APPENDIX A

SOIL VAPOR DATA VALIDATION REPORT
TENTH PERIODIC SAMPLING EVENT

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Geofon, Inc.
22632 Golden Springs Drive, Suite 270
Diamond Bar, CA 91765
ATTN: Mr. Tony Ford

June 21, 2002

SUBJECT: NASA JPL, DO #48, Data Validation

Dear Mr. Ford,

Enclosed is the final validation report for the fraction listed below. This SDG was received on June 11, 2002. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 8602:

SDG #	**Fraction**
GF051402T2	Volatile Halogenated/Aromatic Hydrocarbons

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Richard M. Amano
President/Principal Chemist

CC: Mr. Jim Picker, HP Labs

8602COV.GEO

Attachment 1

LDC #8602 (Geofon, Inc.-Diamond Bar / NASA Jet Propulsion Laboratory, DO#0048)

Contract#N68711-97-D-8702

LDC	SDG#	DATE REC'D	DATE DUE	HVOC/ BTEX (8021)																																	
Matrix:	Air/Soil			A	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	GF051402T2	6-11-02	7-2-02	12	0																																
Total	TH			12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Shaded cells indicate Level IV validation (all other cells are Level III validation).

8602ST.GEO

NASA JPL, DO 048
Data Validation Reports
LDC# 8602

Volatile Halogenated/Aromatic Hydrocarbons

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL, DO 048

Collection Date: May 14, 2002

LDC Report Date: June 19, 2002

Matrix: Air

Parameters: Volatile Halogenated/Aromatic Hydrocarbons

Validation Level: EPA Level III

Laboratory: HP Labs

Sample Delivery Group (SDG): GF051402T2

Sample Identification

SVW37-VPJ-01
SVW36-VPB-02
SVW36-VPC-03
SVW33-VPD-04
SVW33-VPE-05
SVW33-VPE-06dup
SVW33-VPF-07
SVW4-VPB-08
SVW4-VPD-09
SVW17-VPC-10
SVW32-VPH-11
SVW32-VPH-12dup

Introduction

This data review covers 12 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 8010 and 8020B modified for Volatile Halogenated/Aromatic Hydrocarbons.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by these methods with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All samples in SDG GF051402T2	All TCL compounds	A three point calibration was performed.	A five point calibration is specified by the method.	None	P

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

b. Continuing Calibration

Continuing calibration was performed at the required frequencies.

For all samples continuing calibration was not performed for Chloroethane, Vinyl Chloride, Trichlorofluoromethane and Dichlorodifluoromethane. Per the soil/gas guidelines, continuing calibration verification for these coumpounds are not required since these compounds were not detected in the site.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile halogenated/aromatic hydrocarbon contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

c. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent differences (%D) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples SVW33-VPE-05 and SVW33-VPE-06dup and samples SVW32-VPH-11 and SVW32-VPH-11dup were identified as field duplicates. No volatile halogenated/aromatic hydrocarbons were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L-VAPOR)		RPD
	SVW33-VPE-05	SVW33-VPE-06dup	
Carbon tetrachloride	7.4	3.8	64
1,1-Dichloroethene	1.7	1.1	43
1,1,2-Trichlorotrifluoroethane	1.3	ND	200

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL, DO 048
Volatile Halogenated/Aromatic Hydrocarbons- Data Qualification Summary - SDG GF051402T2

SDG	Sample	Compound	Flag	A or P	Reason
GF051402T2	SVW37-VPJ-01 SVW36-VPB-02 SVW36-VPC-03 SVW33-VPD-04 SVW33-VPE-05 SVW33-VPE-06dup SVW33-VPF-07 SVW4-VPB-08 SVW4-VPD-09 SVW17-VPC-10 SVW32-VPH-11 SVW32-VPH-12dup	All TCL compounds	None	P	Initial calibration

NASA JPL, DO 048
Volatile Halogenated/Aromatic Hydrocarbons- Laboratory Blank Data Qualification Summary - SDG GF051402T2

No Sample Data Qualified in this SDG

DWLA

GEOFON PROJECT # 04-4304-480 JPL 1
JET PROPULSION LABORATORY
4800 OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #GF051402T2
GC SHIMADZU 14A
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	AMBIENT BLANK	SVW37-VPJ-01	SVW36-VPB-02	SVW36-VPC-03	SVW33-VPD-04	SVW33-VPE-05	SVW33-VPE-06 DUP	SVW33-VPF-07	SVW4-VPB-08	SVW4-VPD-09	SVW17-VPC-10	SVW32-VPH-11	SVW32-VPH-12 DUP
DATE	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02
ANALYSIS TIME	06:54	07:23	07:46	08:09	08:32	08:54	09:18	09:42	10:04	10:27	10:51	11:42	12:06
SAMPLING DEPTH (feet)	--	185	35	55	85	105	105	120	20	56	36	155	155
VOLUME WITHDRAWN (cc)	--	800	200	280	400	480	540	540	140	284	204	680	740
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	1.5	nd	1.5	7.4	3.8	2.9	nd	nd	nd	nd	nd
CHLOROETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	2.0	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	1.7	1.1	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	2.4	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	1.5	2.2	nd	nd	nd	nd	nd	11	nd	1.1	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	1.3	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	57	nd	nd
CHLOROBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.5	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	3.1	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	4.6	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.9	nd	nd
SURROGATES													
1,4 DIFLUORO BENZENE	96%	101%	101%	99%	101%	101%	101%	100%	101%	103%	105%	96%	102%
4 BROMOFLUORO BENZENE	99%	102%	103%	101%	103%	103%	104%	103%	104%	106%	100%	101%	103%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN CA DOHS MOBILE LABORATORY (CERT #1667)
ANALYSES PERFORMED BY: MARK BURKE
DATA REVIEWED BY: TAMARA DAVIS

6/20/02

LDC #: 8602A23 **VALIDATION COMPLETENESS WORKSHEET** Date: 6-14-02

SDG #: GF051402T2 X EPA Level III ___NFESC Level III Page: 1 of 1

Laboratory: HP Labs Reviewer: Z-Pan

2nd Reviewer: [illegible]

METHOD: Aromatic Volatile ~~Organics~~ Hydrocarbons & Volitile Halogenated Hydrocarbons (EPA SW 846 Method 8020B) Modified & 8010).

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5-14-02
IIa.	Initial calibration	SW	%RSD
IIb.	Calibration verification	SW	%D
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	Not required
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	ND
IX.	Field duplicates	SW	D_1 = 5, 6 ; D_2 = 11, 12
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All Air

1	SVW37-VPJ-01	11 D_2	SVW32-VPH-11	21		31	
2	SVW36-VPB-02	12 D_2	SVW32-VPH-12dup	22		32	
3	SVW36-VPC-03	13	Blank (5/14)	23		33	
4	SVW33-VPD-04	14		24		34	
5 D_1	SVW33-VPE-05	15		25		35	
6 D_1	SVW33-VPE-06dup	16		26		36	
7	SVW33-VPF-07	17		27		37	
8	SVW4-VPB-08	18		28		38	
9	SVW4-VPD-09	19		29		39	
10	SVW17-VPC-10	20		30		40	

Notes:

LDC #: 8602A23
SDG #: GF051402 T2

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: Z. Pan
2nd Reviewer: [illegible]

METHOD: GC Volatiles (EPA SW 846 Method 8010/8020)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a 5 point calibration curve performed?
(Y) N N/A Was a linear fit used for evaluation? If yes, the acceptance criteria used for each compound in %RSD less than or equal to 20.0%
Y (N) N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?_____
(Y) N N/A Did the initial calibration meet the acceptance criteria?

Level IV/D Only

Y N (N/A) Were the retention time window sizes properly established for all compounds?
Y N (N/A) Were compounds run at the required concentrations in the initial calibration?
Y N (N/A) Were the linearity or curve results recalculated? (Please see Initial Calibration calculation verification worksheet.)
Y N (N/A) Were the linearity or curve reported results within 10.0% of the recalculated results?

#	Date	Standard ID	Column	Compound	%RSD (Limit ≤ 20.0%)	Associated Samples	Qualifications
1		A 3 point IC	was	performed		All Samples + BLKs	None/P
		(A 5 point	IC	is required)			

LDC #: 8602A23
SDG #: GF051402T2

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: Z. Pan
2nd Reviewer: /

METHOD: GC Volatiles (EPA SW 846 Method 8010/8020)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ✓ %D or ___ RPD

Y N N/A Was at least one continuing standard run daily to verify the working curve?
Y N N/A Were continuing standards analyzed at a frequency of every 10 samples to verify the working curve?
Y N N/A Did the continuing calibration standards meet the percent difference (%D) and relative percent differences (RPD) criteria of ≤15.0%?

Level IV/D Only

Y N N/A Were the percent difference (%D) results recalculated? (Please see Calibration Verification results verification worksheet.)
Y N N/A Were the (%D) reported results within 10.0% of the recalculated results?

#	Date	Standard ID	Column	Compound	%D / RPD (Limit ≤ 15.0)	Associated Samples	Qualifications
1		CCV ~~was~~ was Not performed for Chloroethane, Vinyl Chloride, Trichlorofluoromethane, and Dichlorodifluoromethane. Per the soil/gas guidelines, CCV for these compounds are Not required since these compounds were Not detected in the site.				All Samples + BLKs	(Text) No qual

CONCAL 23

LDC #: 8602A23
SDG #: GF051402T2

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: Z. Pa
2nd reviewer: /

METHOD: GC Volatiles (EPA SW 846 Method 8010/8020)

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/L - VAPOR) # 5	6	RPD
Carbon Tetrachloride	7.4	3.8	64
1,1- Dichloroethene	1.7	1.1	43
1,1,2- Trichlorotrifluoroethane	1.3	ND	200

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD