Fort Ord OU-C Bio Pilot Study
Data Validation Reports
LDC# 11696

Volatiles

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Fort Ord OU-C Bio Pilot Study

Collection Date: February 3, 2004

LDC Report Date: March 24, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Curtis & Tompkins, Ltd.

Sample Delivery Group (SDG): 170384

Sample Identification

A
B
C
D
E

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows the HLA Chemical Data Quality Management Plan (CDQMP), Former Fort Ord Complex, Monterey County, California, July 22, 1997.

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 XVI.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

U Data are qualified as non-detected, because the analyte was observed in an associated laboratory or field blank.

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.

All samples were received in good condition with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All samples in SDG 170384	All TCL compounds	A headspace of >2 ml was apparent in the sample containers.	There should be no headspace in the sample containers.	J (all detects) UJ (all non-detects)	A

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

Initial calibration verification (ICV) percent differences (%D) were within the QC limits for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

The continuing calibration RRF values of the initial calibration verification (ICV) were within method and validation criteria.

V. Blanks

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

No field blanks were identified in this SDG.

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All samples in SDG 170384	All TCL compounds	No MS/MSD associated with these samples.	MS/MSD required.	None	P

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Fort Ord OU-C Bio Pilot Study
Volatiles - Data Qualification Summary - SDG 170384

SDG	Sample	Compound	Flag	A or P	Reason
170384	A B C D E	All TCL compounds	J (all detects) UJ (all non-detects)	A	Sample condition
170384	A B C D E	All TCL compounds	None	P	Matrix spike/Matrix spike duplicates

Fort Ord OU-C Bio Pilot Study
Volatiles - Laboratory Blank Data Qualification Summary - SDG 170384

No Sample Data Qualified in this SDG

Fort Ord OU-C Bio Pilot Study
Volatiles - Field Blank Data Qualification Summary - SDG 170384

No Sample Data Qualified in this SDG

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	170384	Location:	CC14 Microcosm Ft. Ord
Client:	Cyto Culture International	Prep:	EPA 5030B
Project#:	03-165	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	02/03/04
Units:	ug/L	Received:	02/03/04

Field ID: A
Type: SAMPLE
Lab ID: 170384-001

Analyte	Result		RL	Diln Fac	Batch#	Analyzed
Chloroform	880	J	50	10.00	88222	02/05/04
Carbon Tetrachloride	2,400	J	130	25.00	88273	02/06/04

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	102	80-121	10.00	88222	02/05/04
1,2-Dichloroethane-d4	99	77-129	10.00	88222	02/05/04
Toluene-d8	107	80-120	10.00	88222	02/05/04
Bromofluorobenzene	103	80-123	10.00	88222	02/05/04

Field ID: B
Type: SAMPLE
Lab ID: 170384-002

Analyte	Result		RL	Diln Fac	Batch#	Analyzed
Chloroform	510	J	130	25.00	88222	02/05/04
Carbon Tetrachloride	5,500	J	200	40.00	88273	02/06/04

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	110	80-121	25.00	88222	02/05/04
1,2-Dichloroethane-d4	96	77-129	25.00	88222	02/05/04
Toluene-d8	100	80-120	25.00	88222	02/05/04
Bromofluorobenzene	95	80-123	25.00	88222	02/05/04

Field ID: C
Type: SAMPLE
Lab ID: 170384-003
Diln Fac: 40.00
Batch#: 88222
Analyzed: 02/05/04

Analyte	Result		RL
Chloroform	240	J	200
Carbon Tetrachloride	7,800	J	200

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-121
1,2-Dichloroethane-d4	96	77-129
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-123

~33401

ND= Not Detected
RL= Reporting Limit
Page 1 of 3

1.0

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	170384	Location:	CC14 Microcosm Ft. Ord
Client:	Cyto Culture International	Prep:	EPA 5030B
Project#:	03-165	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	02/03/04
Units:	ug/L	Received:	02/03/04

Field ID:	D	Diln Fac:	40.00
Type:	SAMPLE	Batch#:	88222
Lab ID:	170384-004	Analyzed:	02/05/04

Analyte	Result	RL
Chloroform	ND UJ	200
Carbon Tetrachloride	5,800 J	200

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-121
1,2-Dichloroethane-d4	99	77-129
Toluene-d8	105	80-120
Bromofluorobenzene	98	80-123

Field ID:	E	Batch#:	88273
Type:	SAMPLE	Analyzed:	02/06/04
Lab ID:	170384-005		

Analyte	Result	RL	Diln Fac
Chloroform	ND UJ	100	20.00
Carbon Tetrachloride	3,400 J	200	40.00

Surrogate	%REC	Limits	Diln Fac
Dibromofluoromethane	105	80-121	20.00
1,2-Dichloroethane-d4	105	77-129	20.00
Toluene-d8	96	80-120	20.00
Bromofluorobenzene	97	80-123	20.00

Type:	BLANK	Batch#:	88222
Lab ID:	QC240028	Analyzed:	02/05/04
Diln Fac:	1.000		

Analyte	Result	RL
Chloroform	ND UJ	5.0
Carbon Tetrachloride	ND UJ	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-121
1,2-Dichloroethane-d4	101	77-129
Toluene-d8	96	80-120
Bromofluorobenzene	100	80-123

ND= Not Detected
RL= Reporting Limit

LDC #: 11696A1
SDG #: 170384
Laboratory: Curtis & Tompkins, Ltd.

VALIDATION COMPLETENESS WORKSHEET
Level III

Date: 3/23/04
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

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	SW	Sampling dates: 2/3/04
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	70D & 1CV
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	None/P
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	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: MH2O's

1 1/2	A	11		21		31	
2 1/2	B	12		22		32	
3 1	C	13		23		33	
4 1	D	14		24		34	
5 2	E	15		25		35	
6 1	88222MB	16		26		36	
7 2	88273MB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 11696A1
SDG #: 170387

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 2

All circled dates have exceeded the technical holding times.
(Y) N N/A Were all cooler temperatures within validation criteria?

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
All	headspace						Y/N/A

TECHNICAL HOLDING TIME CRITERIA

Water unpreserved:	Aromatic within 7 days, non-aromatic within 14 days of sample collection.
Water preserved:	Both within 14 days of sample collection.
Soil:	Both within 14 days of sample collection.

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Fort Ord OU-C Bio Pilot Study

Collection Date: December 15, 2003

LDC Report Date: March 23, 2004

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level IV

Laboratory: Curtis & Tompkins, Ltd.

Sample Delivery Group (SDG): 169446

Sample Identification

A
B
C
D
E-NEG

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows the HLA Chemical Data Quality Management Plan (CDQMP), Former Fort Ord Complex, Monterey County, California, July 22, 1997.

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 XVI.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

U Data are qualified as non-detected, because the analyte was observed in an associated laboratory or field blank.

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. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

Initial calibration verification (ICV) percent differences (%D) were within the QC limits for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

The continuing calibration RRF values of the initial calibration verification (ICV) were within method and validation criteria.

V. Blanks

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

No field blanks were identified in this SDG.

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All samples in SDG 169446	All TCL compounds	No MS/MSD associated with these samples.	MS/MSD required.	None	P

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Fort Ord OU-C Bio Pilot Study
Volatiles - Data Qualification Summary - SDG 169446

SDG	Sample	Compound	Flag	A or P	Reason
169446	A B C D E-NEG	All TCL compounds	None	P	Matrix spike/Matrix spike duplicates

Fort Ord OU-C Bio Pilot Study
Volatiles - Laboratory Blank Data Qualification Summary - SDG 169446

No Sample Data Qualified in this SDG

Fort Ord OU-C Bio Pilot Study
Volatiles - Field Blank Data Qualification Summary - SDG 169446

No Sample Data Qualified in this SDG

11696 B

Curtis & Tompkins, Ltd.

Purgeable Halocarbons by GC/MS

Lab #:	169446	Location:	CC14 Microcosm Ft. Ord
Client:	Cyto Culture International	Prep:	EPA 5030B
Project#:	03-165	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	12/15/03
Units:	ug/L	Received:	12/15/03

Field ID:	A	Diln Fac:	40.00
Type:	SAMPLE	Batch#:	87142
Lab ID:	169446-001	Analyzed:	12/23/03

Analyte	Result	RL
Carbon Tetrachloride	3,200	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	77-129
Toluene-d8	102	80-120
Bromofluorobenzene	99	80-123

Field ID:	B	Diln Fac:	40.00
Type:	SAMPLE	Batch#:	87042
Lab ID:	169446-002	Analyzed:	12/18/03

Analyte	Result	RL
Carbon Tetrachloride	5,100	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	77-129
Toluene-d8	107	80-120
Bromofluorobenzene	104	80-123

Field ID:	C	Diln Fac:	40.00
Type:	SAMPLE	Batch#:	87042
Lab ID:	169446-003	Analyzed:	12/18/03

Analyte	Result	RL
Carbon Tetrachloride	7,500	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	77-129
Toluene-d8	101	80-120
Bromofluorobenzene	110	80-123

Field ID:	D	Diln Fac:	40.00
Type:	SAMPLE	Batch#:	87042
Lab ID:	169446-004	Analyzed:	12/18/03

Analyte	Result	RL
Carbon Tetrachloride	5,200	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	77-129
Toluene-d8	107	80-120
Bromofluorobenzene	97	80-123

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

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Curtis & Tompkins, Ltd.

Purgeable Halocarbons by GC/MS

Lab #:	169446	Location:	CC14 Microcosm Ft. Ord
Client:	Cyto Culture International	Prep:	EPA 5030B
Project#:	03-165	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	12/15/03
Units:	ug/L	Received:	12/15/03

Field ID:	E-NEG	Diln Fac:	40.00
Type:	SAMPLE	Batch#:	87142
Lab ID:	169446-005	Analyzed:	12/23/03

Analyte	Result	RL
Carbon Tetrachloride	4,600	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	77-129
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-123

Type:	BLANK	Batch#:	87042
Lab ID:	QC235588	Analyzed:	12/18/03
Diln Fac:	1.000		

Analyte	Result	RL
Carbon Tetrachloride	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	106	77-129
Toluene-d8	98	80-120
Bromofluorobenzene	102	80-123

Type:	BLANK	Batch#:	87042
Lab ID:	QC235589	Analyzed:	12/18/03
Diln Fac:	1.000		

Analyte	Result	RL
Carbon Tetrachloride	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	77-129
Toluene-d8	107	80-120
Bromofluorobenzene	105	80-123

Type:	BLANK	Batch#:	87142
Lab ID:	QC235973	Analyzed:	12/22/03
Diln Fac:	1.000		

Analyte	Result	RL
Carbon Tetrachloride	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	77-129
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-123

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

1.0

LDC #: 11696B1
SDG #: 169446
Laboratory: Curtis & Tompkins, Ltd.

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 3/22/04
Page: 1 of 1
Reviewer: 9
2nd Reviewer: ~

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

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: 12/15/03
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	7DD & ICV
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	None/P
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	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:

1 1	A W	11 1	8T142MB	21		31	
2 2	B	12 2	8T042MB	22		32	
3 2	C	13		23		33	
4 2	D	14		24		34	
5 1	E-NEG	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 11696B1
SDG #: 169446

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 2

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	

LDC #: 11696B1
SDG #: 16944b

VALIDATION FINDINGS CHECKLIST

Reviewer: R
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	

LDC #: 116963I
SDG #: 16944

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 9

Validation Area	Yes	No	NA	Findings/Comments
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL.
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM.
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 11696B1
SDG #: 169446

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (50 std)	Recalculated RRF (50 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	1CALC	12/11/03	~~Methylene chloride~~ K (1st internal standard)	0.6304	0.6304	0.6304	0.6304	3	3
			~~Trichlorethene~~ O (2nd internal standard)	0.3021	0.3021	0.2921	0.2921	3	3
			Toluene (3rd internal standard)						
2	1CALC	12/15/03	~~Methylene chloride~~ K (1st internal standard)	0.4479	0.4479	0.4365	0.4365	4	4
			~~Trichlorethene~~ O (2nd internal standard)	0.1641	0.1641	0.1587	0.1587	8	8
			Toluene (3rd internal standard)						
3			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						
4			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 11696B1
SDG #: 16946

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 4
2nd Reviewer: 2

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	e113	12/18/03	~~Methylene chloride~~ Dichloromethane (1st internal standard)	0.6304	0.6212	0.6212	1	1
			~~Trichlorethene~~ Trichloroethene (2nd internal standard)	0.2921	0.2606	0.2606	11	11
			Toluene (3rd internal standard)					
2	k|m10	12/22/03	~~Methylene chloride~~ Dichloromethane (1st internal standard)	0.4365	0.4633	0.4633	6	6
			~~Trichlorethene~~ Trichloroethene (2nd internal standard)	0.1587	0.1699	0.1699	7	7
			Toluene (3rd internal standard)					
3			Methylene chloride (1st internal standard)					
			Trichlorethene (2nd internal standard)					
			Toluene (3rd internal standard)					
4			Methylene chloride (1st internal standard)					
			Trichlorethene (2nd internal standard)					
			Toluene (3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 11696B1
SDG #: 169446

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	50	50.7674	102	102	0
Bromofluorobenzene	↓	49.4233	99	99	↓
1,2-Dichloroethane-d4	↓	51.6890	103	103	↓
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 11696B1
SDG #: 16944b

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: +
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: 8T042 BS/BSD

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~1,1-Dichloroethene~~ ~~K~~										
Trichloroethene 0	50	50	51.28	51.79	103	103	104	104	1	1
Benzene										
Toluene										
~~Chlorobenzene~~										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 11696B1
SDG #: 169446

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 2, K:

Conc. = $\frac{(18058)(50)(40)}{(109404)(0.6304)(\ )(\ )} = 524.9$ ug/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

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

MACTEC E&C
5341 Old Redwood Highway, Suite 300
Peteluma, CA 94954
ATTN: Ms. Debbie Leibensberger

June 10, 2004

SUBJECT: Fort Ord ~~2nd Quarter 2004 Basewide Data Validation~~ QC CAP Pilot Study, Project #5559600131, WO/PO #MEC07030377.

Dear Ms. Leibensberger,

Enclosed are the final validation reports and Excel qualification sheets for the fractions listed below. These SDGs were received on May 28, 2004.

LDC Project # 12022:

SDG#	**Fraction**
P404353, P404394	Volatiles (EPA Test Method 8260B) Ferric Iron (EPA Test Method 6010B) Methane (EPA Test Method RSK-175) TOC (EPA Test Method 415.1) Nitrate/Nitrite as Nitrogen (EPA Test Method 353.2) Bromide & Sulfate (EPA Test Method 300.0) Ferrous Iron (EPA Test Method 8146)

The following deliverables are submitted under this report:

- Attachment I — Sample ID Cross Reference and Data Review Level
- Attachment II — Overall Data Qualification Summary
- Attachment III — MACTEC Database Qualification Summary
- Enclosure I — EPA Level III ADR Outliers

The data validation was performed in accordance to the MACTEC "Basewide Chemical Data Quality Managment Plan (CDQMP) Former Fort Ord Complex, California, Draft Final, September 2002". Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience. The following items were evaluated during the review:

- Holding Times
- Sample Preservation
- Cooler Temperatures
- Initial Calibration
- Continuing Calibration
- Blanks
- Surrogates

- Matrix Spike/Matrix Spike Duplicates
- Laboratory Control Samples
- Detection and Quantitation Limits
- Field QC Samples

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

Sincerely,

Stacey A. Swenson
Operations Manager/ Senior Chemist