



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
Environmental Sciences Center  
701 Mapes Road  
Fort Meade, Maryland 20755-5350

DATE : June 30, 2010  
SUBJECT: Region III Data QA Review  
FROM: Colleen Walling *Colleen K. Walling*  
Region III ESAT RPO (3EA20)  
TO: Mike Towle  
Regional Project Manager (3HS31)

Attached is the organic data validation report for the Lin Electric Co. site (Case #: 40087; SDG#: C01H9) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, call me at (410) 305-2763.

Attachment

cc: Gene Nance (Tech Law)

TO: #0027 TDF: #06072

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

Lockheed Martin IS & GS-Civil  
Energy & Environment  
ESAT Region 3  
US EPA Environmental Science Center  
701 Mapes Road Ft. Meade, MD 20755-5350  
Telephone 410-305-3037 Facsimile 410-305-3597



**DATE:** June 24, 2010

**SUBJECT:** Organic Data Validation (M2 Level)  
Case: 40087  
SDG: C01H9  
Site: Lin Electric Company

**FROM:** Habteab Ghebreyesus *HG*  
Organic Data Reviewer

Mahboobeh Mecanic *MM*  
Senior Oversight Chemist

**TO:** Colleen Walling  
ESAT Region 3 Project Officer

### OVERVIEW

Case 40087, Sample Delivery Group (SDG) C01H9, consisted of seven (7) aqueous samples submitted to KAP Technologies, Inc. (KAP) for trace volatile compounds. The sample set included one (1) field blank, one (1) rinsate blank, one (1) trip blank and one (1) field duplicate pair. Samples were analyzed according to Contract Laboratory Program (CLP) Statement of Work (SOW) SOM01.2 through the Routine Analytical Services (RAS) program.

### SUMMARY

Data were validated according to Innovative Approaches for Validation of Organic Data, Level M2. This level of review includes assessment of all Quality Assurance/Quality Control (QA/QC) data and review of chromatograms, but excludes review of raw data and sample spectra. Areas that may impact data usability are listed below.

### MINOR PROBLEMS

- Several compounds failed precision criteria [percent difference (%D)] in the trace volatile continuing calibrations. Positive results reported for these compounds in affected samples were qualified "J" on the DSFs unless superseded by "B". The precision did not exceed the fifty percent (50%) criteria; therefore, quantitation limits were not qualified.

- Trace volatile sample C01J5 had recovery of Deuterated Monitoring Compounds (DMC) vinyl chloride-d3 outside the upper control limit. The "K" qualifier for positive result (vinyl chloride) associated with this DMC in this sample has been superseded by "J" on the DSF.
- In the trace volatile analyses, recoveries of DMCs listed below were outside the lower control limits in samples listed. Positive results for compounds associated with these DMCs were qualified "L" unless superseded by "B". Quantitation limits for compounds associated with these DMCs were qualified "UL" on the DSFs.

<u>DMC</u>	<u>Samples</u>
1,2-Dichloroethane-d4	C01H9, C01J0, C01J1, C01J2, C01J3
trans-1,3-Dichloropropene-d4	C01J0, C01J1, C01J3, C01J4
1,1,2,2-Tetrachloroethane-d2	All samples

### NOTES

- Recovery of DMC chloroethane-d5 was outside the upper control limit in trace volatile samples C01H9, C01J2, C01J4 and C01J5. No positive results were reported for compounds associated with this DMC in these samples and no data were qualified based on this finding.
- Concentrations of target compounds found in the volatile analysis of the storage and trip blanks are listed below. Samples with concentrations of these common laboratory contaminants less than ten times (<10X) the blank concentrations have been qualified "B" on the DSFs.

<u>Blanks</u>	<u>Compound</u>	<u>Concentration (ug/L)</u>	<u>Affected Samples</u>
Storage (VHBLK2C)	Methylene Chloride	0.38 J	C01J2, C01J3, C01J4, C01J5
Trip (C01J1)	Acetone	2.0 J	C01J3, C01J5

- Results for field duplicate pairs C01J4/C01J5 were comparable.
- The concentration of cis-1,2-dichloroethene and trichloroethene in the following samples exceeded the calibration range in the initial trace volatile analyses. These samples were diluted and reanalyzed to bring the concentrations of these compounds within the calibration range. Results for these compounds are reported from the diluted analysis and annotated with (+) symbol on the DSFs by the reviewer.

<u>Samples</u>	<u>Dilution Factor</u>	<u>Compounds</u>
C01J2	25X	cis-1,2-Dichloroethene, Trichloroethene
C01J4, C01J5	5X	Trichloroethene

- No Tentatively Identified Compounds (TICs) were detected in these samples.

- Compounds detected below Contract Required Quantitation Limits (CRQLs) were qualified “J” on DSFs unless superseded by “B”.
- The diluted analysis of volatile samples C01J4 (C01J4DL) and C01J5 (C01J5DL) had recovery of DMC 1,1,2,2-Tetrachloroethane-d2 outside the lower QC limits. No data were qualified based on this finding, since compounds associated with this DMC were reported from the undiluted analysis of these samples.

All data for Case 40087, SDG C01H9, were reviewed in accordance with EPA Region 3 Innovative Approaches (Level M2) for Validation of Organic Data, June 1995.

### **ATTACHMENTS**

- 1) Appendix A Glossary of Data Qualifier Terms
- 2) Appendix B Data Summary Forms
- 3) Appendix C Chain-of-Custody Records
- 4) Appendix D Laboratory Case Narrative

DCN: 40087\_C01H9

## Appendix A

### Glossary of Data Qualifier Codes

## **GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)**

### **CODES RELATED TO IDENTIFICATION**

(confidence concerning presence or absence of analytes):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

### **CODES RELATED TO QUANTITATION**

(can be used for both positive results and sample quantitation limits):

J = Analyte Present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

### **OTHER CODES**

NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.

Q = No analytical result.

**Appendix B**  
**Data Summary Forms**

DATA SUMMARY FORM: Trace Volatiles

Case #: 40087

SDG : C01H9

Number of Soil Samples : 0

Site :

LIN ELECTRIC COMPANY

Number of Water Samples : 7

Lab. :

A4

Number of Sediment Samples : 0

Sample Number :	C01H9	C01J0	C01J1	C01J2	C01J3						
Sampling Location :	FB01	RB01	TB01	TW01	TW02						
Field QC:	Field Blank	Rinsate Blank	Trip Blank								
Matrix :	Water	Water	Water	Water	Water						
Units :	ug/L	ug/L	ug/L	ug/L	ug/L						
Date Sampled :	6/1/2010	6/1/2010	6/1/2010	6/1/2010	6/1/2010						
Time Sampled :	15:45	17:25	13:25	14:45	17:05						
pH :	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2						
Dilution Factor :	1.0	1.0	1.0	1.0/25.0	1.0						
Trace Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	0.50										
Chloromethane	0.50										
*Vinyl chloride	0.50					6.3					
Bromomethane	0.50										
Chloroethane	0.50										
Trichlorofluoromethane	0.50		UL		UL		UL		UL		UL
*1,1-Dichloroethene	0.50					1.7	J				
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50		UL		UL		UL		UL		UL
Acetone	5.0	1.4	J	1.8	J	2.0	J			2.8	B
Carbon Disulfide	0.50										
Methyl acetate	0.50		UL		UL		UL		UL		UL
*Methylene chloride	0.50		UL		UL		UL	0.63	B	0.89	B
trans-1,2-Dichloroethene	0.50							0.62			
Methyl tert-butyl ether	0.50		UL		UL		UL		UL		UL
1,1-Dichloroethane	0.50							0.88			
cis-1,2-Dichloroethene	0.50							88 +		2.4	
*2-Butanone	5.0										
Bromochloromethane	0.50										
Chloroform	0.50										
*1,1,1-Trichloroethane	0.50		UL		UL		UL	7.8	L		UL
Cyclohexane	0.50										
*Carbon tetrachloride	0.50		UL		UL		UL		UL		UL
*Benzene	0.50										
*1,2-Dichloroethane	0.50		UL		UL		UL		UL		UL
Trichloroethene	0.50							200 +		3.0	
Methylcyclohexane	0.50										
*1,2-Dichloropropane	0.50										
Bromodichloromethane	0.50										
cis-1,3-Dichloropropene	0.50				UL		UL				UL
4-Methyl-2-pentanone	5.0										
*Toluene	0.50	0.17	J	0.19	J	0.18	J				
trans-1,3-Dichloropropene	0.50				UL		UL				UL
1,1,2-Trichloroethane	0.50				UL		UL				UL

+ = Reported from dilution

Case #: 40087

SDG : C01H9

Site :

LIN ELECTRIC COMPANY

Lab. :

A4

Sample Number :	C01H9	C01J0	C01J1	C01J2	C01J3						
Sampling Location :	FB01	RB01	TB01	TW01	TW02						
Field QC:	Field Blank	Rinsate Blank	Trip Blank								
Matrix :	Water	Water	Water	Water	Water						
Units :	ug/L	ug/L	ug/L	ug/L	ug/L						
Date Sampled :	6/1/2010	6/1/2010	6/1/2010	6/1/2010	6/1/2010						
Time Sampled :	15:45	17:25	13:25	14:45	17:05						
pH :	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2						
Dilution Factor :	1.0	1.0	1.0	1.0/25.0	1.0						
Trace Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*Tetrachloroethene	0.50							3.5			
2-Hexanone	5.0										
Dibromochloromethane	0.50										
1,2-Dibromoethane	0.50		UL		UL		UL		UL		UL
*Chlorobenzene	0.50										
*Ethylbenzene	0.50										
o-Xylene	0.50										
m,p-Xylene	0.50										
*Styrene	0.50										
Bromoform	0.50										
Isopropylbenzene	0.50										
1,1,2,2-Tetrachloroethane	0.50		UL		UL		UL		UL		UL
*1,3-Dichlorobenzene	0.50										
*1,4-Dichlorobenzene	0.50										
1,2-Dichlorobenzene	0.50										
1,2-Dibromo-3-chloropropane	0.50		UL		UL		UL		UL		UL
1,2,4-Trichlorobenzene	0.50										
1,2,3-Trichlorobenzene	0.50										

CRQL = Contract Required Quantitation Limit

\*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL \* Dilution Factor)

Revised 09/99

Case #: 40087

SDG : C01H9

Site :

LIN ELECTRIC COMPANY

Lab. :

A4

Sample Number :		C01J4	C01J5								
Sampling Location :		TW03	TW10								
Field QC:		Dup of C01J5	Dup of C01J4								
Matrix :		Water	Water								
Units :		ug/L	ug/L								
Date Sampled :		6/1/2010	6/1/2010								
Time Sampled :		20:20	20:32								
pH :		≤ 2	≤ 2								
Dilution Factor :		1.0/5.0	1.0/5.0								
Trace Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	0.50										
Chloromethane	0.50										
*Vinyl chloride	0.50			0.12	J						
Bromomethane	0.50										
Chloroethane	0.50										
Trichlorofluoromethane	0.50										
*1,1-Dichloroethene	0.50										
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50										
Acetone	5.0			0.76	B						
Carbon Disulfide	0.50										
Methyl acetate	0.50										
*Methylene chloride	0.50	1.8	B	2.0	B						
trans-1,2-Dichloroethene	0.50										
Methyl tert-butyl ether	0.50										
1,1-Dichloroethane	0.50										
cis-1,2-Dichloroethene	0.50	6.5		6.6							
*2-Butanone	5.0										
Bromochloromethane	0.50										
Chloroform	0.50										
*1,1,1-Trichloroethane	0.50										
Cyclohexane	0.50										
*Carbon tetrachloride	0.50										
*Benzene	0.50										
*1,2-Dichloroethane	0.50										
Trichloroethene	0.50	40 +		36 +							
Methylcyclohexane	0.50										
*1,2-Dichloropropane	0.50										
Bromodichloromethane	0.50										
cis-1,3-Dichloropropene	0.50		UL								
4-Methyl-2-pentanone	5.0										
*Toluene	0.50										
trans-1,3-Dichloropropene	0.50		UL								
1,1,2-Trichloroethane	0.50		UL								

+ = Reported from dilution

DATA SUMMARY FORM: Trace Volatiles

Case #: 40087

SDG : C01H9

Site :

LIN ELECTRIC COMPANY

Lab. :

A4

Sample Number :	C01J4	C01J5									
Sampling Location :	TW03	TW10									
Field QC:	Dup of C01J5	Dup of C01J4									
Matrix :	Water	Water									
Units :	ug/L	ug/L									
Date Sampled :	6/1/2010	6/1/2010									
Time Sampled :	20:20	20:32									
pH :	≤ 2	≤ 2									
Dilution Factor :	1.0/5.0	1.0/5.0									
Trace Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*Tetrachloroethene	0.50	1.1		0.97							
2-Hexanone	5.0										
Dibromochloromethane	0.50										
1,2-Dibromoethane	0.50										
*Chlorobenzene	0.50										
*Ethylbenzene	0.50										
o-Xylene	0.50										
m,p-Xylene	0.50										
*Styrene	0.50										
Bromoform	0.50										
Isopropylbenzene	0.50										
1,1,2,2-Tetrachloroethane	0.50		UL		UL						
*1,3-Dichlorobenzene	0.50										
*1,4-Dichlorobenzene	0.50										
1,2-Dichlorobenzene	0.50										
1,2-Dibromo-3-chloropropane	0.50		UL		UL						
1,2,4-Trichlorobenzene	0.50										
1,2,3-Trichlorobenzene	0.50										

CRQL = Contract Required Quantitation Limit

\*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL \* Dilution Factor)

Revised 09/99

## **Appendix C**

### **Chain-of-Custody Records**

# U.S EPA Region III Analytical Request Form

JES 4-22-10

<b>OASQA USE ONLY</b>	
<b>Control #</b>	GT 4951
<b>DAS#</b>	RAS #
<b>PES #</b>	NSF #
	Analytical TAT <b>14 days</b>

40087

Date: 4/20/10		Site Activity: Removal	
Site Name: Lin Electric Company		Street Address: 1400 Bluefield Avenue	
City: Bluefield	State: WV	Latitude:	Longitude:
Program: Superfund	Acct. #: 2010 TO3N302DC6CA3CNRV00	CERCLIS #: WVN000306141	
Site ID: A3CN	Spill ID:	Operable Unit:	
Site Specific QA Plan Submitted: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		Title: Sampling QA/QC Work Plan Addendum 6	Date Approved: 4/20/10
EPA Project Leader: Mike Towle	Phone#: 215-287-2443	Cell Phone #: 215-287-2443	E-mail: towle.michael@epa.gov
Request Preparer: Gene Nance	Phone#: 740-867-0968	Cell Phone #: 304-830-1442	E-mail: gnance@techlawinc.com
Site Leader: Gene Nance	Phone#: 740-867-0968	Cell Phone #: 304-830-1442	E-mail: gnance@techlawinc.com
Contractor: TechLaw, Inc			
EPA CO/PO: A. Blaney/K. Wodarsyk/D. Jones			
#Samples 7	Matrix: groundwater	Parameter: TCL Trace VOA	Method: SOM01.2
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
Ship Date From: May 24, 2010	Ship Date To: May 28, 2010	Org. Validation Level M2	Inorg. Validation Level IM1
Unvalidated Data Requested: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If Yes, TAT Needed: <input checked="" type="checkbox"/> 14days <input type="checkbox"/> 7days <input type="checkbox"/> 48hrs <input type="checkbox"/> 24hrs <input type="checkbox"/> Other: <b>by ESAT</b>			
Validated Data Package Due: <input type="checkbox"/> 42 days <input checked="" type="checkbox"/> 30 days <input type="checkbox"/> 14 days <input type="checkbox"/> Other (Specify) <b>14/16</b>			
Electronic Data Deliverables Required: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (EDDs will be provided in Region 3 EDD Format)			
Special Instructions: Detection Levels - Method CRQLs For SOM01.2. TCL attached.			



**USEPA Contract Laboratory Program  
Organic Traffic Report & Chain of Custody Record**

Case No: 40087

R

Region: 3		Date Shipped: 6/2/2010	
Project Code: CT4951	Carrier Name: FedEx	Reiniquished By (Date / Time)	
Account Code: 10TOSN302DC6CA3CNRV00	Airbill: 8713 3012 8608	Sampler Signature:	
CERCLIS ID: WVN000306141	Shipped to: A4 Scientific	Received By (Date / Time)	
Spill ID: A3CN	1544 Sawdust Road	1	
Site Name/State: Lin Electric Company/WV	Suite 505	2	
Project Leader: Gene Nance	The Woodlands TX 77380	3	
Action: Removal Action	(281) 292-5277	4	
Sampling Co: TechLaw, Inc.			

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	QC Type
C01H9	Field QC/ Gene Nance	L/G	TVOA (14)	31494 (HCL), 31495 (HCL), 31496 (HCL) (3)	FB01	S: 6/1/2010 15:45		Field Blank
C01J0	Field QC/ Gene Nance	L/G	TVOA (14)	31497 (HCL), 31498 (HCL), 31499 (HCL) (3)	RB01	S: 6/1/2010 17:25		Rinsate
C01J1	Field QC/ Gene Nance	L/G	TVOA (14)	31500 (HCL), 31501 (HCL), 31502 (HCL) (3)	TB01	S: 6/1/2010 13:25		Trip Blank
C01J2	Ground Water/ Gene Nance	L/G	TVOA (14)	31503 (HCL), 31504 (HCL), 31505 (HCL) (3)	TW01	S: 6/1/2010 14:45		-
C01J3	Ground Water/ Gene Nance	L/G	TVOA (14)	31506 (HCL), 31507 (HCL), 31508 (HCL) (3)	TW02	S: 6/1/2010 17:05		-
C01J4	Ground Water/ Gene Nance	L/G	TVOA (14)	31509 (HCL), 31510 (HCL), 31511 (HCL) (3)	TW03	S: 6/1/2010 20:20		Field Duplicate of TW10
C01J5	Ground Water/ Gene Nance	L/G	TVOA (14)	31512 (HCL), 31513 (HCL), 31514 (HCL) (3)	TW10	S: 6/1/2010 20:32		Field Duplicate of TW03

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: TVOA = CLP TCL Trace Volatiles (AQ)	Concentration: L = Low, M = Low/Medium, H = High Type/Designate: Composite = C, Grab = G		Shipment Iced? _____

**TR Number: 3-174383947-060210-0001**

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, 2000 Edmund Halley Dr., Reston, VA. 20191-3400 Phone 703/264-9348 Fax 703/264-9222

**REGION COPY**

## Appendix D

### Laboratory Case Narrative

Contract #: EPW05036	Case #: 40087	SDG #: C01H9
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SDG NARRATIVE

**SAMPLE RECEIPT & LOGIN**

The following samples were received on the dates listed against them. The samples were logged in for analysis as listed.

<u>Client Sample</u>	<u>Lab Sample</u>	<u>Matrix</u>	<u>#Cont.</u>	<u>Received</u>	<u>Analysis</u>	<u>Comments</u>
C01H9	0012202-01	Water	3	06/03/10 09:45	SOM01.2 VOA TRACE	1st Sx
C01J0	0012202-02	Water	3	06/03/10 09:45	SOM01.2 VOA TRACE	
C01J1	0012202-03	Water	3	06/03/10 09:45	SOM01.2 VOA TRACE	
C01J2	0012202-04	Water	3	06/03/10 09:45	SOM01.2 VOA TRACE	
C01J3	0012202-05	Water	3	06/03/10 09:45	SOM01.2 VOA TRACE	
C01J4	0012202-06	Water	3	06/03/10 09:45	SOM01.2 VOA TRACE	
C01J5	0012202-07	Water	3	06/03/10 09:45	SOM01.2 VOA TRACE	
VHBLK2C	0012202-08	Water	2	06/03/10 09:45	SOM01.2 VOA TRACE	

The cooler temperatures are listed against the coolers.

DATE RECEIVED	COOLER NO.	Temp (in °C)	Airbill No.
06/03/2010	1	4.0	871330128608

No discrepancies or issues were noted during sample receipt and login.

**VOLATILES TRACE**

Samples were analyzed using instrument H-5975.

Instrument H-5975 consisted of an Agilent 5975 GC/MS with a 25-meter long DB-624 (Agilent cat#128-1324) column having a 0.2mm ID and 1.12µm film thickness, OI Purge and Trap Model 4560 with an Archon auto sampler. The trap used was a #10 trap (OI Cat# 228122) having an approximate composition of 40% Tenax, 30% Silica gel and 30% CMS.

All VOA samples had the pH characteristics verified. The reading is listed below.

EPA SAMPLE #	LAB SAMPLE #	pH
C01H9	001202-01	≤ 2
C01J0	001202-02	≤ 2
C01J1	001202-03	≤ 2
C01J2	001202-04	≤ 2
C01J3	001202-05	≤ 2
C01J4	001202-06	≤ 2
C01J5	001202-06	≤ 2

000000001

A4 SCIENTIFIC, INC.  
1544 Sawdust Road, Suite 505 • The Woodlands, TX 77380 • Phone (281) 292-5277

Contract #: EPW05036	Case #: 40087	SDG #: C01H9
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The following samples were run at dilution, listed against them to get all the compounds within range.

EPA SAMPLE ID	DILUTION
C01J2	25.0
C01J4	5.0
C01J5	5.0

Manual integrations were performed for the following samples for the compounds listed against them.

Compound	EPA Sample ID
Vinylchloride d3	C01H9, C01J0, C01J1, C01J3, C01J4, VSTD0058Z,
Chloroethane-d5	C01H9, C01J0, C01J1, C01J3, VSTD0208A,
Trichlorofluoromethane	VSTD0058A, VSTD0058A,
Bromoform	VSTD0.58A,
Bromomethane	VSTD0208A,
Chloroethane	VSTD0208A,
Acetone	VSTD0058U,
Chloromethane	VSTD0058X,

These manual integrations were necessary because the software failed to accurately integrate the entire peak. In all the above instances, the quantitation reports are flagged with "m". A hard copy printout of the manual integration, the scan ranges, and initials of the analyst or manager is included in the data package.

The following equations were used for calculation of the sample results from raw instrument output data:

**VOLATILES**

**Water (Low/Med, Trace & SIM):**

$$\text{Concentration } (\mu\text{g/L}) = \frac{(A_x)(I_s)(Df)}{(A_{is})(RRF)(V_o)}$$

A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured.

A<sub>is</sub> = Area of the characteristic ion (EICP) for the internal standard.

I<sub>s</sub> = Amount of internal standard added in nanograms (ng).

RRF = Mean relative response factor from the initial calibration.

V<sub>o</sub> = Total volume of water purged, in milliliters (mL).

Df = Dilution factor.

I certify that this Sample Data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy Sample Data Package and in the electronic data deliverable has been authorized by the laboratory Manager or Manager's designee, as verified by the following signature.

*Sone. Turapalli QA specialist*  
\_\_\_\_\_  
Signature and Title

*06/16/10*

\_\_\_\_\_  
Date of Signature