 =	1 =	1 =			07		
3836		3102-01		1 =	1 =	1 =			3102-01		
3837		02		1 =	1 =	1 =			02		
3838		03		1 =	1 =	1 =			03		
3839		04		1 =	1 =	1 =			04		
3840		05		1 =	1 =	1 =			05		
3841		06		1 =	1 =	1 =			06		
3842		07		1 =	1 =	1 =			07		
3843		08		1 =	1 =	1 =			08		
3844		3115-01		1 =	1 =	1 =			3115-01		
3845		02		1 =	1 =	1 =			02		
3846		03		1 =	1 =	1 =			03		
3847		04		1 =	1 =	1 =			04	pass 12hrs	
3848				1 =	1 =	1 =					

Type	Op #	STD Lot #	$C_{std}(ng/\mu L)\times V_{std}(\mu L)/X(g \text{ or } mL)=T$	Op #	STD Lot #	$C_{std}(ng/\mu L)\times V_{std}(\mu L)/X(g \text{ or } mL)=T$
LCS/LCSD	3825	GC-15138	20 × 2.5 /X= 20 ppb		GC-	× /X= ppb
MS/MSD	3826/3827	GC-	× /X= ppb		GC-	× /X= ppb

Note/Anomaly:

Level C Data Package Deliverables

8270-SIM

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino, CA 91710
Telephone (909)590-1828
Fax (909)590-1498

Applied P & Ch Laboratory

Organic Analysis Results for Method 8270-SIM

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	06/06/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03G2838-MB-01	Received Date:	06/06/2003
Sample ID:	03G2838-MB-01	Sample Matrix	Water	Moisture %:	–
Sample Type:	Method Blank	Prep. Method:	3520	Instrument ID:	GC/MS: M
Anal. Method:	8270-SIM	Prep. Date:	06/06/03	Anal. Date:	06/09/03
Batch No:	03G2838	Prep. No:	1 of 1	Anal. Time:	10:18
Data File Name:	G2838K01	Sample Amount:	1000 mL	Dilution Factor:	1
Extract Vol.	1.0 mL				

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	1,4-DIOXANE	123-91-1	μg/L	1	<1	U

Internal Standard			Control Limit, %	IS Rec.%
1	1,4-DIOXANE-D8	17647-74-4	50-200	83
# of out-of-control				0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

Applied P & Ch Laboratory

Organic Analysis Results for Method 8270-SIM

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/30/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03-3465-3	Received Date:	05/30/2003
Sample ID:	**MW-10**	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample	Prep. Method:	3520	Instrument ID:	GC/MS: M
Anal. Method:	8270-SIM	Prep. Date:	06/06/03	Anal. Date:	06/09/03
Batch No:	03G2838	Prep. No:	1 of 1	Anal. Time:	11:27
Data File Name:	3465-03	Sample Amount:	1000 mL	Dilution Factor:	1
Extract Vol.	1.0 mL				

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	1,4-DIOXANE	123-91-1	μg/L	1	1	

Internal Standard			Control Limit, %	IS Rec.%
1	1,4-DIOXANE-D8	17647-74-4	50-200	76
# of out-of-control				0

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

FORM-3C

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 8270-SIM

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	33465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		Batch No:	03G2838		
LCS Filename:	G2838L01	Date Analyzed:	060903	Time Analyzed:	10:40
LCSD Filename:	G2838J01	Date Analyzed:	060903	Time Analyzed:	11:05

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration LCS	LCS Rec% #	QC Limit, % REC
1,4-DIOXANE	μg/L	20	0	18.7	94	40-140
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, % RPD	QC Limit, % REC
1,4-DIOXANE	μg/L	20	19.0	95	1	30	40-140
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* – Values outside of contract required QC Limits D – Spiked components diluted out

Comments: _____

FORM-4B

Applied P & Ch Laboratory

Method Blank Summary for Method 8270-SIM

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	33465
Project ID:	JPL	Project No:	04-4428.10	Analysis Date:	06/09/03
		Sample Matrix:	Water	Analysis Time:	10:18
Sample ID:	**03G2838-MB-01**	Batch No:	03G2838	Instrument ID:	GC/MS: M
Lab Sample ID:	03G2838-MB-01	Data File Name:	G2838K01	GC Column:	DB-5.625
				Column ID:	0.25 mm

This Method Blank applies to the following samples and QC samples:

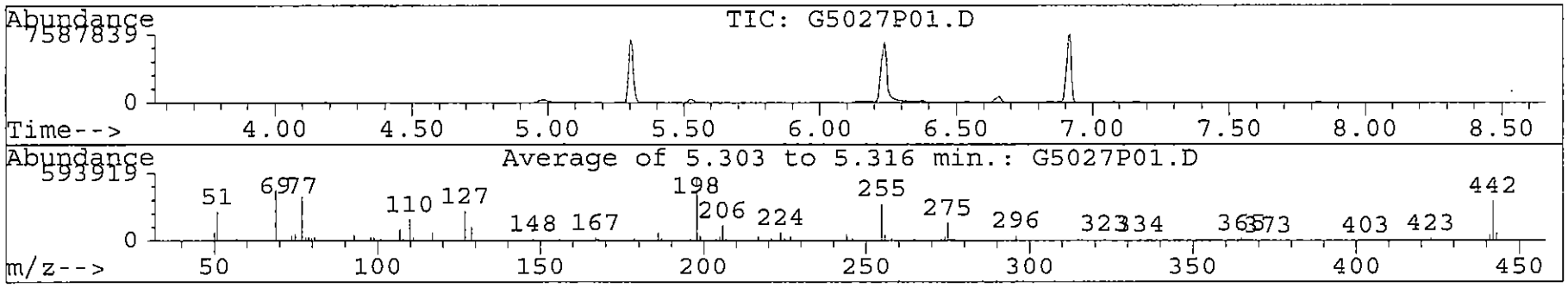
#	Client Sample No	Lab Sample ID	Sample Type	Data Filename	Analysis Date	Analysis Time
1	03G2838-LCS-01	03G2838-LCS-01	Lab Control Spike	G2838L01	06/09/03	10:40
2	03G2838-LSD-01	03G2838-LSD-01	Lab Control Spike Duplicate	G2838J01	06/09/03	11:05
3	MW-10	03-3465-3	Field Sample	3465-03	06/09/03	11:27
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

DFTPP

Data File : C:\HPCHEM\1\DATA\02G5027\G5027P01.D
Acq On : 17 Dec 02 2:19 pm
Sample : ##02g5027,w dftpp gc14349
Misc :

Vial: 99
Operator: Andy Huang
Inst : GC/MS - M
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\DIOSIM06.M
Title : * Applied P & Ch Lab * GC/MS 8270



Peak Apex is scan: AVERAGE

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	30	80	44.9	254307	PASS
68	69	0	2	0.0	0	PASS
69	198	1	100	78.3	443243	PASS
70	69	0	2	0.3	1277	PASS
127	198	25	75	46.2	261139	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	565803	PASS
199	198	5	9	6.7	37981	PASS
275	198	10	30	27.4	155040	PASS
365	198	1	100	3.7	20870	PASS
441	443	1	99	78.6	52501	PASS
442	198	40	110	61.8	349717	PASS
443	442	15	24	19.1	66784	PASS

G5027P01.D DIOSIM06.M Tue Dec 17 22:19:18 2002 5972

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name : APPLIED P & CH LAB Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 033465

Lab File ID: G5027P01 DFTPP Injection Date: 12/17/02

Instrument ID: GCMS-M DFTPP Injection Time: 1419

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	44.9
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	78.3
70	Less than 2.0% of mass 69	0.2 (0.3)1
127	40.0 - 60.0% of mass 198	46.2
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100 % relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	27.4
365	Greater than 0.75% of mass 198	3.7
441	Present, but less than mass 443	9.3 (78.6)3
442	40.0 - 100.0% of mass 198	61.8
443	17.0 - 23.0% of mass 442	11.8 (19.1)2

1-Value is % mass 69 2-Value is % mass 442 3-Value is % mass 443

This check applies to the following SAMPLES, MS, MSD, BLANKS and STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD040	DS006-40	DS006-040.D	12/17/2002	1438
02	SSTD030	DS006-30	DS006-030.D	12/17/2002	1457
03	SSTD020	DS006-20	DS006-020.D	12/17/2002	1516
04	SSTD010	DS006-10	DS006-10.D	12/17/2002	1536
05	SSTD001	DS006-01	DS006-01.D	12/17/2002	1555
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					

Response Factor Report GC/MS - M

Method : C:\HPCHEM\1\METHODS\DIOSIM06.M
Title : * Applied P & Ch Lab * GC/MS 8270
Last Update : Tue Dec 17 16:08:23 2002
Response via : Initial Calibration

Calibration Files
30 =M06-030.D 20 =M06-020.D 10 =M06-010.D
1 =M06-001.D 40 =M06-040.D

	Compound	30	20	10	1	40	Avg	%RSD
1) I	1 1.4-Dioxane-d8	----------ISTD----------						
2)	2 1,4-Dioxane	1.151	1.165	1.216	1.379	1.165	1.215	7.81

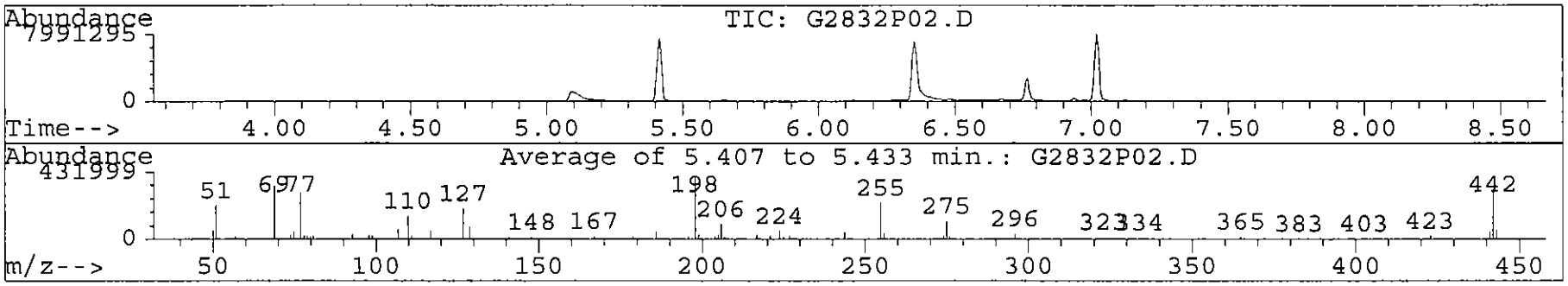
(#) = Out of Range

DFTPP

Data File : C:\HPCHEM\1\DATA\03G2832\G2832P02.D
Acq On : 9 Jun 03 9:32 am
Sample : dftpp gc14349
Misc :

Vial: 99
Operator: Andy Huang
Inst : GC/MS - M
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\DIOSIM06.M
Title : * Applied P & Ch Lab * GC/MS 8270



Peak Apex is scan: AVERAGE

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	30	80	52.3	215152	PASS
68	69	0	2	0.1	173	PASS
69	198	1	100	82.4	339307	PASS
70	69	0	2	0.5	1801	PASS
127	198	25	75	47.4	195235	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	411544	PASS
199	198	5	9	6.7	27465	PASS
275	198	10	30	27.9	114870	PASS
365	198	1	100	3.9	15904	PASS
441	443	1	99	78.2	48151	PASS
442	198	40	110	77.1	317275	PASS
443	442	15	24	19.4	61608	PASS

G2832P02.D DIOSIM06.M Mon Jun 09 12:15:07 2003 5972

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\03G2832\G2832Q02.D Vial: 100
Acq On : 9 Jun 03 9:56 am Operator: Andy Huang
Sample : gc15155 Inst : GC/MS - M
Misc : Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\DIOSIM06.M
Title : * Applied P & Ch Lab * GC/MS 8270
Last Update : Mon Jun 09 11:08:14 2003
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1 1.4-Dioxane-d8	1.000	1.000	0.0	92	0.00
2		2 1,4-Dioxane	1.215	1.274	-4.8	100	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

FORM-5B

Applied P & Ch Laboratory

Semivolatile Organic Instrument Performance Check for Method 8270-SIM

Decafluorotriphenylphosphine (DFTPP), Part II

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	033465
Project ID:	JPL	DFTPP Inj. Date:	06/09/03	Batch No:	03G2838
		DFTPP Inj. Time:	09:32	Sequence No:	03G2832
Project No:	04-4428.10	Instrument ID:	M	GC Column:	DB-5.625
Data File Name:	G2832P02			Column ID:	0.25 mm

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

#	Client Sample No	Lab Sample ID	Data File Name	Date Analyzed	Time Analyzed
1	03G2838-CCV-01	03G2838-CCV-01	G2832Q02	06/09/03	09:56
2	03G2838-MB-01	03G2838-MB-01	G2838K01	06/09/03	10:18
3	03G2838-LCS-01	03G2838-LCS-01	G2838L01	06/09/03	10:40
4	03G2838-LSD-01	03G2838-LSD-01	G2838J01	06/09/03	11:05
5	MW-10	03-3465-3	3465-03	06/09/03	11:27
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

FORM-7B

Applied P & Ch Laboratory

CCV Recovery for Method 8270-SIM

Client Name:	GEOFON, Inc.	Contract No.:		Lab Code:	APCL
Case No:		SAS No.:		Service ID:	33465
Project ID:	JPL	Project No.:	04-4428.10	Instrument	M
		Batch No.:	03G2838	Sequence No.	03G2832
CCV File:	G2832Q02	Date Analyzed:	06/09/2003	Time Analyzed:	09:56

Target Components

#	Component Name	Unit	Expe-cted	Test Result	Rec. %	Dev. %	Flag	Control Limit, %	by
1	1,4-DIOXANE	mg/L	20	21.0	105	5	√	80-120	CCV
					Total CCV	Out of Control	0		

FORM-8B

Applied P & Ch Laboratory

Internal Standard Area and RT Summary for Method 8270-SIM

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	033465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		CCV Data File:	G2832Q02	Instrument ID:	M
Batch No:	03G2838				

#	Client Sample No	Lab Sample ID	Analysis Date & Time	IS-1 Area #	IS-1 RT #
12 Hour CCV STD			06/09/03 09:56	425732	4.62
CCV Upper Limit				851464	5.12
CCV Lower Limit				212866	4.12
1	03G2838-MB-01	03G2838-MB-01	06/09/03 10:18	352222	4.62
2	03G2838-LCS-01	03G2838-LCS-01	06/09/03 10:40	313217	4.63
3	03G2838-LSD-01	03G2838-LSD-01	06/09/03 11:05	290948	4.66
4	MW-10	03-3465-3	06/09/03 11:27	322850	4.66
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

IS-1 = 1,4-DIOXANE-D8

Area Upper Limit = +100% of CCV internal standard area
Area Lower Limit = - 50% of CCV internal standard area
RT Upper Limit = +0.50 minutes of CCV internal standard RT
RT Lower Limit = - 0.50 minutes of CCV internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Organic Sample Preparation Logbook

Batch # 3G2838 Matrix: W Target method: 1,4Dioxane EXT Method: 3520C Date: 6-6-03

Solvent: CH2Cl2 Lot # 027471 ; Exchange Solvent: NA Lot # NA ; Analyst: ML

Lot #: Surr.: GC- NA Conc.: NA ppm Na_2SO_4: RC0078

Op. #	Sample Type	Sample ID #	Smpl Amnt (mL or g)	Surr. Vol mL	Extract sub-ID	Final Vol. mL	Dilution F=V/X	Note & Anomaly
2321	MB	3G2838-MB	1000.0	NA	1,4Dioxane	1.00	0.001	
2322	LCS	-LCS	1000.0					
2323	LCSD	-LCSD	1000.0					
2324	Sample-1	3511 -2	1000.0					
2325	MS							
2326	MSD							
2327	Sample-2	3511 -4	1000.0	NA	1,4Dioxane	1.00	0.001	
2328	Sample-3	3465 -3	1000.0					
2329	Sample-4							
2330	Sample-5							
2331	Sample-6							
2332	Sample-7							
2333	Sample-8							
2334	Sample-9							
2335	Sample-10							
2336	Sample-11							
2337	Sample-12							
2338	Sample-13							
2339	Sample-14							
2340	Sample-15							
2341	Sample-16							
2342	Sample-17							
2343	Sample-18							
2344	Sample-19							
2345	Sample-20							
2346	MTX Dup.							
2347	LCS′							
2348	LCSD′							
2349	MS′							
2350	MSD′							

ML 6-6-03

Type	Op #	STD Lot #	$C_{std}(ppm) \times V_{std}(mL)/X(g \text{ or } mL) = T$	Op #	STD Lot #	$C_{std}(ppm) \times V_{std}(mL)/X(g \text{ or } mL) = T$
LCS/LCSD	2322	GC-1414	1000 × 200 × 1.00 /X= ppb	2323	GC-1414	1000 × 200 × 1.00 /X= ppb
MS/MSD		GC-	1000 × × /X= ppb		GC-	1000 × × /X= ppb
LCS′/LCSD′		GC-	1000 × × /X= ppb		GC-	1000 × × /X= ppb
MS′/MSD′		GC-	1000 × × /X= ppb		GC-	1000 × × /X= ppb

Supervisor Initial

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Organic Sample Preparation

Extraction method: **1** 3510–separate funnel; **2** 3520–L-L continue extraction; **3** 3550–Ultrasonic; **4** LUFT–Shaker; **5** 3540–Soxhlet; **6** Solid phase Extraction; **7** Microextraction; **8** SFE; **9** Dilution; **10** Concentration; **11** Other, specify.

Service ID: 3465 Batch # 362838 Matrix W GC, GC/MS Method 1,4 Dioxane Ext Method 3520C

Sample Extraction								
	OP. by HL		Date 6/6/03		Surro Lot GC- NA		Conc. NA pp	
	LCS Lot GC-15154		Conc. 20.0 pp		MS Lot GC-15154		Conc. 20.0 pp	
	Ext. solv. CH_2Cl_2		Lot # 027471		Exchage solv. NA		Lot # NA	
Sample ID	-3							
Sample Matrix	W							
Sample Amount, X (g/mL)	1000.0							
Any TCLP, EP, WET, SPLP ?								
Surr. STD used, mL	NA							
Spike STD used, mL								
[Extracted at pH]	/	/	/	/	/	/	/	/
Solvent amount, mL	200	×	×	×	×	×	×	×
Final volume, V, mL	1.00							
Extraction DF $f_e = V/X$	0.001							
Sub-ID of extracts	1,4Dioxane							
Anomaly Footnote† :								

Sample Cleanup								
	Op. by		Date / /		(For details, see Cleanup worksheet)			
Cleanup method:								
Cleanup DF, f_c								
Preparation DF, $f_1 = f_e\ f_c$								

Pre-injection*:		Op. by		Date / /		IS Lot : GC-		Conc. pp	
2nd dilution, f_2	(1)								
V_t, μL	(40)								
Single Extract GC, GC/MS Analysis:									
$V_2 = V_t/f_2$, μL	($40/f_2$)								
$V_{solvent} = V_t - V_2$, μL									
Double Extract GC, GC/MS Analysis:									
$V_> = \frac{1}{2}V_t/f_2$, μL	($20/f_2$)								
$V_< = \frac{1}{2}\frac{V_t}{f_2}\frac{f_<}{f_>}$, μL	($\frac{20}{f_2}\frac{f_<}{f_>}$)								
$V_{solvent} = V_t - V_> - V_<$									
IS volume, μL	(10)								
Final Conc. of IS	(40 ppm)								
Total $F = 2\ f_1\ f_>$ or $f_1\ f_2$									

† Extraction Anomaly Footnote:

1. Difficult to concentrate to 1.0 mL.
2. Extract is dark color
3. Extract is sticky
4. Heterogenous matrix.
5. Too much precipitate during extraction.
6. There is an oil layer above the sample.
7. Mixture of soil & water.
8. BN-extract is interfered, A-extract only.
9. Sample has strong stink
10. Some solvent suspected
11. special color, specify

* For double extract analysis (ABN), $f_> = \max[f_A, f_B]$ and $f_< = \min[f_A, f_B]$, where f_A, f_B are f_1 for A and BN extracts, respectively. The values in () is the typical case for 625/8270 ABN analysis.

Applied P & Ch Laboratory
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Tel: (909) 590-1828 Fax: (909) 590-1498

Semi-VOC Analysis Logbook

M

Sequence # 03G2832

Starting Date: 6-6-03 Time 3:23 pm Analyst: Tom/JW

Seq. type: ☐ Cal. ☒ Ini. Batch ☐ Middle ☐ Final ☐ Continue ☐ Study Datafile Path: C|HPCHEM|1|DATA|03G283

Routine Maintenance: ☐ Replace Septum ☒ Replace Liner ☐ Replace Seal ☐ Cut Guid Column ☐ Cut Column ☐ Others

Op. #	Batch-No	MTX	S Type*	Sample ID	Method**	f_2	F	A-#	Datafile	OK ?†	Note††
1361			SP	G2832P01	DFTPP625			99	G2832P01	✓	6-6-03 3:23pm
1362			CCV	Q01	D105IM06			100	Q01	✓	GC15155
1363	03G2832	S	MB	K01			0.0333	1	K01	✓	
1364			LCS	L01				2	L01	✓	
1365			LCSD	J01				3	J01	✓	
1366			MS	M01				4	M01	✓	$3535-01
1367			MSD	N01				5	N01	✓	1
1368				3535-01				6	3535-01	✓	
1369				3570-03				7	3570-03	✓	
1370				-06				8	-06	✓	
1371				3562-01				9	3562-01	✓	
1372			SP	G2832P02	DFTPP625			99	G2832P02	✓	6-9-03 9:32am
1373			CCV	Q02	D105IM06			100	Q02	✓	GC15155
1374	03G2838	W	MB	G2838K01			0.001	1	G2838K01	✓	
1375			LCS	L01				2	L01	✓	
1376			LCSD	J01				3	J01	✓	
1377				3465-01				4	3465-01	✓	
1378				3511-02				5	3511-02	✓	
1379				-04				6	-04	✓	
1380											
1381											
1382											
1383											
1384											
1385											
1386											
1387											
1388											
1389											
1390											

JW 6-9-03

Footnote/Anomaly:

* Sample type such as, SP(BFB, or DFTPP), CCV, CVA, CVB, LCS, LCSD, MS, MSD, MD, CLS etc. For field samples leave as blank.

** Method name: [MMMM][S][nnn]. [MMMM] – method code, per SOP C-88. Special codes: DSL2: Diesel #2; FP30: Fuel Finger Print (C8-C30); FP40: Fuel Finger Print (C8-C40); EGLY: Ethylene Glycol; FORM: Formaldehyde; MEOH: Methyl Alcohol. [S] – APCL system code; [nnn] – initial calibration number.

† Specify the result of the injection is accepted (√), or denied (X), or need Re-run (R) or use as a reference data (ref).

†† Lot # for CCV/Closing, Time for SP (e.g. DFTPP) must be recorded.

Supervisor Initial

M LOG-063

plied P & Ch Laboratory
Magnolia Ave. Chino CA 91710
(909) 590-1828 Fax: (909) 590-1498

Semi-VOC Analysis Logbook

nce # 02G5027 Starting Date: 12-17-02 Time 2:19 pm Analyst: Jiy

type: ☐ Cal. ☒ Ini. Batch ☐ Middle ☐ Final ☐ Continue ☐ Study Datafile Path:

ine Maintenance: ☐ Replace Septum ☒ Replace Liner ☐ Replace Seal ☐ Cut Guid Column ☐ Cut Column ☐ Others

	Batch-No	MTX	S Type*	Sample ID	Method**	f_2	F	A-#	Datafile	OK ?†	Note††
5			SP	G5027P01	DFTPP625			99	G5027P01	✓	12-17-02 2:19pm
6			Cali-	M06-040	D10S1M06			1	M06-040	✓	40ppm GC14554
7				-030				2	-030	✓	30
8				-020				3	-020	✓	20
9				-010				4	-010	✓	10
90				-001				5	-001	✓	1
91			CCV	G5027Q01				100	G5027Q01	✓	GC14554
92	02G5027	W	MB	K01			0.001	6	K01	✓	
993			LCS	L01				7	L01	✓	
994			LCSD	J01				8	J01	✓	
2995			MS	M01				9	M01	✓	$6556-03
2996			MSD	N01				10	N01	✓	1
2997			MS'	M02			0.000962	11	M02	✓	$6587-01
2998			MSD'	N02				12	N02	✓	1
2999				6587-01				13	6587-01	✓	
3000				-02				14	-02	✓	
3001				-03				15	-03	✓	
3002				6556-01			0.002	16	6556-01	✓	
3003				-02			0.001	17	-02	✓	
3004				-03				18	-03	✓	
3005				6588-01			0.000962	19	6588-01	✓	
3006				6603-01				20	6603-01	✓	
3007				-02				21	-02	✓	
3008				6558-01				22	6558-01	✓	
3009				-03			0.001	23	-03	✓	
3010				6586-02				24	6586-02	✓	
3011				-04				25	-04	✓	
3012				-05				26	-05	✓	
3013				-06				27	-06	R, overscale	
3014				-08				28	-08	↓	↓

Footnote/Anomaly:

* Sample type such as, SP(BFB, or DFTPP), CCV, CVA, CVB, LCS, LCSD, MS, MSD, MD, CLS etc. For field samples leave as blank.

** Method name: [MMMM][S][nnn]. [MMMM] – method code, per SOP C-88. Special codes: DSL2: Diesel #2; FP30: Fuel Finger Print (C8-C30); FP40: Fuel Finger Print (C8-C40); EGLY: Ethylene Glycol; FORM: Formaldehyde; MEOH: Methyl Alcohol. [S] – APCL system code; [nnn] – initial calibration number.

† Specify the result of the injection is accepted (√), or denied (X), or need Re-run (R) or use as a reference data (ref).

†† Lot # for CCV/Closing, Time for SP (e.g. DFTPP) must be recorded.

FILE: [CUST.DOC.GC]GC_LOG .TEX Root-File: GC_LOG_ROOT.TEX 1-Page-File:[CUST.DOC.GC]GC_LOG1.TEX
APCL form 7-101, Nov 22, 2000; Ver 5.0 No pencil. Use blue pen for record. Use red pen for correction.

Supervisor Initial [signature]

Level C Data Package Deliverables

Metals

Applied P & Ch Laboratory

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	06/02/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03M1535-MB-01	Received Date:	06/02/2003
Sample ID:	03M1535-MB-01	Sample Matrix	Water	Moisture %:	–
Sample Type:	Method Blank				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ARSENIC	7440-38-2	μg/L	5	< 5	U	F		03M1535E	06/02/03	06/02/03	1	200.9
CALCIUM	7440-70-2	μg/L	200	< 200	U	P		03M1537M	06/02/03	06/02/03	1	200.7
IRON	7439-89-6	μg/L	50	< 50	U	P		03M1537M	06/02/03	06/02/03	1	200.7
MAGNESIUM	7439-95-4	μg/L	100	< 100	U	P		03M1537M	06/02/03	06/02/03	1	200.7
POTASSIUM	7440-09-7	μg/L	400	73.2	B	P		03M1537M	06/02/03	06/02/03	1	200.7
SODIUM	7440-23-5	μg/L	2000	< 2000	U	P		03M1537M	06/02/03	06/02/03	1	200.7

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/30/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03-3465-1	Received Date:	05/30/2003
Sample ID:	**MW-1**	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ARSENIC	7440-38-2	μg/L	5	<5	U	F		03M1535E	06/02/03	06/02/03	1	200.9
CALCIUM	7440-70-2	μg/L	200	65100		P		03M1537M	06/02/03	06/02/03	1	200.7
IRON	7439-89-6	μg/L	50	72.0		P		03M1537M	06/02/03	06/02/03	1	200.7
MAGNESIUM	7439-95-4	μg/L	100	20000		P		03M1537M	06/02/03	06/02/03	1	200.7
POTASSIUM	7440-09-7	μg/L	400	2730		P		03M1537M	06/02/03	06/02/03	1	200.7
SODIUM	7440-23-5	μg/L	2000	24600		P		03M1537M	06/02/03	06/02/03	1	200.7

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/30/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03-3465-2	Received Date:	05/30/2003
Sample ID:	**MW-9**	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ARSENIC	7440-38-2	μg/L	5	2.1	B	F		03M1535E	06/02/03	06/02/03	1	200.9
CALCIUM	7440-70-2	μg/L	200	51600		P		03M1537M	06/02/03	06/02/03	1	200.7
IRON	7439-89-6	μg/L	50	832		P		03M1537M	06/02/03	06/02/03	1	200.7
MAGNESIUM	7439-95-4	μg/L	100	16300		P		03M1537M	06/02/03	06/02/03	1	200.7
POTASSIUM	7440-09-7	μg/L	400	2750		P		03M1537M	06/02/03	06/02/03	1	200.7
SODIUM	7440-23-5	μg/L	2000	19400		P		03M1537M	06/02/03	06/02/03	1	200.7

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/30/2003
Project ID:	JPL	Service ID:	33465	Collected by:	
		Lab Sample ID:	03-3465-3	Received Date:	05/30/2003
Sample ID:	**MW-10**	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ARSENIC	7440-38-2	μg/L	5	<5	U	F		03M1535E	06/02/03	06/02/03	1	200.9
CALCIUM	7440-70-2	μg/L	200	121000		P		03M1537M	06/02/03	06/02/03	1	200.7
IRON	7439-89-6	μg/L	50	43.6	B	P		03M1537M	06/02/03	06/02/03	1	200.7
MAGNESIUM	7439-95-4	μg/L	100	38800		P		03M1537M	06/02/03	06/02/03	1	200.7
POTASSIUM	7440-09-7	μg/L	400	3130		P		03M1537M	06/02/03	06/02/03	1	200.7
SODIUM	7440-23-5	μg/L	2000	26200		P		03M1537M	06/02/03	06/02/03	1	200.7

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

FORM-2A Metal

Applied P & Ch Laboratory

Initial and Continuing Calibration Verification

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Instrument:	ICP -M	Method:	200.9
Batch No.(s):	03M1537				

Analysis Date: 06/02/03 Concentration Units: UG/L

#	Analyte	ICV True	11:12 Result	%R	CCV True	11:29 Result	%R	CCV True	12:08 Result	%R	CCV True	12:28 Result	%R
1	Aluminum	10000.0	9942.63	99.4	5000.0	5240.06	104.8	5000.0	5027.22	100.5	5000.0	5177.05	103.5
2	Antimony	4000.0	3993.87	99.8	2000.0	2030.03	101.5	2000.0	1883.43	94.2	2000.0	2028.49	101.4
3	Arsenic	1000.0	1006.07	100.6	500.0	508.36	101.7	500.0	451.06	90.2	500.0	515.27	103.1
4	Barium	10000.0	9978.16	99.8	5000.0	5274.75	105.5	5000.0	5193.62	103.9	5000.0	5094.50	101.9
5	Beryllium	1000.0	1001.81	100.2	500.0	515.72	103.1	500.0	459.63	91.9	500.0	497.51	99.5
6	Cadmium	2000.0	1995.47	99.8	1000.0	1026.26	102.6	1000.0	920.40	92.0	1000.0	1024.26	102.4
7	Calcium	100000.0	99827.40	99.8	50000.0	51437.58	102.9	50000.0	48054.31	96.1	50000.0	51298.20	102.6
8	Chromium	1000.0	996.13	99.6	500.0	514.56	102.9	500.0	481.77	96.4	500.0	513.20	102.6
9	Cobalt	4000.0	3978.34	99.5	2000.0	2075.74	103.8	2000.0	1860.40	93.0	2000.0	2066.41	103.3
10	Copper	4000.0	4003.92	100.1	2000.0	2095.23	104.8	2000.0	2161.82	108.1	2000.0	2019.21	101.0
11	Iron	10000.0	10019.62	100.2	5000.0	5255.54	105.1	5000.0	4921.42	98.4	5000.0	5079.04	101.6
12	Lead	1000.0	991.40	99.1	500.0	521.80	104.4	500.0	548.20	109.6	500.0	526.33	105.3
13	Magnesium	50000.0	49783.73	99.6	25000.0	26349.39	105.4	25000.0	26641.57	106.6	25000.0	25460.94	101.8
14	Manganese	4000.0	3995.70	99.9	2000.0	2115.48	105.8	2000.0	2289.80	114.5	2000.0	2031.98	101.6
15	Nickel	4000.0	3967.96	99.2	2000.0	2075.61	103.8	2000.0	1843.84	92.2	2000.0	2073.46	103.7
16	Potassium	30000.0	29805.81	99.4	15000.0	14951.97	99.7	15000.0	14090.86	93.9	15000.0	14764.40	98.4
17	Selenium	1000.0	994.78	99.5	500.0	522.59	104.5	500.0	521.21	104.2	500.0	523.30	104.7
18	Silver	2000.0	2053.56	102.7	1000.0	1036.71	103.7	1000.0	1000.95	100.1	1000.0	1005.79	100.6
19	Sodium	200000.0	199293.44	99.6	100000.0	101587.53	101.6	100000.0	93312.11	93.3	100000.0	101341.95	101.3
20	Thallium	1000.0	988.25	98.8	500.0	517.78	103.6	500.0	516.59	103.3	500.0	519.65	103.9
21	Vanadium	4000.0	3998.54	100.0	2000.0	2073.94	103.7	2000.0	1926.80	96.3	2000.0	2018.54	100.9
22	Zinc	4000.0	3977.12	99.4	2000.0	2075.09	103.8	2000.0	2144.69	107.2	2000.0	2055.25	102.8
23	Molybdenum	4000.0	3991.30	99.8	2000.0	2067.26	103.4	2000.0	2090.13	104.5	2000.0	2052.07	102.6

(a) ICV Control Limit 95-105%; For Hg, 90-110%.

(b) CCV Control Limit 90-110%; For Hg, 80-120%.

FORM-2A Metal

Applied P & Ch Laboratory

Initial and Continuing Calibration Verification

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Instrument:	ICP -M	Method:	200.9
Batch No.(s):	03M1537				

Analysis Date: 06/02/03

Concentration Units: UG/L

#	Analyte	CCV 13:07 True	Result	%R	CCV 13:25 True	Result	%R	CCV 14:04 True	Result	%R	CCV 14:51 True	Result	%R
1	Aluminum	5000.0	5285.99	105.7	5000.0	5256.06	105.1	5000.0	5174.55	103.5	5000.0	5556.35	111.1
2	Antimony	2000.0	2011.73	100.6	2000.0	1978.14	98.9	2000.0	1963.85	98.2	2000.0	1949.13	97.5
3	Arsenic	500.0	503.66	100.7	500.0	492.99	98.6	500.0	485.56	97.1	500.0	476.05	95.2
4	Barium	5000.0	5217.66	104.4	5000.0	5180.50	103.6	5000.0	5104.67	102.1	5000.0	5348.25	107.0
5	Beryllium	500.0	494.92	99.0	500.0	491.84	98.4	500.0	480.56	96.1	500.0	485.15	97.0
6	Cadmium	1000.0	1031.30	103.1	1000.0	1022.42	102.2	1000.0	995.08	99.5	1000.0	1034.78	103.5
7	Calcium	50000.0	52276.36	104.6	50000.0	51782.73	103.6	50000.0	50685.59	101.4	50000.0	53658.25	107.3
8	Chromium	500.0	520.09	104.0	500.0	515.10	103.0	500.0	504.99	101.0	500.0	524.80	105.0
9	Cobalt	2000.0	2084.83	104.2	2000.0	2060.79	103.0	2000.0	2005.13	100.3	2000.0	2084.18	104.2
10	Copper	2000.0	2083.98	104.2	2000.0	2072.90	103.6	2000.0	2056.92	102.8	2000.0	2164.46	108.2
11	Iron	5000.0	5160.81	103.2	5000.0	5119.42	102.4	5000.0	5009.47	100.2	5000.0	5295.56	105.9
12	Lead	500.0	532.88	106.6	500.0	528.11	105.6	500.0	532.31	106.5	500.0	536.97	107.4
13	Magnesium	25000.0	26204.10	104.8	25000.0	26043.28	104.2	25000.0	25801.55	103.2	25000.0	27299.64	109.2
14	Manganese	2000.0	2070.12	103.5	2000.0	2097.93	104.9	2000.0	2063.92	103.2	2000.0	2125.33	106.3
15	Nickel	2000.0	2094.83	104.7	2000.0	2062.55	103.1	2000.0	2003.32	100.2	2000.0	2080.99	104.0
16	Potassium	15000.0	14690.09	97.9	15000.0	14902.25	99.3	15000.0	14887.51	99.3	15000.0	15239.40	101.6
17	Selenium	500.0	524.27	104.9	500.0	518.88	103.8	500.0	518.10	103.6	500.0	523.62	104.7
18	Silver	1000.0	1024.15	102.4	1000.0	1016.08	101.6	1000.0	1000.53	100.1	1000.0	1045.07	104.5
19	Sodium	100000.0	102541.80	102.5	100000.0	101375.90	101.4	100000.0	99653.48	99.7	100000.0	104594.88	104.6
20	Thallium	500.0	517.10	103.4	500.0	510.31	102.1	500.0	510.69	102.1	500.0	510.21	102.0
21	Vanadium	2000.0	2041.22	102.1	2000.0	2023.43	101.2	2000.0	1978.67	98.9	2000.0	2058.29	102.9
22	Zinc	2000.0	2122.65	106.1	2000.0	2114.28	105.7	2000.0	2100.56	105.0	2000.0	2205.20	110.3
23	Molybdenum	2000.0	2100.56	105.0	2000.0	2090.95	104.5	2000.0	2063.30	103.2	2000.0	2162.33	108.1

(a) ICV Control Limit 95-105%; For Hg, 90-110%.

(b) CCV Control Limit 90-110%; For Hg, 80-120%.

FORM-2A Metal

Applied P & Ch Laboratory

Initial and Continuing Calibration Verification

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Instrument:	ICP -M	Method:	200.9
Batch No.(s):	03M1537				

Analysis Date: 06/02/03 Concentration Units: UG/L

#	Analyte	CCV True	14:59 Result	%R	True	Result	%R	True	Result	%R	True	Result	%R
1	Aluminum	5000.0	5207.74	104.2									
2	Antimony	2000.0	1955.18	97.8									
3	Arsenic	500.0	478.53	95.7									
4	Barium	5000.0	5123.84	102.5									
5	Beryllium	500.0	484.22	96.8									
6	Cadmium	1000.0	990.31	99.0									
7	Calcium	50000.0	50505.78	101.0									
8	Chromium	500.0	504.13	100.8									
9	Cobalt	2000.0	1999.38	100.0									
10	Copper	2000.0	2063.93	103.2									
11	Iron	5000.0	5033.10	100.7									
12	Lead	500.0	534.97	107.0									
13	Magnesium	25000.0	26015.87	104.1									
14	Manganese	2000.0	2107.81	105.4									
15	Nickel	2000.0	1986.64	99.3									
16	Potassium	15000.0	15422.19	102.8									
17	Selenium	500.0	521.21	104.2									
18	Silver	1000.0	998.85	99.9									
19	Sodium	100000.0	99397.13	99.4									
20	Thallium	500.0	510.12	102.0									
21	Vanadium	2000.0	1972.53	98.6									
22	Zinc	2000.0	2107.67	105.4									
23	Molybdenum	2000.0	2068.24	103.4									

(a) ICV Control Limit 95-105%; For Hg, 90-110%.

(b) CCV Control Limit 90-110%; For Hg, 80-120%.

FORM-2A Metal

Applied P & Ch Laboratory

Initial and Continuing Calibration Verification

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1535E
		Instrument:	GFAA-E	Method:	200.9
Batch No.(s):	03M1535				

Analysis Date: **06/02/03** Concentration Units: **UG/L**

#	Analyte	ICV 15:36 True	Result	%R	CCV 16:53 True	Result	%R	CCV 18:08 True	Result	%R	CCV 18:27 True	Result	%R
1	Arsenic	50.0	51.00	102.0	50.0	50.70	101.4	50.0	50.00	100.0	50.0	50.70	101.4

(a) ICV Control Limit 95-105%; For Hg, 90-110%.

(b) CCV Control Limit 90-110%; For Hg, 80-120%.

FORM-2B Metal

Applied P & Ch Laboratory

CRDL Standard For AA and ICP

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Instrument:	ICP -M	Method:	200.9
Batch No.(s):	03M1537				

Analysis Date: **06/02/03** Concentration Units: **UG/L**

#	Analyte	True	11:20 Found	R%	Time Found	R%
1	Aluminum	200.0	234.00	117.0		
2	Antimony	20.0	21.59	108.0		
3	Arsenic	20.0	21.72	108.6		
4	Barium	10.0	12.57	125.7		
5	Beryllium	4.0	4.51	112.7		
6	Cadmium	5.0	4.72	94.5		
7	Calcium	1000.0	1111.53	111.2		
8	Chromium	10.0	11.39	113.9		
9	Cobalt	20.0	23.47	117.3		
10	Copper	10.0	12.80	128.0		
11	Iron	50.0	46.81	93.6		
12	Lead	10.0	11.00	110.0		
13	Magnesium		-1.03			
14	Manganese	10.0	10.82	108.2		
15	Nickel	20.0	23.05	115.2		
16	Potassium		155.36			
17	Selenium	10.0	13.49	134.9		
18	Silver	10.0	11.62	116.2		
19	Sodium		8.93			
20	Thallium	10.0	11.65	116.5		
21	Vanadium	10.0	10.88	108.8		
22	Zinc	20.0	22.11	110.6		
23	Molybdenum	15.0	16.24	108.3		

FORM-3 Metal

Applied P & Ch Laboratory

Metal ICB/CCB Summary

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Instrument:	ICP -M	Method:	200.9
Batch No.(s):	03M1537				

Analysis Date: 06/02/03

Concentration Units: **UG/L**

#	Analyte	ICB Result	11:16 C	CCB Result	11:32 C	CCB Result	12:32 C	CCB Result	13:11 C	CCB Result	13:29 C
1	Aluminum	6.90	U	20.55	B	6.90	U	9.17	B	9.34	B
2	Antimony	5.16	B	2.40	U	5.27	B	3.74	B	2.97	B
3	Arsenic	1.80	U	1.80	U	1.80	U	1.80	U	1.80	U
4	Barium	1.64	B	1.34	B	1.21	B	1.65	B	0.89	U
5	Beryllium	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
6	Cadmium	0.18	B	0.25	B	0.16	U	0.29	B	0.16	U
7	Calcium	121.00	U	121.00	U	121.00	U	121.00	U	121.00	U
8	Chromium	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
9	Cobalt	0.74	B	0.46	U	0.46	U	0.46	U	0.46	U
10	Copper	5.97	B	5.24	B	1.90	U	1.90	U	1.90	U
11	Iron	7.70	U	13.83	B	7.70	U	7.70	U	7.70	U
12	Lead	0.90	U	0.90	U	0.90	U	1.06	B	0.90	U
13	Magnesium	19.00	U	19.00	U	19.00	U	19.00	U	19.00	U
14	Manganese	0.77	B	0.63	U	0.63	U	0.86	B	0.63	U
15	Nickel	0.60	B	0.44	U	0.44	U	0.44	U	0.44	U
16	Potassium	160.96	B	164.74	B	68.88	B	70.22	B	68.98	B
17	Selenium	1.80	U	2.46	B	-3.63	B	1.80	U	1.80	U
18	Silver	0.61	B	0.47	B	-0.55	B	0.43	U	0.68	B
19	Sodium	189.00	U	189.00	U	-202.61	B	-381.16	B	189.00	U
20	Thallium	1.80	U	1.80	U	1.80	U	2.27	B	2.93	B
21	Vanadium	0.53	U	0.53	U	0.53	U	0.90	B	0.96	B
22	Zinc	1.30	U	1.30	U	1.30	U	1.30	U	1.30	U
23	Molybdenum	2.69	B	1.80	B	1.43	B	1.36	B	0.55	B

FORM-3 Metal

Applied P & Ch Laboratory

Metal ICB/CCB Summary

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Instrument:	ICP -M	Method:	200.9
Batch No.(s):	03M1537				

Analysis Date: 06/02/03

Concentration Units: **UG/L**

#	Analyte	CCB Result	14:09 C	CCB Result	15:06 C	CCB Result	Time C	CCB Result	Time C	CCB Result	Time C
1	Aluminum	10.14	B	17.40	B						
2	Antimony	2.40	U	2.40	U						
3	Arsenic	-3.77	B	-3.34	B						
4	Barium	0.89	U	0.89	U						
5	Beryllium	0.19	U	0.19	U						
6	Cadmium	0.16	U	0.16	U						
7	Calcium	124.84	B	222.94							
8	Chromium	0.26	U	0.26	U						
9	Cobalt	0.46	U	0.46	U						
10	Copper	1.90	U	1.90	U						
11	Iron	7.70	U	7.70	U						
12	Lead	0.90	U	0.90	U						
13	Magnesium	19.00	U	19.00	U						
14	Manganese	0.63	U	0.63	U						
15	Nickel	-0.63	B	-0.78	B						
16	Potassium	70.31	B	78.58	B						
17	Selenium	1.80	U	1.80	U						
18	Silver	-0.47	B	0.43	U						
19	Sodium	-201.38	B	189.00	U						
20	Thallium	1.80	U	1.80	U						
21	Vanadium	0.53	B	0.53	U						
22	Zinc	1.30	U	1.30	U						
23	Molybdenum	0.48	U	0.48	U						

FORM-3 Metal

Applied P & Ch Laboratory

Metal ICB/CCB Summary

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1535E
		Instrument:	GFAA-E	Method:	200.9
Batch No.(s):	03M1535				

Analysis Date: 06/02/03

Concentration Units: **UG/L**

#	Analyte	ICB Result	15:42 C	CCB Result	16:59 C	CCB Result	18:15 C	CCB Result	18:34 C	CCB Result	Time C
1	Arsenic	1.80	U	1.80	U	1.80	U	1.80	U		

FORM-4 Metal

Applied P & Ch Laboratory

ICP Interference Check Sample

Client Name: GEOFON, Inc.
Project Name: JPL
Batch No.(s): 03M1537

Project No: 04-4428.10
Service ID: 033465
ICP ID Number: ICP -M

Lab Code: APCL
Sequence No.: 03M1537M

Analysis Date: 06/02/03

Concentration Units: UG/L

#	Analyte	Expected Sol. A	Expected Sol. AB	Initial 11:22 Sol. A	Found 11:25 Sol. AB	%R	Final 14:44 Sol. A	Found 14:47 Sol. AB	%R
1	Aluminum	500000	500000	464290	458836.3	91.8	458682	464695.8	92.9
2	Antimony	0	1000	-10	954.1	95.4	-10	908.0	90.8
3	Arsenic	0	1000	2	963.3	96.3	-3	916.9	91.7
4	Barium	0	500	4	496.3	99.3	2	497.7	99.5
5	Beryllium	0	500	0	474.9	95.0	0	456.0	91.2
6	Cadmium	0	1000	0	915.2	91.5	-1	919.3	91.9
7	Calcium	500000	500000	495897	470558.3	94.1	496981	476691.8	95.3
8	Chromium	0	500	6	473.6	94.7	6	482.7	96.5
9	Cobalt	0	500	2	450.4	90.1	2	451.2	90.2
10	Copper	0	500	6	483.8	96.8	-1	493.1	98.6
11	Iron	200000	200000	184377	178537.4	89.3	177283	175558.6	87.8
12	Lead	0	1000	-4	943.5	94.3	1	979.0	97.9
13	Magnesium	500000	500000	482688	472549.8	94.5	473346	476208.9	95.2
14	Manganese	0	500	0	478.1	95.6	-1	491.9	98.4
15	Nickel	0	1000	3	883.0	88.3	2	882.4	88.2
16	Potassium	0	0	237	226.4		170	137.2	
17	Selenium	0	1000	-7	964.5	96.5	14	962.7	96.3
18	Silver	0	1000	-2	975.1	97.5	-3	980.3	98.0
19	Sodium	0	0	257	416.2		-19	214.4	
20	Thallium	0	1000	11	939.8	94.0	13	924.2	92.4
21	Vanadium	0	500	0	467.0	93.4	1	461.8	92.4
22	Zinc	0	1000	11	945.1	94.5	12	1003.8	100.4
23	Molybdenum	0	1000	2	931.2	93.1	-1	940.1	94.0

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 200.7

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	33465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		Batch No:	03M1537M		
MS Filename:	-	Date Analyzed:	060203	Time Analyzed:	12:56
MSD Filename:	-	Date Analyzed:	060203	Time Analyzed:	13:00
MS Sample No:	MW-6	Sample Lab ID:	03-3444-1		

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration MS	MS Rec%	#	QC Limit, % REC
CALCIUM	μg/L	20000	162000	168000	30	*	75-125
IRON	μg/L	1000	785	1710	93		75-125
MAGNESIUM	μg/L	10000	51200	55900	47	*	75-125
POTASSIUM	μg/L	5000	2690	7730	101		75-125
SODIUM	μg/L	40000	35100	72500	94		75-125
# of Out-of-control					2		

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec%	#	RPD%	#	QC Limit, % RPD	QC Limit, % REC
CALCIUM	μg/L	20000	168000	30	*	0		20	75-125
IRON	μg/L	1000	1710	93		0		20	75-125
MAGNESIUM	μg/L	10000	57000	58	*	2		20	75-125
POTASSIUM	μg/L	5000	7640	99		2		20	75-125
SODIUM	μg/L	40000	72000	92		2		20	75-125
# of Out-of-control				2		0			

Column to be used to flag recovery and RPD values:

* – Values outside of contract required QC Limits D – Spiked components diluted out

Comments: _____

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 200.9

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	33465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		Batch No:	03M1535E		
MS Filename:	-	Date Analyzed:	060203	Time Analyzed:	16:27
MSD Filename:	-	Date Analyzed:	060203	Time Analyzed:	16:33
MS Sample No:	MW-6	Sample Lab ID:	03-3444-1		

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration MS	MS Rec% #	QC Limit, % REC
ARSENIC	μg/L	50	1.7	50.0	97	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD	QC Limit, % REC
ARSENIC	μg/L	50	50.3	97	0	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits D - Spiked components diluted out

Comments: _____

FORM-5B Metal

Applied P & Ch Laboratory

Post Digest Spike Sample Recovery

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Batch No.:	03M1537	Method:	200.9
Spike Sample No. :	03-3444-01	Matrix:	WATER	Instrument:	ICP -M
Client Sample No.:	MW-6	Analysis Date:	06/02/03		

Concentration Units: **UG/L**

#	Analyte	Spiked Sample Result(SSR)	12:04 C	Sample Result(SR)	11:46 C	Spike Added(SA)	% Rec.	Control Limit	Q
1	Aluminum	2228.9153		36.5019	B	2000.00	109.6	75-125	
2	Antimony	447.2098		0.7123	U	500.00	89.4	75-125	
3	Arsenic	484.5293		-1.2631	U	500.00	96.9	75-125	
4	Barium	4807.1958		147.0415		4000.00	116.5	75-125	
5	Beryllium	189.9951		0.0476	U	200.00	95.0	75-125	
6	Cadmium	231.1964		-0.2714	U	250.00	92.5	75-125	
7	Calcium	172104.7500		151830.7813		20000.00	101.4		
8	Chromium	1040.7628		16.0299		1000.00	102.5	75-125	
9	Cobalt	936.2001		2.7535	B	1000.00	93.3	75-125	
10	Copper	1092.9030		5.7678	B	1000.00	108.7	75-125	
11	Iron	1804.3965		763.1682		1000.00	104.1	75-125	
12	Lead	3346.4131		0.1093	U	3000.00	111.5	75-125	
13	Magnesium	63376.3438		51314.2305		10000.00	120.6		
14	Manganese	1104.0011		7.2717		1000.00	109.7	75-125	
15	Nickel	941.9952		43.1892		1000.00	89.9	75-125	
16	Potassium	7526.1890		2494.1963		5000.00	100.6	75-125	
17	Selenium	538.5984		-0.3001	U	500.00	107.7	75-125	
18	Silver	1044.1323		-0.0361	U	1000.00	104.4	75-125	
19	Sodium	72573.5156		32701.3848		40000.00	99.7	75-125	
20	Thallium	538.5551		3.6788	B	500.00	107.0	75-125	
21	Vanadium	2018.6143		7.6707	B	2000.00	100.5	75-125	
22	Zinc	562.4015		6.9027	B	500.00	111.1	75-125	
23	Molybdenum	2336.7134		2.3301	B	2000.00	116.7	75-125	

FORM-5B Metal

Applied P & Ch Laboratory

Post Digest Spike Sample Recovery

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1535E
		Batch No.:	03M1535	Method:	200.9
Spike Sample No. :	03-3444-01	Matrix:	WATER	Instrument:	GFAA-E
Client Sample No.:	MW-6	Analysis Date:	06/02/03		

Concentration Units: **UG/L**

#	Analyte	Spiked Sample Result(SSR)	16:40 C	Sample Result(SR)	16:07 C	Spike Added(SA)	% Rec.	Control Limit	Q
1	Arsenic	49.5000		1.7000	U	50.00	99.0	75-125	

FORM-6 Metal

Applied P & Ch Laboratory

Duplicates Verification

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Batch No.:	03M1537	Method:	200.9
Spike Sample No.	03-3444-01	Matrix:	WATER	Instrument:	ICP -M
Client Sample No.	MW-6	% Solid:	0.00	Analysis Date:	06/02/03

Concentration Unit: UG/L

#	Analyte	12:46 Sample(s)	C	11:50 Duplicate	C	RPD(%)	Q
1	Aluminum	30.0306	B	35.8550	B	17.7	
2	Antimony	1.4348	U	1.6336	U		
3	Arsenic	-2.4048	U	-1.2404	U		
4	Barium	147.7640		150.2931		1.7	
5	Beryllium	0.0393	U	0.0081	U		
6	Cadmium	-0.1573	U	-0.2892	U		
7	Calcium	162318.2813		154509.3906		4.9	
8	Chromium	16.4422		15.8867		3.4	
9	Cobalt	2.8895	B	3.2040	B	10.3	
10	Copper	2.8083	B	5.2453	B	60.5	
11	Iron	785.3618		771.6895		1.8	
12	Lead	-0.5542	U	0.4256	U		
13	Magnesium	51161.0703		52550.8516		2.7	
14	Manganese	6.8908		7.2023		4.4	
15	Nickel	46.0714		42.9448		7.0	
16	Potassium	2691.0327		2501.1614		7.3	
17	Selenium	-0.6773	U	1.6048	U		
18	Silver	0.6735	B	-0.1531	U	200.0	
19	Sodium	35059.4453		33229.7383		5.4	
20	Thallium	5.4083	B	1.1675	U	200.0	
21	Vanadium	7.7537	B	7.5016	B	3.3	
22	Zinc	6.2649	B	6.6248	B	5.6	
23	Molybdenum	1.4667	B	0.9221	B	45.6	

FORM-6 Metal

Applied P & Ch Laboratory

Duplicates Verification

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1535E
		Batch No.:	03M1535	Method:	200.9
Spike Sample No.	03-3444-01	Matrix:	WATER	Instrument:	GFAA-E
Client Sample No.	MW-6	% Solid:	0.00	Analysis Date:	06/02/03

Concentration Unit: **UG/L**

#	Analyte	16:07 Sample(s)	C	16:14 Duplicate	C	RPD(%)	Q
1	Arsenic	1.7000	U	1.0000	U		

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 200.9

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	33465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		Batch No:	03M1535E		
LCS Filename:	-	Date Analyzed:	060203	Time Analyzed:	15:55
LCSD Filename:	-	Date Analyzed:	060203	Time Analyzed:	16:01

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration LCS	LCS Rec% #	QC Limit, % REC
ARSENIC	μg/L	50	0	46.7	93	80-120
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, % RPD	QC Limit, % REC
ARSENIC	μg/L	50	46.3	93	0	20	80-120
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* – Values outside of contract required QC Limits D – Spiked components diluted out

Comments: _____

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 200.7

Client Name:	GEOFON, Inc.	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	33465
Project ID:	JPL	Project No:	04-4428.10	Sample Matrix:	Water
		Batch No:	03M1537M		
LCS Filename:	-	Date Analyzed:	060203	Time Analyzed:	12:39
LCSD Filename:	-	Date Analyzed:	060203	Time Analyzed:	12:42

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration LCS	LCS Rec% #	QC Limit, % REC
CALCIUM	μg/L	20000	0	21000	105	80-120
IRON	μg/L	1000	0	1020	102	80-120
MAGNESIUM	μg/L	10000	0	10300	103	80-120
POTASSIUM	μg/L	5000	0	4700	94	80-120
SODIUM	μg/L	40000	0	39200	98	80-120
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, % RPD	QC Limit, % REC
CALCIUM	μg/L	20000	21400	107	2	20	80-120
IRON	μg/L	1000	1010	101	1	20	80-120
MAGNESIUM	μg/L	10000	10200	102	1	20	80-120
POTASSIUM	μg/L	5000	4700	94	0	20	80-120
SODIUM	μg/L	40000	38800	97	1	20	80-120
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* – Values outside of contract required QC Limits D – Spiked components diluted out

Comments: _____

FORM-9 Metal

Applied P & Ch Laboratory

Serial Dilution

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Batch No.:	03M1537	Method:	200.9
Dilution Sample No.:	03-3444-01	Matrix:	WATER	Instrument:	ICP -M
Client Sample No.:	MW-6	Analysis Date:	06/02/03		

Concentration Units: **UG/L**

#	Analyte	Initial Sample Results(I)	11:46 C	Serial Dilut Results(S)	11:53 C	% Diff.	Q
1	Aluminum	36.50	B	107.15	B	193.5	
2	Antimony	0.71	U	6.92	U		
3	Arsenic	-1.26	U	-14.89	U		
4	Barium	147.04		152.47		3.7	
5	Beryllium	0.05	U	-0.01	U		
6	Cadmium	-0.27	U	-0.62	U		
7	Calcium	151830.78		157169.08		3.5	
8	Chromium	16.03		16.52	B	3.1	
9	Cobalt	2.75	B	3.59	B	30.3	
10	Copper	5.77	B	8.06	U	100.0	
11	Iron	763.17		750.92		1.6	
12	Lead	0.11	U	6.65	B		
13	Magnesium	51314.23		54105.89		5.4	
14	Manganese	7.27		7.31	B	0.5	
15	Nickel	43.19		44.49		3.0	
16	Potassium	2494.20		2517.35		0.9	
17	Selenium	-0.30	U	5.89	U		
18	Silver	-0.04	U	0.66	U		
19	Sodium	32701.38		31894.17		2.5	
20	Thallium	3.68	B	-8.33	U	100.0	
21	Vanadium	7.67	B	7.33	B	4.4	
22	Zinc	6.90	B	5.01	U	100.0	
23	Molybdenum	2.33	B	1.34	U	100.0	

FORM-9 Metal

Applied P & Ch Laboratory

Serial Dilution

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1535E
		Batch No.:	03M1535	Method:	200.9
Dilution Sample No.:	03-3444-01	Matrix:	WATER	Instrument:	GFAA-E
Client Sample No.:	MW-6	Analysis Date:	06/02/03		

Concentration Units: **UG/L**

#	Analyte	Initial Sample Results(I)	16:07 C	Serial Dilut Results(S)	16:20 C	% Diff.	Q
1	Arsenic	1.70	U	9.00	B		

FORM-13 Metal

Applied P & Ch Laboratory

Preparation Log

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Batch No.:	03M1537	Method:	200.9
Preparation Matrix:	WATER	Instrument:	ICP -M		

#	Client Sample No.	APCL Sample No.	Preparation Date	Weight (gram)	Volume (ml)
1	MI573-SO-5-27-03-1	03-3407-01TC	06/02/03		50.0
2	MI573-SO-5-27-03-3	03-3407-03TC	06/02/03		50.0
3	MW-6	03-3444-01DM	06/02/03		50.0
4	MW-7	03-3444-02	06/02/03		50.0
5	MW-15	03-3444-03	06/02/03		50.0
6	24 hrs Composite	03-3449-01	06/02/03		50.0
7	MW-1	03-3465-01	06/02/03		50.0
8	MW-9	03-3465-02	06/02/03		50.0
9	MW-10	03-3465-03	06/02/03		50.0
10	051EB1-14824	03-3467-01	06/02/03		50.0
11	1990-065-231	03-3469-02	06/02/03		50.0
12	Composite	03-3471-01	06/02/03		50.0
13	MW-1-203	03-3473-06	06/02/03		50.0
14	MW-2-203	03-3473-07	06/02/03		50.0
15	MW-3-203	03-3473-08	06/02/03		50.0
16	MW-4-203	03-3473-09	06/02/03		50.0
17	7647-94	03-3474-01	06/02/03		50.0
18		03M1537MB	06/02/03		50.0
19		03M1537LCS	06/02/03		50.0
20		03M1537LCSD	06/02/03		50.0
21	MW-6 Dup.	03M1537MD	06/02/03		50.0
22	MW-6 MS	03M1537MS	06/02/03		50.0
23	MW-6 MSD	03M1537MSD	06/02/03		50.0

FORM-13 Metal

Applied P & Ch Laboratory

Preparation Log

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1535E
		Batch No.:	03M1535	Method:	200.9
Preparation Matrix:	WATER	Instrument:	GFAA-E		

#	Client Sample No.	APCL Sample No.	Preparation Date	Weight (gram)	Volume (ml)
1	MW-13	03-3391-01	06/02/03		50.0
2	MW-16	03-3391-02	06/02/03		50.0
3	MW-5	03-3414-01	06/02/03		50.0
4	MW-8	03-3414-02	06/02/03		50.0
5	MW-6	03-3444-01DM	06/02/03		50.0
6	MW-7	03-3444-02	06/02/03		50.0
7	MW-15	03-3444-03	06/02/03		50.0
8	MW-1	03-3465-01	06/02/03		50.0
9	MW-9	03-3465-02	06/02/03		50.0
10	MW-10	03-3465-03	06/02/03		50.0
11		03M1535MB	06/02/03		50.0
12		03M1535LCS	06/02/03		50.0
13		03M1535LCSD	06/02/03		50.0
14	MW-6 Dup.	03M1535MD	06/02/03		50.0
15	MW-6 MS	03M1535MS	06/02/03		50.0
16	MW-6 MSD	03M1535MSD	06/02/03		50.0

FORM-14 Metal

Applied P & Ch Laboratory

Analysis Run Log

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Instrument:	ICP -M	Method:	200.9
Batch No.(s):	03M1537	Start Date:	06/02/03	End Date:	06/02/03

#	APCL Sample No.	D/F	Time	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn	Mo	Sr	Ti	Sn	Li	B	Si
1	Calib Blank	1.00	10:57	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
2	STD1 1423A	1.00	11:01	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
3	STD2 1423B	1.00	11:04	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
4	STD3 1423C	1.00	11:08	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
5	ICV 1447A	1.00	11:12	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
6	ICB	1.00	11:16	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
7	CRI A1432	1.00	11:20	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
8	ICSA 1441	1.00	11:22	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
9	ICSAB 1443	1.00	11:25	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
10	CCV 1447B	1.00	11:29	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
11	CCB	1.00	11:32	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
12	M-BL 03M1537 W	1.00	11:36	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
13	LCS-03M1537	1.00	11:39	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
14	LCSD-03M1537	1.00	11:43	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
15	3444-1 S F=1	1.00	11:46	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
16	3444-1 D F=1	1.00	11:50	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
17	3444-1 1/5 F=5	5.00	11:53	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
18	3444-1 MS F=1	1.00	11:57	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
19	3444-1 MSD F=1	1.00	12:01	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
20	3444-1 PS F=1	1.00	12:04	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
21	CCV 1447B	1.00	12:08	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
22	Calib Blank	1.00	12:13	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
23	STD1 1423A	1.00	12:17	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
24	STD2 1423B	1.00	12:21	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
25	STD3 1423C	1.00	12:25	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
26	CCV 1447B	1.00	12:28	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
27	CCB	1.00	12:32	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
28	M-BL 03M1537 W	1.00	12:35	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
29	LCS-03M1537	1.00	12:39	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
30	LCSD-03M1537	1.00	12:42	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
31	3444-1 S F=1	1.00	12:46	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
32	3444-1 D F=1	1.00	12:49	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
33	3444-1 1/5 F=5	5.00	12:53	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
34	3444-1 MS F=1	1.00	12:56	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
35	3444-1 MSD F=1	1.00	13:00	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
36	3444-1 PS F=1	1.00	13:04	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
37	CCV 1447B	1.00	13:07	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
38	CCB	1.00	13:11	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
39	TC Blank	2.00	13:13	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
40	3407-1TC F=2	2.00	13:16	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						

FORM-14 Metal

Applied P & Ch Laboratory

Analysis Run Log

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1537M
		Instrument:	ICP -M	Method:	200.9
Batch No.(s):	03M1537	Start Date:	06/02/03	End Date:	06/02/03

#	APCL Sample No.	D/F	Time	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn	Mo	Sr	Ti	Sn	Li	B	Si
41	3407-3TC F=2	2.00	13:19	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
42	CCV 1447B	1.00	13:25	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
43	CCB	1.00	13:29	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
44	3444-2 F=1	1.00	13:32	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
45	3444-3 F=1	1.00	13:47	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
46	3465-1 F=1	1.00	13:50	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
47	3465-2 F=1	1.00	13:53	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
48	3465-3 F=1	1.00	13:57	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
49	3467-1 F=1	1.00	14:00	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
50	CCV 1447B	1.00	14:04	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
51	CCB	1.00	14:09	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
52	3471-1 F=1	1.00	14:12	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
53	3473-6 F=1	1.00	14:16	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
54	3473-7 F=1	1.00	14:20	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
55	3473-8 F=1	1.00	14:23	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
56	3473-9 F=1	1.00	14:27	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
57	3469-2 F=1	1.00	14:30	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
58	3474-1 F=1	1.00	14:33	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
59	3449-1 F=1	1.00	14:37	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
60	ICSA 1441	1.00	14:44	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
61	ICSAB 1443	1.00	14:47	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
62	CCV 1447B	1.00	14:51	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
63	CCV 1447B	1.00	14:59	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
64	CCB	1.00	15:06	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						
65	DLC A1427	1.00	15:10	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√						

FORM-14 Metal

Applied P & Ch Laboratory

Analysis Run Log

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Lab Code:	APCL
Project Name:	JPL	Service ID:	033465	Sequence No.:	03M1535E
		Instrument:	GFAA-E	Method:	200.9
Batch No.(s):	03M1535	Start Date:	06/02/03	End Date:	06/02/03

#	APCL Sample No.	D/F	Time	Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Hg	Ni	K	Se	Ag	Na	Tl	V	Zn	Mo	Sr	Ti	Sn	Li	B	Si
1	Calib. Blank	1.00	15:00			√																											
2	1/2 STD1 1472A	1.00	15:06			√																											
3	STD1 1472A	1.00	15:12			√																											
4	STD2 1472B	1.00	15:18			√																											
5	STD3 1472C	1.00	15:25			√																											
6	ICV A1474	1.00	15:36			√																											
7	ICB	1.00	15:42			√																											
8	M-BL 03M1535	1.00	15:48			√																											
9	LCS-03M1535	1.00	15:55			√																											
10	LCSD-03M1535	1.00	16:01			√																											
11	3444-1 S F=1	1.00	16:07			√																											
12	3444-1 D F=1	1.00	16:14			√																											
13	3444-1 1/5 F=5	5.00	16:20			√																											
14	3444-1 MS F=1	1.00	16:27			√																											
15	3444-1 MSD F=1	1.00	16:33			√																											
16	3444-1 PS F=1	1.00	16:40			√																											
17	3444-2 F=1	1.00	16:46			√																											
18	CCV A1474	1.00	16:53			√																											
19	CCB	1.00	16:59			√																											
20	3444-3 F=1	1.00	17:24			√																											
21	3391-1 F=1	1.00	17:31			√																											
22	3391-2 F=1	1.00	17:37			√																											
23	3414-1 F=1	1.00	17:43			√																											
24	3414-2 F=1	1.00	17:49			√																											
25	3465-1 F=1	1.00	17:56			√																											
26	3465-2 F=1	1.00	18:02			√																											
27	CCV A1474	1.00	18:08			√																											
28	CCB	1.00	18:15			√																											
29	3465-3 F=1	1.00	18:21			√																											
30	CCV A1474	1.00	18:27			√																											
31	CCB	1.00	18:34			√																											

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Metal Digestion (3010/3050) Worksheet

Batch # 03M1537 Matrix: W Method used: 3010A Date: 6/2/03 Digested by: XI Diluted by: YW

Lot #: ASTM Type I water RW1414 HNO_3 1102120 H_2SO_4 _____ HCl 4102050 H_2O_2 _____

OP #	Type	Samp ID /Lot #	X (g or mL)	$V_{digest}/X = f_1$	$V_f/V_i = f_2$	$V_f'/V_i' = f_3$	$F=f_1f_2f_3$	Note
3159	Method Blank	Bl. Lot RW1414	50	50 /X= 1	/ =	/ =		23 Me
3160	LCS1	Bl. Lot: "		/X=	/ =	/ =		
3161	Sample-1	3444 —1		/X=	/ =	/ =		T=95°C
3162	MS1 on S-1	—1		/X=	/ =	/ =		
3163	MS2 on S-1	—1		/X=	/ =	/ =		
3164	Sample 2	—2		/X=	/ =	/ =		MS/MSD
3165	Sample 3	—3		/X=	/ =	/ =		
3166	Sample 4	3465 —1		/X=	/ =	/ =		
3167	Sample 5	—2		/X=	/ =	/ =		
3168	Sample 6	—3		/X=	/ =	/ =		
3169	Sample 7	3467 —1		/X=	/ =	/ =		
3170	Sample 8	3471 —1		/X=	/ =	/ =		
3171	Sample 9	3473 —6		/X=	/ =	/ =		
3172	Sample 10	—7		/X=	/ =	/ =		
3173	LCS2	Bl. Lot RW1414		/X=	/ =	/ =		
3174	Sample 11	—8		/X=	/ =	/ =		
3175	Sample 12	—9		/X=	/ =	/ =		
3176	Sample 13	3469 —2		/X=	/ =	/ =		
3177	Sample 14	3474 —1		/X=	/ =	/ =		
3178	Sample 15	3449 —1		/X=	/ =	/ =		
3179	Sample 16	TC Blank		/X=	10/5 = 2	/ =	2	
3180	Sample 17	3407-1 TC		/X=	/ =	/ =		
3181	Sample 18	—3 "		/X=	/ =	/ =		
3182	Sample 19			/X=	/ =	/ =		
3183	Sample 20	XW	6/2/03	/X=	/ =	/ =		
3184	Duplicate	3444 —1	50	50 /X= 1	/ =	/ =		

Specification of matrix spike and lab control spike

QC Type	Spiked Element *	Spike Stock Solution Lot #	Spike Stock (Rep.) Conc. C_s, μg/mL	Spike Stock Volum Used V_s mL	Spike Level $T'=C_sV_s/V$ ppm or mg/L	Sample Spike T, ppm
MS1	/AsSe/Sb/M_{20}	AA- /AA- /AA- /AA 4433	/ / / 25	/ / / 2	/ / / 1	
MS2	/AsSe/Sb/M_{20}	AA- /AA- /AA- /AA- "	/ / /	/ / /	/ / /	
LCS1	/AsSe/Sb/M_{20}	AA- /AA- /AA- /AA 4492	/ / /	/ / /	/ / /	
LCS2	/AsSe/Sb/M_{20}	AA- /AA- /AA- /AA- "	/ / /	/ / /	/ / /	

* Notation: T – rep. sample spike level. T' – digest solution spike level. $T=f\,T'=C_sV_s/X$. M20 (or M_j) represents 20 (or j) metals, (see STD logbook).
If digest needs dilution for different metals, use dilution worksheet.

Supervisor Initial: [illegible]

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Digest-082

Metal Digestion (3010/3050) Worksheet

Batch # BM1535 Matrix: W Method used: 3020A Date: 6/2/03 Digested by: X1 Diluted by: YW

Lot #: ASTM Type I water RW1414 HNO_3 1102/20 H_2SO_4 _____ HCl _____ H_2O_2 _____

OP #	Type	Samp ID /Lot #	X (g or mL)	$V_{digest}/X = f_1$	$V_f/V_i = f_2$	$V_f'/V_i' = f_3$	$F=f_1f_2f_3$	Note
3107	Method Blank	Bl. Lot RW1414	50	50 /X= 1	/ =	/ =		GFAA/As
3108	LCS1	Bl. Lot: "		/X=	/ =	/ =		
3109	Sample-1	3444 -1		/X=	/ =	/ =		
3110	MS1 on S-1	3444 -1		/X=	/ =	/ =		
3111	MS2 on S-1	X1 6/2/03 -1		/X=	/ =	/ =		
3112	Sample 2	-2		/X=	/ =	/ =		MS/MSD
3113	Sample 3	-3		/X=	/ =	/ =		
3114	Sample 4	3391 -1		/X=	/ =	/ =		
3115	Sample 5	-2		/X=	/ =	/ =		
3116	Sample 6	3414 -1		/X=	/ =	/ =		
3117	Sample 7	-2		/X=	/ =	/ =		
3118	Sample 8	3465 -1		/X=	/ =	/ =		
3119	Sample 9	-2		/X=	/ =	/ =		
3120	Sample 10	-3		/X=	/ =	/ =		
3121	LCS2	Bl. Lot RW1414		/X=	/ =	/ =		
3122	Sample 11			/X=	/ =	/ =		
3123	Sample 12			/X=	/ =	/ =		
3124	Sample 13			/X=	/ =	/ =		
3125	Sample 14			/X=	/ =	/ =		
3126	Sample 15			X1 /X=	/ =	/ =		
3127	Sample 16			/X=	/ =	/ =		
3128	Sample 17			6/2/03	/ =	/ =		
3129	Sample 18			/X=	/ =	/ =		
3130	Sample 19			/X=	/ =	/ =		
3131	Sample 20			/X=	/ =	/ =		
3132	Duplicate	3444 -1	50	50 /X= 1	/ =	/ =		

Specification of matrix spike and lab control spike

QC Type	Spiked Element *	Spike Stock Solution Lot #	Spike Stock (Rep.) Conc. C_s, µg/mL	Spike Stock Volum Used V_s mL	Spike Level $T'=C_sV_s/V$ ppm or mg/L	Sample Spike T, ppm
MS1	/AsSe/Sb/M_{20}	AA- /AA- /AA- /AA 473	/ / / 5	/ / / 0.5	/ / / 0.05	
MS2	/AsSe/Sb/M_{20}	AA- /AA- /AA- /AA- "	/ / /	/ / /	/ / /	
LCS1	/AsSe/Sb/M_{20}	AA- /AA- /AA- /AA 471	/ / /	/ / /	/ / /	
LCS2	/AsSe/Sb/M_{20}	AA- /AA- /AA- /AA- "	/ / /	/ / /	/ / /	

* Notation: T – rep. sample spike level. T' – digest solution spike level. $T=f\,T'=C_sV_s/X$. M20 (or Mj) represents 20 (or j) metals, (see STD logbook).
If digest needs dilution for different metals, use dilution worksheet.

APCL form 6-116 April. 03, 1996. Ver. 4.0 No pencil. Use blue pen for record. Use red pen for correction.
Root-File:[CUST.DOC.AA]DIGEST.ROOT.TEX File:[CUST.DOC.AA]DIGEST .TEX

Supervisor Initial YW