ARCADIS
Infrastructure · Water · Environment · Buildings

ARCADIS of New York, Inc.
855 Route 146
Suite 210
Clifton Park
New York 12065
Tel 518 250 7300
Fax 518 250 7301

Transmittal Letter

To:
Ms. Ruth Curley, P.E.
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B – 12th Floor
625 Broadway
Albany, New York 12207-2942

Copies:
Charles Trione, Lockheed Martin
James Zigmont, CDM
Greg Rys, NYSDOH
Dale Truskett, Lockheed Martin
Kay Armstrong, Armstrong & Assoc.
Mary Morningstar, Lockheed Martin
Richard Zigenfus, ConMed
Glenda Smith, Lockheed Martin
Virginia Robbins, BS&K
File

From:
Lisa Collins

Date:
April 18, 2013

Subject:
Former Northern Perimeter Ditch Off-Site Vapor Intrusion Pathway Evaluation Report

ARCADIS Project No.:
NJ001032.0001

We are sending you:

☒ **Attached** ☐ **Under Separate Cover Via _____ the Following Items:**

☐ Shop Drawings ☐ Plans ☐ Specifications ☐ Change Order
☐ Prints ☐ Samples ☐ Copy of Letter ☒ Reports
☐ Other:

Copies	Date	Description	Action*
1	2/14/13	Former Northern Perimeter Ditch Off-Site Vapor Intrusion Pathway Evaluation Report, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York	AS

Action*

☐ A Approved ☐ CR Correct and Resubmit ☐ Resubmit _____ Copies
☐ AN Approved As Noted ☐ F File ☐ Return _____ Copies
☒ AS As Requested ☐ FA For Approval ☐ Review and Comment
☐ Other:

Mailing Method

☐ U.S. Postal Service 1st Class ☐ Courier/Hand Delivery ☐ FedEx Priority Overnight ☐ FedEx 2-Day Delivery
☐ Certified/Registered Mail ☐ United Parcel Service (UPS) ☒ FedEx Standard Overnight ☐ FedEx Economy
☒ Other: Email

Comments: This is a revised report per the request of NYSDEC.

ARCADIS U.S., Inc.
10 Friends Lane
Suite 200
Newtown
Pennsylvania 18940
Tel 267.685.1874
Fax 267.685.1801
www.arcadis-us.com

ENVIRONMENT

Ms. Ruth Curley, P.E.
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B – 12th Floor
625 Broadway
Albany, New York 12207-2942

Subject:
Former Northern Perimeter Ditch Off-Site Vapor Intrusion Pathway Evaluation Report, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date:
February 14, 2013

Contact:
Jeffrey Bonsteel

Phone:
267.685.1874

Email:
jeffrey.bonsteel@arcadis-us.com

Our reference:
NJ001032.0001

Dear Ms. Curley:

On behalf of Lockheed Martin Corporation (Lockheed Martin), ARCADIS of New York, Inc. (ARCADIS) has prepared this Off-Site Vapor Intrusion (VI) Pathway Evaluation Report for the Former Northern Perimeter Ditch (FNPD) area, herein referred to as the FNPD Off-Site VI Report. The FNPD Off-Site VI Report describes the VI pathway evaluation that was conducted adjacent to the former Lockheed Martin French Road facility as part of the *Corrective Measures Implementation Plan* (CMIP) required by the "Order on Consent," Index Number CO 6-20080321-5. A supplemental investigation presented within the *Former Northern Perimeter Ditch Supplemental Investigation Report* (*FNPD Report*) (ARCADIS 2011a) evaluated soil, groundwater, and soil gas quality associated with the Solvent Dock Area (the Site) at the French Road facility, specifically in the area of the FNPD, located along the northern boundary of the Site. Soil gas quality results from the FNPD investigation were transmitted to the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) in an e-mail dated October 22, 2010 (and further discussed with NYSDOH on November 22, 2010). NYSDOH indicated that low-level detections of chlorinated volatile organic compounds (CVOCs) in soil gas samples warranted further investigation pertaining to the potential for off-Site migration northward and onto the Indium Corporation (Indium) property (which is adjacent to the French Road facility). As a result, Lockheed Martin conducted the FNPD Off-Site VI pathway evaluation.

This FNPD Off-Site VI Report describes the off-Site activities that were completed to evaluate the potential migration of site-related CVOCs in soil gas onto the Indium property. Samples were collected on the Indium property, adjacent to the FNPD, from just above the water table during November 2012. The on-Site and off-Site areas, as well as historical soil gas sample locations are presented on Figure 1.

Although six samples were proposed in the work plan (ARCADIS 2011b), only thee samples were successfully collected due to an observed high groundwater table and, in some cases, groundwater infiltration into the sample ports. The specific sampling methods, data results, and data analysis are presented below.

Objective and Scope of Work

The FNPD Off-Site VI pathway evaluation was designed to further evaluate the soil gas quality findings presented in the FNPD Report, which concluded that CVOCs were detected in soil vapor above United States Environmental Protection Agency (USEPA) screening levels along the on-Site portion of the FNPD in select samples (ARCADIS 2011a).

To investigate the potential for off-Site migration of CVOCs in soil gas, additional samples along the property boundary between the former Lockheed Martin facility and Indium were collected. Low level CVOC concentrations detected along the southern (on-Site) side of the existing Groundwater Collection and Treatment System (GCTS) trench have the potential to contribute to off-Site migration of constituents via the soil gas pathway (Figure 2). Although CVOCs were detected in on-Site groundwater samples collected along the southern side of the GCTS trench, CVOCs were not detected in groundwater sample locations along the northern side of the GCTS trench (adjacent to the property boundary identified for sampling). However, these groundwater sampling locations are in near existing soil gas sample locations (i.e., sample locations SG-22 through SG-27), which have been identified to have measurable concentrations of site-related constituents of concern.

Soil Gas Probe Installation and Sampling

Sample locations were adjusted in the field slightly from what was proposed in the Work Plan, actual locations of soil gas samples and soil borings are presented in Figures 1 and 2. Soil borings were advanced at each proposed sample location to characterize soils and determine the depth to groundwater. Soil boring logs are included in Appendix A. Four permanent soil gas probes were installed on November 14, 2012, with a hand auger at locations at the off-Site Indium property (Figure 2). Two locations (identified as locations SB-IND-5 and SB-IND-6 on Figure 2) were not installed due to observations of groundwater (saturated conditions) from ground surface to depths up to 15-feet below ground surface. Due to the higher land surface elevation encountered at locations SB-IND-4 and SB-IND-5 a Geoprobe™ rig was used to advance a soil boring to a deeper termination depth, to ensure that the water observed near the surface was not perched groundwater or some other unique

drainage feature. Based on saturated soils within the borings and anticipated groundwater elevations from the northern perimeter wells, soil gas probes SG-IND-1 through SG-IND-4 were installed in soils with the best chance for vapor recovery within the vadose zone and above the capillary fringe. Soil gas probes SG-IND-1 through SG-IND-3 are located approximately 30 feet northwest of the French Road facility property boundary in a line approximately 40 to 50 feet northwest of existing on-Site soil gas probes SG-24 through SG-27 along the FNPD (Figure 2). Soil gas probe SG-IND-4 is located farther within the Indium property, approximately 100 feet from the property boundary. Soil gas probes SG-IND-1 to SG-IND-3 were installed between 2 and 5 feet below ground surface (ft bgs), and SG-IND-4 was installed between 9.5 and 10 feet below land surface, due to higher land surface elevation. The installed sample depth at each location was approximately 1 foot above saturated soils and the approximate water table in accordance with NYSDOH VI guidance (2006) and the approved work plan (ARCADIS 2011b). Soil gas probe construction logs are included in Appendix A.

The integrity of each vapor probe was tested using a helium tracer gas test on the same day as sampling. Sample collection was attempted on November 20, 2012, from each of the four newly-installed locations as two-hour grab samples using passivated stainless steel canisters (i.e., SUMMA canisters). Sample logs are included in Appendix B. Samples were submitted to Centek Laboratories in Syracuse, New York, and analyzed in accordance with the existing *Quality Assurance Project Plan* (QAPP) (ARCADIS 2009) by USEPA Method TO-15. In addition to the soil gas samples, one ambient (outdoor) air sample was collected at an upwind sample location representative of the Site.

Sample Results and Analysis

Although four soil gas probes were installed along the off-Site side of the FNPD on the Indium property, samples were only successfully collected from three locations due to groundwater infiltration into the screened interval of SG-IND-4 soil gas probe. Samples were successfully collected from SG-IND-1, SG-IND-2, and SG-IND-3 on November 20, 2012. Soil gas data collected from the off-Site Indium property are presented in Table 1. One ambient air sample was also collected during the off-Site sampling event and its resulting data are presented in Table 1. The full laboratory deliverable for the samples collected from the Indium property is included in Appendix C. Various CVOCs were detected in the ambient air sample, which is typical for samples collected in urban/commercial environments.

Following receipt of laboratory data, all deliverables were reviewed independent of the analytical laboratory. This review was completed according to the guidelines established by NYSDEC for Data Usability Summary Reviews (DUSR). A DUSR report was prepared for the sample data-package prepared and is included in Appendix D.

Off-Site soil gas data were evaluated considering the following: (1) relevant screening values for migration of soil gas to indoor air and (2) on-Site soil gas concentrations and detections.

As a conservative measure, soil gas data were first compared to NYSDOH (2006) Air Guidelines although these values were developed to be protective of exposure to indoor air resulting from vapor intrusion under a residential use scenario. No exceedances of the three available Air Guidelines (methylene chloride, tetrachloroethylene (PCE), and trichloroethylene (TCE)) were noted in the off-Site soil gas samples collected November 20, 2012 (Table 1). In addition, off-Site soil gas data were compared to USEPA Regional Screening Levels (RSLs) (2012a) for indoor air at an industrial building converted to soil gas screening levels using an attenuation factor (AF) of 0.1. The usage of an AF of 0.01 was outlined in the work plan (ARCADIS 2011b); however, USEPA currently recommends using an AF of 0.1 for soil gas data (USEPA 2012b).

As shown in Table 1, using an AF of 0.1, benzene was detected slightly above the calculated RSL value in one sample (SG-IND-1). No other exceedances were noted from off-Site samples collected near the FNPD. Although benzene was detected above the calculated RSL value in sample SG-IND-1, off-site benzene concentrations are similar or higher than those collected on site near this location (SG-24 and SG-25). Further, benzene has not been detected in groundwater samples collected from the FNPD during 2010 and 2011 or across the entire site during 2012 (ARCADIS 2011a, ARCADIS in process). Benzene has only been detected in one soil sample collected from the FNPD but at a depth of 15 ft bgs and at a low concentration (ARCADIS 2011a). Benzene was not detected in soil samples collected during 2011 (ARCADIS in process). This suggests that benzene may be associated with background sources as there is no source of benzene in groundwater or soil near the FNPD.

Off-Site and on-Site soil gas samples collected along the FNPD were also compared in Table 2, which presents all constituents that were detected in either set of samples. For ease of data comparison in Table 2, off-Site samples were placed approximately where they lie between on-Site samples (Figure 2). Similar

constituents were detected in soil gas samples at the on-Site boundary and on the off-Site Indium property near the FNPD including CVOCs and benzene, toluene, ethylbenzene, and xylenes (BTEX) (Table 2). Although similar chemicals were detected, there does not appear to be an overall consistent increasing or decreasing trend in detected concentrations of constituents between on-Site and off-Site samples. Given the shallow (< 3 ft bgs) nature of some of the samples, it is not unexpected to encounter variability in the data as these samples are likely influenced by ambient air, wind, barometric pressure, and temporal changes as the samples were collected over a period of two years and not always during the same season.

Overall, the data collected from the off-Site Indium property on the north side of the FNPD do not support the presence of a soil gas source that could be associated with potential VI to the off-Site Indium property. As noted in Table 1, all soil gas results are less than NYSDOH air guidelines. In addition, with the exception of one detection of benzene, all soil gas results are below calculated USEPA RSLs for soil gas. All samples were taken very close to the water table and, therefore, are representative of worst case conditions. There were no elevated off-Site detections of constituents that could be directly correlated to known impacts from the Lockheed Martin French Road site. As such, no further action in regards to off-site migration of soil gas is recommended.

Please contact us if you have any questions or require additional information.

Sincerely,

ARCADIS U.S., Inc.

Jeffrey J. Bonsteel
Project Manager

Attachments:

Table 1: Off-Site (Indium Property) Soil Gas Data, Former Lockheed Martin Facility, Utica, New York
Table 2: Detected Constituents in On-Site and Off-Site Soil Gas Data from Former Northern Perimeter Ditch Area, Former Lockheed Martin Facility, Utica, New York

Figure 1: Facility Plan
Figure 2: Investigation Sample Locations

Appendix A: Soil Gas Installation Logs
Appendix B: Sample Collection Logs
Appendix C: Laboratory Deliverable
Appendix D: Data Usability Summary Review

Copies:
Mr. Gregory A. Rys, NYSDOH
Mr. Charles Trione, Lockheed Martin
Mr. James Zigmont, CDM
Ms. Dale Truskett, Lockheed Martin
Ms. Virginia Robbins, BS&K
Ms. Kay Armstrong, Armstrong & Assoc.
Mr. Richard Zigenfus, ConMed
Ms. Glenda Smith, Lockheed Martin
Ms. Mary Morningstar, Lockheed Martin

References

ARCADIS. 2009. Quality Assurance Project Plan. October.

ARCADIS. 2011a. Former Northern Perimeter Ditch Supplemental Investigation Report. Solvent Dock Area, Former Lockheed Martin French Road, Facility, Utica, New York. March.

ARCADIS. 2011b. Former Northern Perimeter Ditch Off-Site Vapor Intrusion Pathway Evaluation Work Plan. Solvent Dock Area, Former Lockheed Martin French Road, Facility, Utica, New York. April.

ARCADIS. 2013 Pre-Design Activities Report, Former Northern Perimeter Ditch, Solvent Dock Area, Former Lockheed Martin French Road, Facility, Utica, New York. February

NYSDOH. 2006. Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Center for Environmental Health, Bureau of Environmental Exposure Investigation. October.

USEPA. 2012a. Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/pdf/master_sl_table_run_NOV2012.pdf. November.

USEPA. 2012b. Superfund Vapor Intrusion FAQs. http://www.epa.gov/superfund/sites/npl/Vapor_Intrusion_FAQs_Feb2012.pdf. February.

ARCADIS

Tables

Table 1. Off-Site (Indium Property) Soil Gas Data, Former Lockheed Martin Facility, Utica, New York

Sample ID: / Lab ID: / Sample Date: / Sample Depth: / Unit:	NYSDOH Air Guideline (Indoor Air) µg/m³	USEPA RSL / 0.1 AF (c) 1x10-6 Risk Level µg/m³	AMB-112012 C1211047-004A 11/20/2012 3' ags µg/m³	SG-IND-1 C1211047-001A 11/20/2012 2-2.5'bgs µg/m³	SG-IND-2 C1211047-002A 11/20/2012 4.5-5' bgs µg/m³	SG-IND-3 C1211047-003A 11/20/2012 4.5-5' bgs µg/m³
Constituent						
1,1,1-Trichloroethane	--	220,000	0.83 U	0.83 U	0.83 U	0.83 U
1,1,2,2-Tetrachloroethane	--	2.1	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	--	7.7	0.83 U	0.83 U	0.83 U	0.83 U
1,1-Dichloroethane	--	77	0.62 U	0.62 U	0.62 U	0.62 U
1,1-Dichloroethene	--	8,800	0.60 U	0.60 U	0.60 U	0.60 U
1,2,4-Trichlorobenzene	--	88	1.1 U	1.1 U	1.1 U	1.1 U
1,2,4-Trimethylbenzene	--	310	7.5	12	2	2.2
1,2-Dibromoethane	--	0.2	1.2 U	1.2 U	1.2 U	1.2 U
1,2-Dichlorobenzene	--	8,800	0.92 U	0.92 U	0.92 U	0.92 U
1,2-Dichloroethane	--	4.7	0.62 U	0.62 U	0.62 U	0.62 U
1,2-Dichloropropane	--	12	0.70 U	0.70 U	0.70 U	0.70 U
1,3,5-Trimethylbenzene	--	--	2.6	3.1	0.50J	0.50J
1,3-butadiene	--	4.1	0.34 U	0.34 U	0.34 U	0.34 U
1,3-Dichlorobenzene	--	--	0.92 U	0.92 U	0.92 U	0.92 U
1,4-Dichlorobenzene	--	11	0.92 U	0.92 U	0.92 U	0.92 U
1,4-Dioxane	--	16	1.1 U	1.1 U	1.1 U	1.1 U
2,2,4-trimethylpentane	--	--	8.1 D	17 D	0.57J	0.71 U
4-ethyltoluene	--	--	2.7	4.1	0.65J	0.60J
Acetone	--	1,400,000	19 D	29 D	28 D	23 D
Allyl chloride	--	20	0.48 U	0.48 U	0.48 U	0.48 U
Benzene	--	16	9.1 D	21 D	1.3	0.65
Benzyl chloride	--	2.5	0.88 U	0.88 U	0.88 U	0.88 U
Bromodichloromethane	--	3.3	1.0 U	1.0 U	1.0 U	1.0 U
Bromofluorobenzene		--	0 U	0 U	0 U	0 U
Bromoform	--	110	1.6 U	1.6 U	1.6 U	1.6 U
Bromomethane	--	220	0.59 U	0.59 U	0.59 U	0.59 U
Carbon disulfide	--	31,000	0.47 U	0.7	1.8	0.47 U
Carbon tetrachloride	--	20	0.96 U	0.96 U	0.96 U	0.96 U
Chlorobenzene	--	2,200	0.70 U	0.70 U	0.70 U	0.70 U
Chloroethane	--	440,000	0.40 U	0.40 U	0.40 U	0.40 U
Chloroform	--	5.3	0.74 U	0.74 U	1.3	0.74 U
Chloromethane	--	3,900	0.31 U	0.31 U	0.31 U	0.31 U
cis-1,2-Dichloroethene (a)	--	2,600	0.60 U	0.60 U	0.60 U	0.60 U
cis-1,3-Dichloropropene (b)	--	31	0.69 U	0.69 U	0.69 U	0.69 U
Cyclohexane	--	260,000	30 D	160 D	2.6	0.52 U
Dibromochloromethane	--	4.5	1.3 U	1.3 U	1.3 U	1.3 U
Ethyl acetate	--	--	0.92 U	0.92 U	0.92 U	0.92 U
Ethylbenzene	--	49	5.2	9.4	1.1	1.1
Freon 11	--	31,000	1.4	1.1	1.1	0.91
Freon 113	--	1,300,000	1.2 U	0.93J	1.1J	1.2 U
Freon 114	--	--	1.1 U	1.1 U	1.1 U	1.1 U
Freon 12	--	4,400	2.6	2	2.4	110 D
Heptane	--	--	9.6	24 D	1.3	0.62 U
Hexachloro-1,3-butadiene	--	5.6	1.6 U	1.6 U	1.6 U	1.6 U
Hexane	--	31,000	30	130 D	2.7	2.2
Isopropyl alcohol	--	310,000	28	0.37 U	0.37 U	0.37 U
m&p-Xylene	--	4,400	15	18 D	3.7	4.3
Methyl Butyl Ketone	--	1,300	1.2 U	1.2 U	1.2 U	1.2 U
Methyl Ethyl Ketone	--	220,000	0.90 U	0.90 U	0.90 U	0.90 U
Methyl Isobutyl Ketone	--	130,000	1.2 U	1.2 U	1.2 U	1.2 U
Methyl tert-butyl ether	--	470	0.55 U	0.55 U	0.55 U	0.55 U
Methylene chloride	60	12,000	0.53 U	0.53 U	0.53 U	0.53 U
o-Xylene	--	4,400	6.6	11	1.1	1.3
Propylene	--	130,000	0.26 U	0.26 U	0.26 U	0.26 U
Styrene	--	44,000	0.65 U	0.65 U	0.65 U	0.65 U
Tetrachloroethylene	100	470	1.0 U	3.8	3.9	15 D
Tetrahydrofuran	--	88,000	0.45 U	0.45 U	0.45 U	0.45 U
Toluene	--	220,000	26	57 D	6.8	6.7
trans-1,2-Dichloroethene	--	2,600	0.60 U	0.60 U	0.60 U	0.60 U
trans-1,3-Dichloropropene (b)	--	31	0.69 U	0.69 U	0.69 U	0.69 U
Trichloroethylene	5	30	**14**	2.5	0.66J	0.82 U
Vinyl acetate	--	8,800	0.54 U	0.54 U	0.54 U	0.54 U
Vinyl Bromide	--	--	0.67 U	0.67 U	0.67 U	0.67 U
Vinyl chloride	--	28	0.39 U	0.39 U	0.39 U	0.39 U

Notes:

(a) trans-1,2-Dichloroethene used as a surrogate
(b) 1,3-Dichloropropene used as a surrogate
(c) Calculated from RSL for industrial air using an AF of 0.1
-- - Value not available
µg/m³ - Micrograms per cubic meter
AF - Attenuation factor
ags - Above ground surface
AMB - Ambient air
bgs - Below ground surface
IND - Indium property
J - Constituent concentration estimated
NYSDOH - New York State Department of Health
RSL - Regional screening level
SG - Soil gas
U - Constituent not detected at reporting limit
D - Diluted value reported
USEPA - United States Environmental Protection Agency
Cells exceeding the NYSDOH Air Guideline are bolded.
Cells exceeding the calculated RSL are shaded.

ARCADIS

Table 2. Detected Constituents in On-Site and Off-Site Soil Gas Data from Former Northern Perimeter Ditch Area, Former Lockheed Martin Facility, Utica, New York

Sample ID: Lab ID: Sample Date: Sample Depth: Unit:	NYSDOH Air Guideline (Indoor Air) µg/m^3	USEPA RSL / 0.1 AF (b) 1x10-6 Risk Level µg/m^3	SG-7 C1008052-003A 08/18/10 3 - 3.5' bgs µg/m^3	SG-22 C1008052-004A 08/18/10 3.5 - 4' bgs µg/m^3	SG-22 C1010020-001A 10/7/2010 3.5 - 4' bgs µg/m^3	SG-22R C1105038-001A 5/23/2011 1.5 - 2' bgs µg/m^3	SG-23 C1008052-005A 08/18/10 1.8 - 2.4' bgs µg/m^3	SG-23R C1105038-002A 5/23/2011 1.5 - 2' bgs µg/m^3	SG-IND-1 C1211047-001A 11/20/2012 2-2.5'bgs µg/m^3	SG-24 C1008052-006A 08/18/10 6.5 - 7' bgs µg/m^3	SG-24 C1010020-002A 10/7/2010 6.5 - 7' bgs µg/m^3
Constituents											
1,1,1-Trichloroethane	--	220,000	0.83 U	3.5	1.4	0.83 U	0.61 J	0.83 U	0.83 U	4.4	1.1
1,1-Dichloroethane	--	77	0.62 U	12	4	0.62	0.62 U	0.62 U	0.62 U	30	8.3
1,2,4-Trimethylbenzene	--	310	25 J	57	12	4.8	110 J	2.2	12	67	9.5
1,3,5-Trimethylbenzene	--	--	11 J	14	6 J	1.3	25 J	0.85	3.1	15	4.5 J
1,3-Dichlorobenzene	--	--	18 J	12	17	2.4	17 J	3.2	0.92 U	19	11
1,4-Dichlorobenzene	--	11	0.92 U	0.92 U	0.79 J	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.67 J
2,2,4-trimethylpentane	--	--	20 J	6.5	4	0.71 U	3.6 J	4.6	17 D	3.6	2.8
4-ethyltoluene	--	--	5.5 J	16	4.6	0.95	27 J	0.75 U	4.1	15	3.1 J
Acetone	--	1,400,000	660 J	180	35 J	500 E	420 J	180	29 D	180	110 J
Benzene	--	16	9.1 J	7.1	5.7	1.8	26 J	3.1	21 D	9.1	0.49 U
Carbon disulfide	--	31,000	11 J	5.3	0.47 U	5.3	2.7 J	130	0.7	11	1.3
Carbon tetrachloride	--	20	0.96 U	0.96 U	0.38 J	0.26 J	0.96 U	0.32 J	0.96 U	0.96 U	0.45 J
Chlorobenzene	--	2,200	0.47 J	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.70 U	0.7 U	0.7 U
Chloroethane	--	440,000	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.40 U	0.4 U	0.4 U
Chloroform	--	5.3	5 J	19	7.1	1.6	0.74 U	0.74 U	0.74 U	10	2.8
Chloromethane	--	3,900	0.31 U	0.31 U	0.52	0.27 J	0.31 U	0.31 U	0.31 U	0.31 U	0.44
cis-1,2-Dichloroethene (a)	--	2,600	0.6 U	20	3.7	4.2	0.6 U	0.6 U	0.60 U	64	14
Cyclohexane	--	260,000	19 J	0.52 UJ	4.9	2.4	0.52 UJ	6.1	160 D	8.3 J	3.3
Ethyl acetate	--	--	23 J	10	9.5	0.92 U	43 J	0.92 U	0.92 U	16	16
Ethylbenzene	--	49	8 J	15	8.8 J	1.7	12 J	2.1	9.4	13	6.9 J
Freon 11	--	31,000	2.1 J	7.5	3.4	2.4	1.8 J	1.8	1.1	8.3	4.8
Freon 113	--	1,300,000	1.2 U	400	810	54	1.5 J	1.6	0.93J	860	360
Freon 12	--	4,400	0.75 U	0.75 U	0.75 U	1.4	0.75 U	2.1	2	0.75 U	1
Heptane	--	--	8.7 J	6.2	6.6	1	8.7 J	0.87	24 D	6.2	3.2
Hexane	--	31,000	15 J	0.54 U	2.3	4.9	0.54 U	5.6	130 D	0.54 U	2.3
Isopropyl alcohol	--	310,000	200 J	130	91 J	240 E	450 J	360 E	0.37 U	190 J	130
m&p-Xylene	--	4,400	15 J	45	29 J	4.6	45 J	5.9	18 D	41 J	15 J
Methyl Butyl Ketone	--	1,300	2.7 J	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Methyl Ethyl Ketone	--	220,000	24 J	5.7 J	4.5	3.3	14 J	4.1	0.90 U	4.5 J	5.8
Methyl Isobutyl Ketone	--	130,000	44 J	37	1.7 J	1.2 U	68 J	1.2 U	1.2 U	42 J	2.5 J
Methyl tert-butyl ether	--	470	49 J	2.6	0.55 J	0.55 U	0.55 U	0.55 U	0.55 U	1.8 J	0.55 U
Methylene chloride	60	12,000	0.53 U	0.53 U	0.53 U	4.7	0.42 J	0.71	0.53 U	0.53 U	0.67
o-Xylene	--	4,400	9.7 J	28	8.8 J	2.4	31 J	2.5	11	28 J	9 J
Styrene	--	44,000	0.65 U	0.65 U	7.4 J	1.4	0.65 U	1	0.65 U	0.65 U	3.5 J
Tetrachloroethylene	100	470	8.5 J	14	2.4	1.4	1 U	1 U	3.8	**320**	8.3 J
Toluene	--	220,000	16 J	52	69	14	33 J	25	57 D	32	28
trans-1,2-Dichloroethene	--	2,600	0.6 U	6.2	1.9	0.6 U	0.6 U	0.6 U	0.60 U	0.6 U	0.93
Trichloroethylene	5	30	2.2 J	**36**	**9.1**	**6**	2 J	1.8	2.5	**200**	**9.3**
Vinyl chloride	--	28	0.39 U	0.39 U	0.39 U	0.21 J	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U

Notes:

(a) trans-1,2-Dichloroethene used as a surrogate

(b) Calculated from RSL for industrial air using an AF of 0.1

-- - Value not available

µg/m^3 - Micrograms per cubic meter

AF - Attenuation factor

ags - Above ground surface

bgs - Below ground surface

D - Diluted value reported

E - Constituent was quantitated above the calibration range

IND - Indium property

J - Constituent concentration estimated

NYSDOH - New York State Department of Health

RSL - Regional screening level

SG - Soil gas

U - Constituent not detected at reporting limit

USEPA - United States Environmental Protection Agency

Cells exceeding the NYSDOH Air Guideline are Bolded.

Cells exceeding the calculated RSL are Shaded Gray.

Table 2. Detected Constituents in On-Site and Off-Site Soil Gas Data from Former Northern Perimeter Ditch Area, Former Lockheed Martin Facility, Utica, New York

Sample ID: Lab ID: Sample Date: Sample Depth: Unit:	NYSDOH Air Guideline (Indoor Air) µg/m^3	USEPA RSL / 0.1 AF (b) 1x10-6 Risk Level µg/m^3	SG-24R C1105038-003A 5/23/2011 1.5 - 2' bgs µg/m^3	SG-IND-2 C1211047-002A 11/20/2012 4.5-5' bgs µg/m^3	SG-25 C1008052-007A 08/18/10 2.3 - 2.9' bgs µg/m^3	SG-25R C1105038-004A 5/23/2011 1.5 - 2' bgs µg/m^3	SG-IND-3 C1211047-003A 11/20/2012 4.5-5' bgs µg/m^3	SG-26 C1008052-008A 08/18/10 5 - 5.5' bgs µg/m^3	SG-26 C1010020-003A 10/7/2010 5 - 5.5' bgs µg/m^3	SG-26R C1105038-005A 5/23/2011 1.5 - 2' bgs µg/m^3	SG-27 C1008052-009A 08/18/10 6.5 - 7' bgs µg/m^3
Constituents											
1,1,1-Trichloroethane	--	220,000	33	0.83 U	4	0.55 J	0.83 U	0.83 U	0.83 U	0.83 U	1.1
1,1-Dichloroethane	--	77	36	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
1,2,4-Trimethylbenzene	--	310	2.1	2	62	1.8	2.2	48	11	2.3	120 J
1,3,5-Trimethylbenzene	--	--	0.95	0.50J	16	0.9	0.50J	15	4.8 J	0.8	22 J
1,3-Dichlorobenzene	--	--	3.9	0.92 U	25	4.3	0.92 U	20	16 J	2.8	28 J
1,4-Dichlorobenzene	--	11	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.67 J	0.92 U	0.92 U
2,2,4-trimethylpentane	--	--	1	0.57J	5.7	9.6	0.71 U	38	7	10	4.1
4-ethyltoluene	--	--	0.75 U	0.65J	12	0.75 U	0.60J	12 J	3.3 J	0.75 U	22 J
Acetone	--	1,400,000	260 E	28 D	500	540 E	23 D	86	83 J	440	180
Benzene	--	16	4.1	1.3	7.8	4.6	0.65	4.2	0.49 U	4.2 J	4.5
Carbon disulfide	--	31,000	130	1.8	180	300 E	0.47 U	150	2.8 J	220	12 J
Carbon tetrachloride	--	20	0.32 J	0.96 U	0.96 U	0.38 J	0.96 U	0.96 U	0.38 J	0.38 J	0.96 U
Chlorobenzene	--	2,200	0.7 U	0.70 U	0.7 U	0.7 U	0.70 U	0.7 U	0.7 U	0.7 U	0.7 U
Chloroethane	--	440,000	3.3	0.40 U	0.4 U	0.32 J	0.40 U	0.4 U	0.4 U	0.4 U	0.4 U
Chloroform	--	5.3	2.5	1.3	1.1	0.74 U	0.74 U	2.4	0.5 J	3.5	0.99
Chloromethane	--	3,900	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.65	0.31 U	0.31 U
cis-1,2-Dichloroethene (a)	--	2,600	6.9	0.60 U	2.2	0.6 U	0.60 U	0.6	0.44 J	0.6 U	0.6 U
Cyclohexane	--	260,000	6.3	2.6	25 J	13	0.52 U	22 J	6.4 J	12	23 J
Ethyl acetate	--	--	0.92 U	0.92 U	13	0.92 U	0.92 U	8	13	0.92 U	8.4 J
Ethylbenzene	--	49	2	1.1	9.7	2.5	1.1	8.4	8.8 J	3.7	16 J
Freon 11	--	31,000	39	1.1	2.2	1.7	0.91	1.6	0.86 U	1.7	2.5
Freon 113	--	1,300,000	2300 E	1.1J	16	4.3	1.2 U	22 J	4.3	5.5	6.8
Freon 12	--	4,400	0.75 U	2.4	3.3	2.3	110 D	0.75 U	0.8	2.4	3.1
Heptane	--	--	0.62 U	1.3	9.4	1.4	0.62 U	3.7	5.2 J	1.3	0.62 U
Hexane	--	31,000	6.9	2.7	7.1	44	2.2	9.9	2.7	36	0.54 U
Isopropyl alcohol	--	310,000	370 E	0.37 U	300 J	420 E	0.37 U	0.37 U	150 J	340	110 J
m&p-Xylene	--	4,400	6.5	3.7	31 J	5.8	4.3	23 J	24 J	9.6	51 J
Methyl Butyl Ketone	--	1,300	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	9.6
Methyl Ethyl Ketone	--	220,000	5.6	0.90 U	8.4 J	0.9 U	0.90 U	7	9	0.9 U	14 J
Methyl Isobutyl Ketone	--	130,000	8.7 J	1.2 U	340 J	1.2 U	1.2 U	23 J	3 J	1.2 U	57 J
Methyl tert-butyl ether	--	470	0.55 U	0.55 U	0.55 U	3.8	0.55 U	14 J	0.55 U	0.55 U	0.55 U
Methylene chloride	60	12,000	0.53 U	0.53 U	0.6	1.4	0.53 U	0.53 U	0.53	0.53 U	0.53 U
o-Xylene	--	4,400	2.7	1.1	21 J	2.6	1.3	15 J	8.4 J	4	37 J
Styrene	--	44,000	1.1	0.65 U	0.65 U	1	0.65 U	0.65 U	4 J	1.4	0.65 U
Tetrachloroethylene	100	470	72	3.9	76	6.5	15 D	4.6	1 U	3.2	61 J
Toluene	--	220,000	26	6.8	28	31	6.7	15	51 J	28	30 J
trans-1,2-Dichloroethene	--	2,600	3.4	0.60 U	0.6 U	0.6 U	0.60 U	0.6 U	0.6 U	0.6 U	0.6 U
Trichloroethylene	5	30	**68**	0.66J	**10**	2.9	0.82 U	1.8	0.76 J	2.8	2
Vinyl chloride	--	28	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U

Notes:

(a) trans-1,2-Dichloroethene used as a surrogate

(b) Calculated from RSL for industrial air using an AF of 0.1

-- - Value not available

µg/m^3 - Micrograms per cubic meter

AF - Attenuation factor

ags - Above ground surface

bgs - Below ground surface

D - Diluted value reported

E - Constituent was quantitated above the calibration range

IND - Indium property

J - Constituent concentration estimated

NYSDOH - New York State Department of Health

RSL - Regional screening level

SG - Soil gas

U - Constituent not detected at reporting limit

USEPA - United States Environmental Protection Agency

Cells exceeding the NYSDOH Air Guideline are Bolded.

Cells exceeding the calculated RSL are Shaded Gray.

Table 2. Detected Constituents in On-Site and Off-Site Soil Gas Data from Former Northern Perimeter Ditch Area, Former Lockheed Martin Facility, Utica, New York

Sample ID: Lab ID: Sample Date: Sample Depth: Unit:	NYSDOH Air Guideline (Indoor Air) µg/m^3	USEPA RSL / 0.1 AF (b) 1x10-6 Risk Level µg/m^3	SG-27 C1010020-004A 10/7/2010 6.5 - 7' bgs µg/m^3	SG-27R C1105038-006A 5/23/2011 1.5 - 2' bgs µg/m^3
Constituents				
1,1,1-Trichloroethane	--	220,000	0.83 U	0.55 J
1,1-Dichloroethane	--	77	0.62 U	0.62 U
1,2,4-Trimethylbenzene	--	310	6.5 J	2.6
1,3,5-Trimethylbenzene	--	--	3 J	0.85
1,3-Dichlorobenzene	--	--	9.2	0.92 U
1,4-Dichlorobenzene	--	11	0.92 U	0.92 U
2,2,4-trimethylpentane	--	--	3.9 J	9.5
4-ethyltoluene	--	--	1.8 J	0.75 U
Acetone	--	1,400,000	100 J	160
Benzene	--	16	0.49 U	2.4
Carbon disulfide	--	31,000	0.95	120
Carbon tetrachloride	--	20	0.32 J	0.38 J
Chlorobenzene	--	2,200	0.7 U	0.7 U
Chloroethane	--	440,000	0.4 U	0.4 U
Chloroform	--	5.3	0.65 J	46
Chloromethane	--	3,900	0.67	0.31 U
cis-1,2-Dichloroethene (a)	--	2,600	0.4 J	0.6 U
Cyclohexane	--	260,000	3.4 J	9.1
Ethyl acetate	--	--	8.4 J	0.92 U
Ethylbenzene	--	49	5.1 J	3.7
Freon 11	--	31,000	1.4	1.9
Freon 113	--	1,300,000	3	4.7
Freon 12	--	4,400	1.7	2.1
Heptane	--	--	2.7 J	1.9
Hexane	--	31,000	2.4	23
Isopropyl alcohol	--	310,000	150	26
m&p-Xylene	--	4,400	11 J	8.8 J
Methyl Butyl Ketone	--	1,300	1.2 U	1.2 U
Methyl Ethyl Ketone	--	220,000	5	4.8
Methyl Isobutyl Ketone	--	130,000	1.2 J	2.1
Methyl tert-butyl ether	--	470	0.55 U	0.55 U
Methylene chloride	60	12,000	0.49 J	0.92
o-Xylene	--	4,400	6.2 J	4.3
Styrene	--	44,000	2.8 J	1.9
Tetrachloroethylene	100	470	1 J	69
Toluene	--	220,000	27	38
trans-1,2-Dichloroethene	--	2,600	0.6 U	0.6 U
Trichloroethylene	5	30	0.87 J	2.4
Vinyl chloride	--	28	0.39 U	0.39 U

Notes:

(a) trans-1,2-Dichloroethene used as a surrogate

(b) Calculated from RSL for industrial air using an AF of 0.1

-- - Value not available

µg/m^3 - Micrograms per cubic meter

AF - Attenuation factor

ags - Above ground surface

bgs - Below ground surface

D - Diluted value reported

E - Constituent was quantitated above the calibration range

IND - Indium property

J - Constituent concentration estimated

NYSDOH - New York State Department of Health

RSL - Regional screening level

SG - Soil gas

U - Constituent not detected at reporting limit

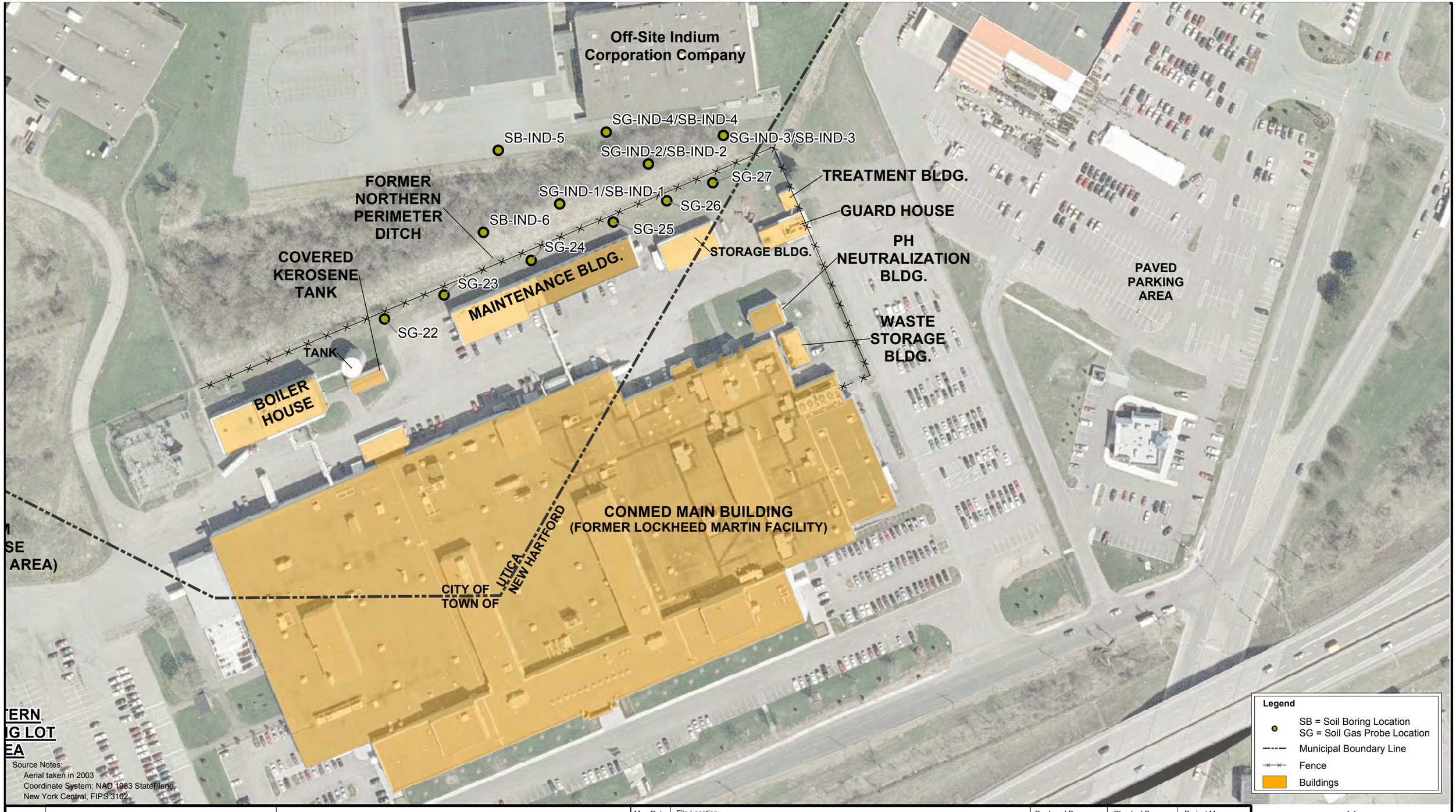
USEPA - United States Environmental Protection Agency

Cells exceeding the NYSDOH Air Guideline are Bolded.

Cells exceeding the calculated RSL are Shaded Gray.

ARCADIS

Figures



Source Notes:
Aerial taken in 2003
Coordinate System: NAD 1983 StatePlane, New York Central, FIPS 3102

ArcGIS - ArcView 9.x

ARCADIS
855 Route 146, Suite 210
Clifton park, NY 12065
Tel (518)250-7300 Fax (518)250-7301

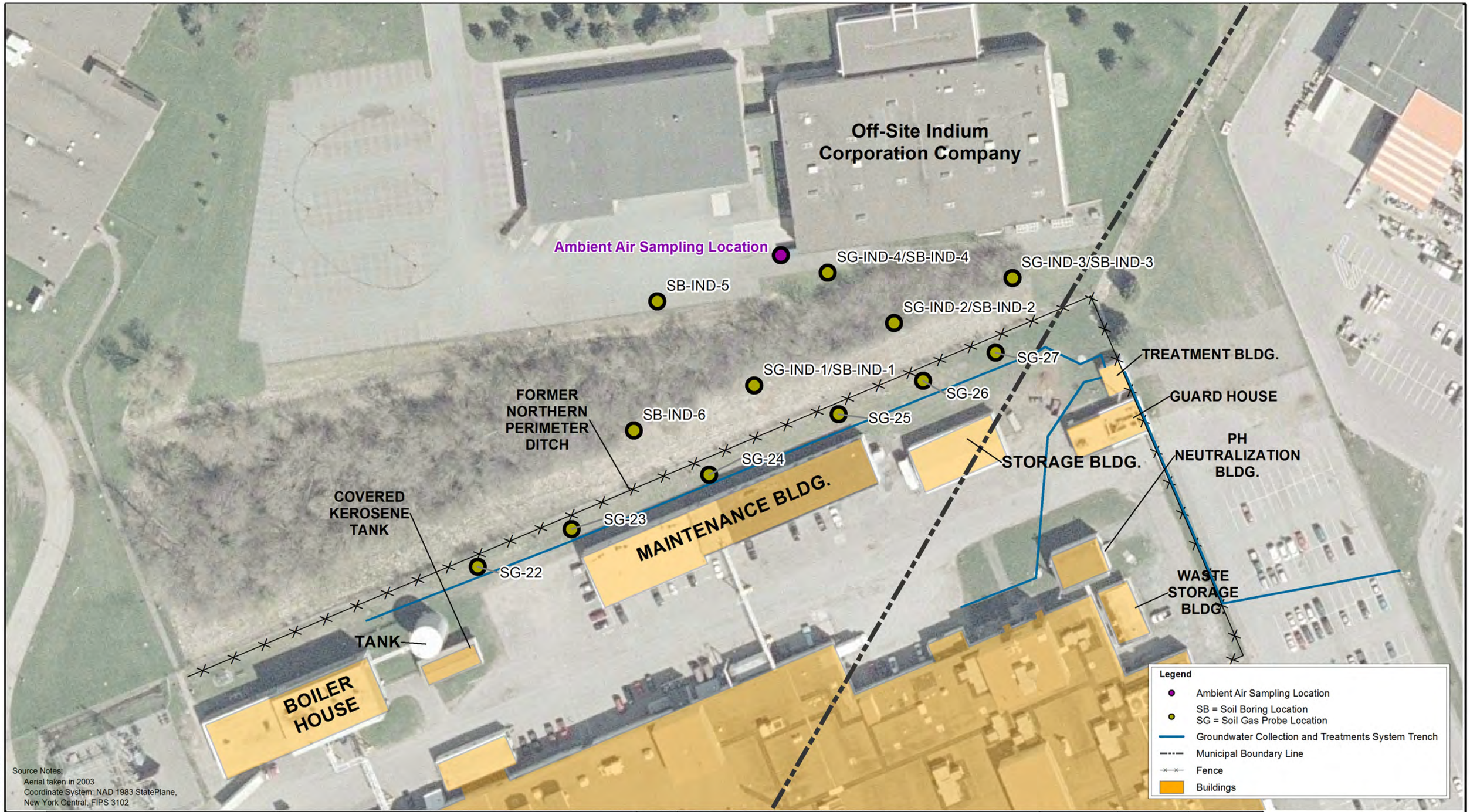
Map Date:	File Location:	Produced By:	Checked By:	Project Manager:
2/7/2013	Path: I:\LockheedMartin\Utica\ArcMap\2013\20130103_Fig1_InvestigationLocationPlan.mxd	R. McKinney	J. Bonsteel	C.Motta

Facility Plan

Former Lockheed Martin French Road Property
Utica, New York

Dept. Manager:	Geodatabase:
C.Motta	Site Map

Project Number:	Figure:
NJ001032.0001 .00006	1



ARCADIS
855 Route 146, Suite 210
Clifton park, NY 12065
Tel (518)250-7300 Fax (518)250-7301

Map Date:	File Location:	Produced By:	Checked By:	Project Manager:
4/16/2013	Path: I:\LockheedMartin\Utica\ArcMap\2013\20130103_Fig2_InvestigationsampleLocations.mxd	R. McKinney	J. Bonsteel	C.Motta
			Dept. Manager: C.Motta	Geodatabase: Site Map
			Project Number: NJ001032.0001 .00006	Figure: 2

Investigation Sample Locations

Former Lockheed Martin French Road Property
Utica, New York

N

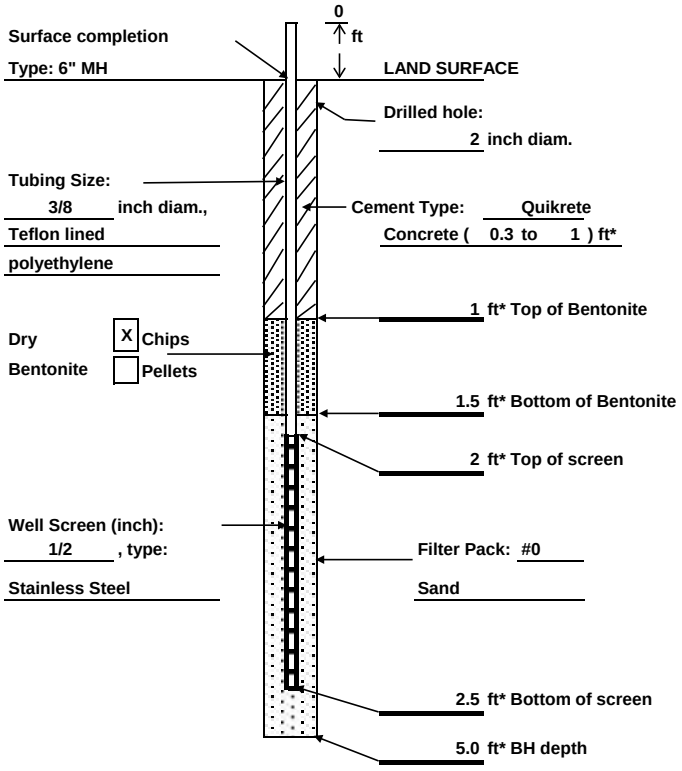
80 40 0 80
Feet

ARCADIS

Appendix A

ARCADIS

Permanent Soil Vapor Point Construction Log



Project Name and No.: Lockheed Martin Utica

Location: SG-IND-1 **Address:** Indium

Town/City: Utica **State:** NY

Land-Surface Elevation and Datum:

NA feet ☐ Surveyed ☐ Estimated

Coordinates- Northing: NA **Easting:** NA

Installation Date(s): 11/14/2012

Drilling Contractor: (Diller/Helper) Zebra

Installation Method: Hand Auger/Drill rig

Equipment Used: Shovel, Rig

Groundwater Information:

Well ID: NA

Well Screen Setting: NA

Static Depth to Water: NA

Vapor Point Purpose: Perimeter Evaluation

Remarks: Soil Boring ID = SB-IND-1

**Measuring Point is Top of Well Casing Unless Otherwise Noted.

Prepared by Dan Zuck

ARCADIS

Soil Boring/Sample Log

Location: SB-IND-1 **Project Name and No.** Lockheed Martin Utica

Site Location Utica, NY (Indium) **Drilling Started** 11/14/2012 **Drilling Completed** 11/14/2012

Total Depth Drilled 5 feet **Hole Diameter** 2 inches **Sampling Interval** 0.0 - 5.0 feet

Length and Diameter of Sampling Device 1.5 ft x 4 ft **Type of Sampling Device** Liner

Drilling Method Geoprobe **Drilling Fluid Used** NA

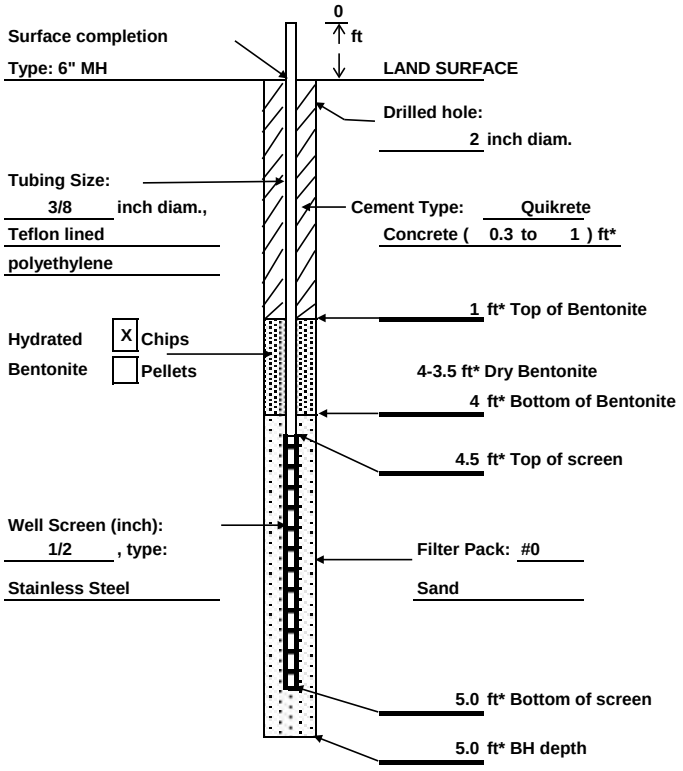
Drilling Contractor Zebra **Driller** Will McAlister **Helper** J. Plank

Prepared By D.Zuck **Hammer Weight** NA **Hammer Drop** NA inches

Sample Depth (feet below land surface) From	To	Sample Recovery (feet)	Sample Interval (feet)	Sample Description	PID (ppm)
0	5	4.7	0.0 - 0.5	Organic, Dark Brown, Sandy SILT, loose, Roots, Leaves.	0.0
			0.5 - 2.5	Orangish Brown, Sandy SILT, very fine to fine subangular Sand, little fine to medium subangular to angular Gravel, dry, NP, trace coarse subangular to angular Gravel.	0.0
			2.5 - 5.0	Reddish Brown, Clayey SILT, stiff, wet pockets, some medium to fine subangular to angular Gravel, NP, no odor.	0.0

ARCADIS

Permanent Soil Vapor Point Construction Log



Project Name and No.: Lockheed Martin Utica

Location: SG-IND-2 **Address:** Indium

Town/City: Utica **State:** NY

Land-Surface Elevation and Datum:

NA feet ☐ Surveyed ☐ Estimated

Coordinates- Northing: NA **Easting:** NA

Installation Date(s): 11/14/2012

Drilling Contractor: (Diller/Helper) Zebra

Installation Method: Hand Auger/Drill rig

Equipment Used: Shovel, Rig

Groundwater Information:

Well ID: NA

Well Screen Setting: NA

Static Depth to Water: NA

Vapor Point Purpose: Perimeter Evaluation

Remarks: Soil Boring ID = SB-IND-2

**Measuring Point is Top of Well Casing Unless Otherwise Noted.

Prepared by Dan Zuck

ARCADIS

Soil Boring/Sample Log

Location: SB-IND-2 **Project Name and No.** Lockheed Martin Utica

Site Location Utica, NY (Indium) **Drilling Started** 11/14/2012 **Drilling Completed** 11/14/2012

Total Depth Drilled 5 feet **Hole Diameter** 2 inches **Sampling Interval** 0.0 - 5.0 feet

Length and Diameter of Sampling Device 1.5 ft x 4 ft **Type of Sampling Device** Liner

Drilling Method Geoprobe **Drilling Fluid Used** NA

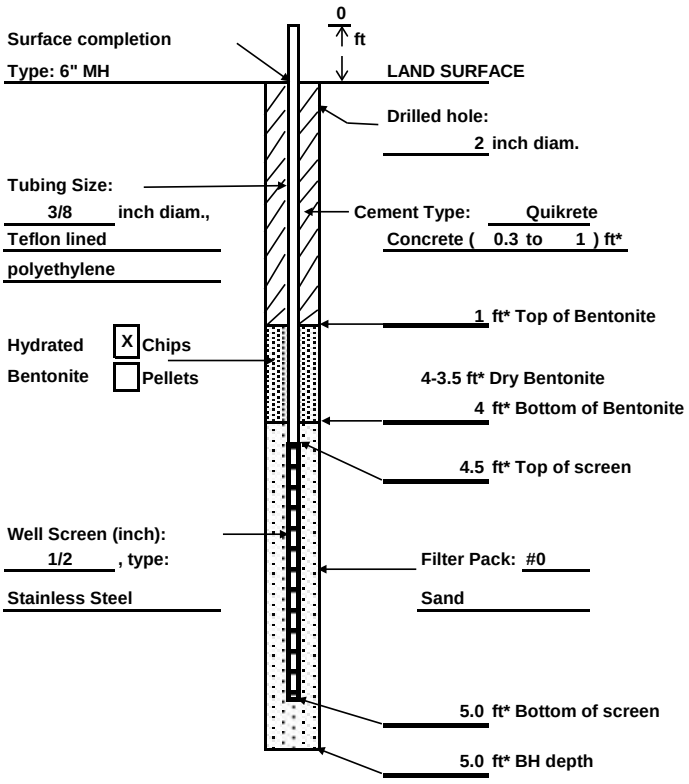
Drilling Contractor Zebra **Driller** Will McAlister **Helper** J. Plank

Prepared By D.Zuck **Hammer Weight** NA **Hammer Drop** NA inches

Sample Depth (feet below land surface) From	To	Sample Recovery (feet)	Sample Interval (feet)	Sample Description	PID (ppm)
0	5	3.8	0.0 - 1.7	Orangish Brown, Sandy SILT, loose, very fine to fine Sand, trace fine to medium subangular to angular Gravel, dry, NP, no odor.	0.0
			1.7 - 3.8	Brownish Grey, Sandy SILT, stiff, very fine to fine Sand, some medium to coarse subangular to angular Gravel, moist to dry, NP.	0.0

ARCADIS

Permanent Soil Vapor Point Construction Log



Project Name and No.: Lockheed Martin Utica

Location: SG-IND-3 **Address:** Indium

Town/City: Utica **State:** NY

Land-Surface Elevation and Datum:

NA feet ☐ Surveyed ☐ Estimated

Coordinates- Northing: NA **Easting:** NA

Installation Date(s): 11/14/2012

Drilling Contractor: (Diller/Helper) Zebra

Installation Method: Hand Auger/Drill rig

Equipment Used: Shovel, Rig

Groundwater Information:

Well ID: NA

Well Screen Setting: NA

Static Depth to Water: NA

Vapor Point Purpose: Perimeter Evaluation

Remarks: Soil Boring ID = SB-IND-3

****Measuring Point is Top of Well Casing Unless Otherwise Noted.**

Prepared by Dan Zuck

ARCADIS

Soil Boring/Sample Log

Location: SB-IND-3 **Project Name and No.** Lockheed Martin Utica

Site Location Utica, NY (Indium) **Drilling Started** 11/14/2012 **Drilling Completed** 11/14/2012

Total Depth Drilled 5 feet **Hole Diameter** 2 inches **Sampling Interval** 0.0 - 5.0 feet

Length and Diameter of Sampling Device 1.5 ft x 4 ft **Type of Sampling Device** Liner

Drilling Method Geoprobe **Drilling Fluid Used** NA

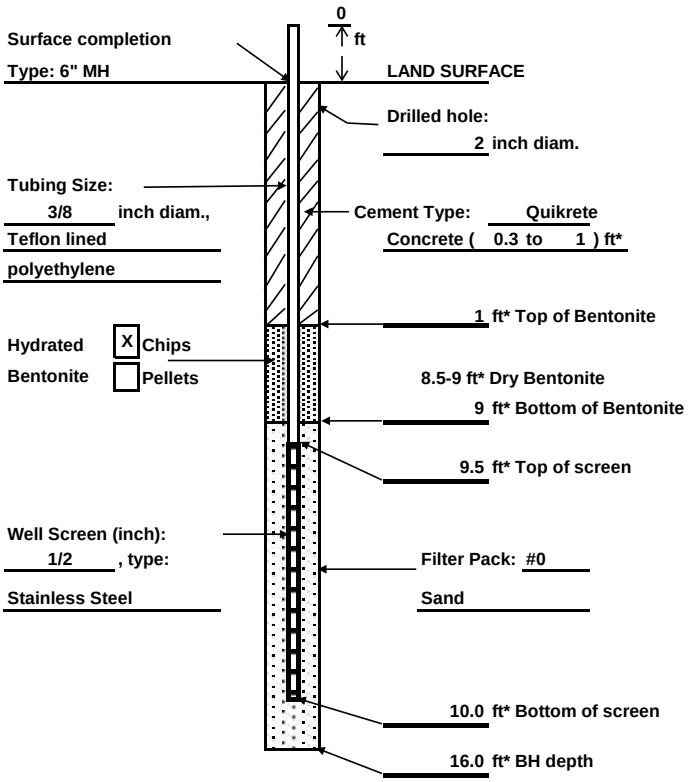
Drilling Contractor Zebra **Driller** Will McAlister **Helper** J. Plank

Prepared By D.Zuck **Hammer Weight** NA **Hammer Drop** NA inches

Sample Depth (feet below land surface) From	To	Sample Recovery (feet)	Sample Interval (feet)	Sample Description	PID (ppm)
0	5	1.7	0.0 - 1.7	Orangish Brown, Sandy SILT, fine to medium subangular to subrounded Sand, loose, dry, trace coarse subangular Gravel, few to little fine to medium subangular to subrounded Gravel, NP, no odor.	0.0

ARCADIS

Permanent Soil Vapor Point Construction Log



Project Name and No.: Lockheed Martin Utica

Location: SG-IND-4 **Address:** Indium

Town/City: Utica **State:** NY

Land-Surface Elevation and Datum:

NA feet ☐ Surveyed ☐ Estimated

Coordinates- Northing: NA **Easting:** NA

Installation Date(s): 11/14/2012

Drilling Contractor: (Diller/Helper) Zebra

Installation Method: Hand Auger/Drill rig

Equipment Used: Shovel, Rig

Groundwater Information:

Well ID: NA

Well Screen Setting: NA

Static Depth to Water: NA

Vapor Point Purpose: Perimeter Evaluation

Remarks: Saturated soils noted at ~10 feet

Soil Boring ID = SB-IND-4

**Measuring Point is Top of Well Casing Unless Otherwise Noted.

Prepared by Dan Zuck

ARCADIS

Soil Boring/Sample Log

Location: SB-IND-4 **Project Name and No.** Lockheed Martin Utica

Site Location Utica, NY (Indium) **Drilling Started** 11/14/2012 **Drilling Completed** 11/14/2012

Total Depth Drilled 16 feet **Hole Diameter** 3 to 2 inches **Sampling Interval** 0.0 - 15.0 feet

Length and Diameter of Sampling Device 1.5 ft x 4 ft **Type of Sampling Device** Liner

Drilling Method Geoprobe **Drilling Fluid Used** NA

Drilling Contractor Zebra **Driller** Will McAlister **Helper** J. Plank

Prepared By D.Zuck **Hammer Weight** NA **Hammer Drop** NA inches

Sample Depth (feet below land surface) From	To	Sample Recovery (feet)	Sample Interval (feet)	Sample Description	PID (ppm)
0	4	NA	NA	Hand cleared, Dark Brown, Sandy SILT, some medium to coarse subangular to angular gravel, loose, moist, NP, no odor.	0.0
4	8	3.8	0.0 - 3.8	Medium Brown, Sandy SILT, fine to very fine Sand, some to little medium to coarse subangular to angular Gravel, moist, stiff to very stiff, no odor, NP.	0.0
8	12	3.6	0.0 - 3.0	Medium Brown, Sandy SILT, fine to very fine Sand, some to little medium to coarse subangular to angular Gravel, moist, stiff to very stiff, no odor, NP.	0.0
			3.0 - 3.6	Brownish Grey, Sandy SILT, very fine to fine Sand, stiff to very stiff, moist to wet, little medium to coarse subangular to angular Gravel, NP, no odor.	0.0
12	16	3.7	0.0 - 0.4	Slough.	0.0
			0.4 - 0.9	Brownish Grey, Sandy SILT, very fine to fine Sand, stiff to very stiff, moist to wet, little medium to coarse subangular to angular Gravel, NP, no odor.	0.0
			0.9 - 3.7	Brownish Grey, Sandy SILT, very fine to fine Sand, very stiff, moist, some fine to coarse subangular to angular Gravel, NP, no odor.	0.0
				Note: Set SG-IND-6 at 10 to 9.5 feet based on soil saturation.	

ARCADIS

Soil Boring/Sample Log

Location: SB-IND-5 **Project Name and No.** Lockheed Martin Utica

Site Location Utica, NY (Indium) **Drilling Started** 11/14/2012 **Drilling Completed** 11/14/2012

Total Depth Drilled 11 feet **Hole Diameter** 2 inches **Sampling Interval** 0.0 - 11.0 feet

Length and Diameter of Sampling Device 1.5 ft x 4 ft **Type of Sampling Device** Liner

Drilling Method Geoprobe **Drilling Fluid Used** NA

Drilling Contractor Zebra **Driller** Will McAlister **Helper** J. Plank

Prepared By D.Zuck **Hammer Weight** NA **Hammer Drop** NA inches

Sample Depth (feet below land surface) From	To	Sample Recovery (feet)	Sample Interval (feet)	Sample Description	PID (ppm)
0	4	NA	NA	Hand cleared, Greyish Brown, Silty GRAVEL, fine to coarse subangular to subrounded Gravel, loose, wet, some to little fine to medium Sand, NP.	0.0
4	7	3.8	0.0 - 1.0	Slough.	0.0
			1.0 - 3.8	Orangish Brown, Sandy SILT, very fine to fine Sand, little fine to medium subangular to angular Gravel, stiff, pockets of wet, TP to NP, no odor.	0.0
7	11	3.2	0.0 - 3.2	Orangish Brown, Sandy SILT, very fine to fine Sand, some fine to medium subangular to angular Gravel, stiff, saturated, TP to NP, no odor.	0.0

ARCADIS

Soil Boring/Sample Log

Location: SB-IND-6 **Project Name and No.** Lockheed Martin Utica

Site Location Utica, NY (Indium) **Drilling Started** 11/14/2012 **Drilling Completed** 11/14/2012

Total Depth Drilled 4 feet **Hole Diameter** 2 inches **Sampling Interval** 0.0 - 5.0 feet

Length and Diameter of Sampling Device 1.5 ft x 4 ft **Type of Sampling Device** Liner

Drilling Method Geoprobe **Drilling Fluid Used** NA

Drilling Contractor Zebra **Driller** Will McAlister **Helper** J. Plank

Prepared By D.Zuck **Hammer Weight** NA **Hammer Drop** NA inches

Sample Depth (feet below land surface) From	To	Sample Recovery (feet)	Sample Interval (feet)	Sample Description	PID (ppm)
0	2.5	NA	NA	Hand Cleared, Medium Brown, Sandy SILT, moist, loose, very fine to fine Sand, NP.	0.0
2.5	4	NA	NA	Redish Brown, Clayey SILT, soft to stiff, wet to saturated, TP to SP, no odor, few to little fine to medium subangular Gravel.	0.0

ARCADIS

Appendix B

Indoor/Ambient Air Sample Collection Log

Sample ID: AMB-112012

Client:	LMC	**Date/Day:**	11/20/12
Project:	LMC Utica	**Sample Intake Height:**	~5' ALS
Location:	Indium Corp.,Utica, NY	**Subcontractor:**	NA
Project #:	NJ001032	**Miscellaneous Equipment:**	Cones and Truck
Samplers:	Daniel Zuck		
Coordinates:	See Figure	**Time Start:**	10:17
Outdoor/Indoor:	Outside	**Time Stop:**	17:10

Instrument Readings:

Time (Collected Sample)	Canister Pressure (inches Hg)	Temperature (F)	Relative Humidity (%)	Air Speed (MPH)	Barometric Pressure	PID (ppb)
10:17	-31	39.3	59.8	0	30.09	0
12:00	-28	NC	NC	0	NC	0
15:00	-22	47.8	42.1	0	30.01	0
17:10	-18	40.1	57.2	0	30.02	0

SUMMA Canister Information

Size (circle one): (**1 L**) **6 L**

Canister ID: Arc: 322 / IND: 130

263

Flow Controller ID: _____

General Observations/Notes:

Photo Number: 101-1809
NC: not collected

Soil Gas Sample Collection Log

Sample ID: SG-IND-1

Client:	LMC	**Date/Day:**	11/20/12
Project:	LMC Utica	**Sample Intake Height:**	1' ALS
Location:	Indium Corp., Utica, NY	**Subcontractor:**	NA
Project #:	NJ001032	**Miscellaneous Equipment:**	Truck
Samplers:	Daniel Zuck	**Subcontractor:**	None
Logged By:	Daniel Zuck	**Equipment:**	Hand Pump
Sampling Depth:	2' – 2.5'	**Moisture Content of Sampling Zone (circle one):**	Dry / (Moist)
Probe (circle one):	(Permanent) / Temporary	**Approximate Volume of Sampling Train::**	9 mL x 5 = 45 mL
Time of Collection:	Start: 14:32 Finish: 16:42	**Approximate Purge Volume:**	[(45 + 20.18 mL) = 65 mL * (3v)] = 195 mL purged pre-sample.

Nearby Groundwater Monitoring Wells/Water Levels:

Well ID	Depth to Groundwater (feet)

SUMMA Canister Information

Size (circle one): (**1 L**) **6 L**

Canister ID: ARC: 458 / IND: 364

Flow Controller ID: 342

Tracer Gas Information (if applicable)

Tracer Gas: Helium

Canister Pressure (inches Hg):	
Measured Prior to Sample Collection	**Measured Following Sample Collection**
-28.5	-11.5

Tracer Gas Concentration (if applicable):			
Measured from Soil Vapor Tubing		**Measured in 'Concentrated' Area**	
Post Purge / Post Sample		**Prior to Purging**	**Post Purge / Post Purging**
0.0 ppm / 13.2 ppm		80.3%	66.9% / 23.1%

General Observations/Notes:

Photo ID: 101-1810
0 ppb reading following sample collection in sample tube.

Approximating One-Well Volume (for purging temporary points):
A 6-inch sampling area will have sampling volume of approximately 20.18 mL. Each foot of ¼-inch tubing will have a volume of approximately 8.62 mL.

Soil Gas Sample Collection Log

Sample ID: SG-IND-2

Client:	LMC	**Date/Day:**	11/20/12
Project:	LMC Utica	**Sample Intake Height:**	1' ALS
Location:	Indium Corp., Utica, NY	**Subcontractor:**	NA
Project #:	NJ001032	**Miscellaneous Equipment:**	Truck
Samplers:	Daniel Zuck	**Subcontractor:**	None
Logged By:	Daniel Zuck	**Equipment:**	Hand Pump
Sampling Depth:	4.5' – 5'	**Moisture Content of Sampling Zone (circle one):**	Dry / (Moist)
Probe (circle one):	(Permanent) / Temporary	**Approximate Volume of Sampling Train::**	9 mL x 8 = 72 mL
Time of Collection:	Start: 13:40 Finish: 16:25	**Approximate Purge Volume:**	[(72 + 20.18 mL) = 92 mL * (3v)] = 276 mL purged pre-sample.

Nearby Groundwater Monitoring Wells/Water Levels:

Well ID	Depth to Groundwater (feet)

SUMMA Canister Information

Size (circle one): (**1 L**) **6 L**

Canister ID: ARC: 553 / IND: 240

Flow Controller ID: 153

Tracer Gas Information (if applicable)

Tracer Gas: Helium

Canister Pressure (inches Hg):	
Measured Prior to Sample Collection	**Measured Following Sample Collection**
-30	-7.5

Tracer Gas Concentration (if applicable):		
Measured from Soil Vapor Tubing	**Measured in 'Concentrated' Area**	
Post Purge / Post Sample	**Prior to Purging**	**Post Purge / Post Purging**
0.0 ppm / 0.0 ppm	69.0%	61.2% / 34.6%

General Observations/Notes:

Photo ID: 101-1808
0 ppb reading following sample collection in sample tube.

Approximating One-Well Volume (for purging temporary points):
A 6-inch sampling area will have sampling volume of approximately 20.18 mL. Each foot of ¼-inch tubing will have a volume of approximately 8.62 mL.

Soil Gas Sample Collection Log

Sample ID: SG-IND-3

Client:	LMC	**Date/Day:**	11/20/12
Project:	LMC Utica	**Sample Intake Height:**	1' ALS
Location:	Indium Corp., Utica, NY	**Subcontractor:**	NA
Project #:	NJ001032	**Miscellaneous Equipment:**	Truck
Samplers:	Daniel Zuck	**Subcontractor:**	None
Logged By:	Daniel Zuck	**Equipment:**	Hand Pump
Sampling Depth:	4.5' – 5'	**Moisture Content of Sampling Zone (circle one):**	Dry / (Moist)
Probe (circle one):	(Permanent) / Temporary	**Approximate Volume of Sampling Train::**	9 mL x 8 = 72 mL
Time of Collection:	Start: 12:45 Finish: 15:32	**Approximate Purge Volume:**	[(72 + 20.18 mL) = 92 mL * (3v)] = 276 mL purged pre-sample.

Nearby Groundwater Monitoring Wells/Water Levels:

Well ID	Depth to Groundwater (feet)

SUMMA Canister Information

Size (circle one): (**1 L**) **6 L**

Canister ID: ARC: 285 / IND: 459

Flow Controller ID: 281

Tracer Gas Information (if applicable)

Tracer Gas: Helium

Canister Pressure (inches Hg):	
Measured Prior to Sample Collection	**Measured Following Sample Collection**
-29	-7.5

Tracer Gas Concentration (if applicable):		
Measured from Soil Vapor Tubing	**Measured in 'Concentrated' Area**	
Post Purge / Post Sample	**Prior to Purging**	**Post Purge / Post Purging**
0.0 ppm / 0.0 ppm	65.0%	62.6% / 56.1%

General Observations/Notes:

Photo ID: 101-1807
0 ppb reading following sample collection in sample tube.

Approximating One-Well Volume (for purging temporary points):
A 6-inch sampling area will have sampling volume of approximately 20.18 mL. Each foot of ¼-inch tubing will have a volume of approximately 8.62 mL.

Soil Gas Sample Collection Log

Sample ID: SG-IND-4

Client:	LMC	**Date/Day:**	11/20/12
Project:	LMC Utica	**Sample Intake Height:**	1' ALS
Location:	Indium Corp., Utica, NY	**Subcontractor:**	NA
Project #:	NJ001032	**Miscellaneous Equipment:**	Truck
Samplers:	Daniel Zuck	**Subcontractor:**	None
Logged By:	Daniel Zuck	**Equipment:**	Hand Pump
Sampling Depth:	9.0' – 9.5'	**Moisture Content of Sampling Zone (circle one):**	Dry / (Moist)
Probe (circle one):	(Permanent) / Temporary	**Approximate Volume of Sampling Train::**	NA, see note.
Time of Collection:	Start: Finish: NA, see note.	**Approximate Purge Volume:**	NA, see note.

Nearby Groundwater Monitoring Wells/Water Levels:

Well ID	Depth to Groundwater (feet)

SUMMA Canister Information

Size (circle one): (1 L) 6 L

Canister ID: ARC: 481 / IND: 325

Flow Controller ID: 187

Tracer Gas Information (if applicable)

Tracer Gas: Helium

Canister Pressure (inches Hg):	
Measured Prior to Sample Collection	**Measured Following Sample Collection**
NA, see note.	NA, see note.

Tracer Gas Concentration (if applicable):		
Measured from Soil Vapor Tubing	**Measured in 'Concentrated' Area**	
Post Purge / Post Sample	**Prior to Purging**	**Post Purge / Post Purging**
NA, see note.	NA, see note.	NA, see note.

General Observations/Notes:

Photo ID: NA, see note.
Note: Water in purge line prior to sample attempt. No sample collected.
NA – Not Applicable

Approximating One-Well Volume (for purging temporary points):
A 6-inch sampling area will have sampling volume of approximately 20.18 mL. Each foot of ¼-inch tubing will have a volume of approximately 8.62 mL.

ARCADIS

Appendix C

TO-15 Package Review Checklist

Client: Arcadis Project: LMC - Utica SDG: C1211047

		YES	NO	NA
Analytical Results	Present and Complete	✓		
TIC's present	Present and Complete	✓		
	Holding Times Met	✓		

Comments:

Chain-of-Custody	Present and Complete	✓		
Surrogate Recovery	Present and Complete	✓		
	Recoveries within limits	✓		
	Sample(s) reanalyzed			✓
Internal Standards Recovery	Present and Complete	✓		
	Recoveries within limits	✓		
	Sample(s) reanalyzed			✓

Comments:

Lab Control Sample (LCS)	Present and Complete	✓		
	Recoveries within limits	✓		
Lab Control Sample Dupe (LCSD)	Present and Complete	✓		
	Recoveries within limits	✓		
MS/MSD	Present and Complete			✓
	Recoveries within limits			✓

Comments: No MS/MSD

Sample Raw Data	Present and Complete	✓		
	Spectra present for all samples	✓		

Comments:

TO-15 Package Review Checklist

Client: Arcadis Project: LMC-Utica SDG: C1211047

		YES	NO	NA
Standards Data				
Initial Calibration Summary	Present and Complete	✓		
	Calibration(s) met criteria	✓		
Continuing Calibration Summary	Present and Complete	✓		
	Calibration(s) met criteria	✓		
Standards Raw Data	Present and Complete	✓		

Comments:

Raw Quality Control Data

Tune Criteria Report	Present and Complete	✓		
Method Blank Data	MB Results <PQL	✓		
	Associated results flagged "B"			✓
LCS sample data	Present and Complete	✓		
LCSD sample data	Present and Complete	✓		
MS/MSD sample data	Present and Complete			✓

Comments:

Logbooks

Injection Log	Present and Complete	✓		
Standards Log	Present and Complete	✓		
Can Cleaning Log	Present and Complete	✓		
	Raw Data Present	✓		
Calculation sheet	Present and Complete	✓		
IDL's	Present and Complete	✓		
Bottle Order Form	Present and Complete	✓		
Sample Tracking Form	Present and Complete	✓		

Additional Comments:

Section Supervisor: [signature] Date: 12/20/12

QC Supervisor: [signature] Date: 12/20/12

CENTEK LABORATORIES, LLC

143 Midler Park Drive * Syracuse, NY 13206
Phone (315) 431-9730 * Emergency 24/7 (315) 416-2752
NYSDOH ELAP Certificate No. 11830

Analytical Report

Jeff Bonsteel
Arcadis - Newtown
10 Friends Lane, Suite 200
Newtown, PA 18940

TEL: (267) 685-1874
FAX
RE: LMC Utica

Friday, November 30, 2012
Order No.: C1211047

Dear Jeff Bonsteel:

Centek Laboratories, LLC received 4 sample(s) on 11/21/2012 for the analyses presented in the following report.

I certify that this data package is in compliance with the terms and conditions of the Contract, both technically and for completeness. Release of the data contained in this hardcopy data package and/or in the computer readable data submitted has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objective except as indicated in the case narrative. All samples were received and analyzed within the EPA recommended holding times. Test results are not Method Blank (MB) corrected for contamination.

Centek Laboratories is distinctively qualified to meet your needs for precise and timely volatile organic compound analysis. We perform all analyses according to EPA, NIOSH or OSHA-approved analytical methods. Centek Laboratories is dedicated to providing quality analyses and exceptional customer service. Samples were analyzed using the methods outlined in the following references:

Compendium of Methods for the Determination of Toxic Organic Compounds, Compendium Method TO-15, January 1999.

Analytical results relate to samples as received at laboratory. We do our best to make our reporting format clear and understandable and hope you are thoroughly satisfied with our services.

Please contact your client service representative at (315) 431-9730 or myself, if you would like any additional information regarding this report.

Sincerely,

William Dobbin
Lead Technical Director

Disclaimer: The test results and procedures utilized, and laboratory interpretations of the data obtained by Centek as contained in this report are believed by Centek to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of Centek for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages. ELAP does not offer certification for the following parameters by this method at present time, they are: 4-ethyltoluene, ethyl acetate and propylene.4-ethyltoluene, ethyl acetate and propylene.

Centek Laboratories, LLC Terms and Conditions

Sample Submission

All samples sent to Centek Laboratories should be accompanied by our Request for Analysis Form or Chain of Custody Form. A Chain of Custody will be provided with each order shipped for all sampling events, or if needed, one is available at our website www.CentekLabs.com. Samples received after 3:00pm are considered to be a part of the next day's business.

Sample Media

Samples can be collected in an canister or a Tedlar bag. Depending on your analytical needs, Centek Laboratories may receive a bulk, liquid, soil or other matrix sample for headspace analysis.

Blanks

Every sample is run with a surrogate or tracer compound at a pre-established concentration. The surrogate compound run with each sample is used as a standard to measure the performance of each run of the instrument. If required, a Minican can be provided containing nitrogen to be run as a trip blank with your samples.

Sampling Equipment

Centek Laboratories will be happy to provide the canisters to carry-out your sampling event at no charge. The necessary accessories, such as regulators, tubing or personal sampling belts, are also provided to meet your sampling needs. The customer is responsible for all shipping charges to the client's destination and return shipping to the laboratory. Client assumes all responsibility for lost, stolen and any dameges of equipment.

Turn Around time (TAT)

Centek Laboratories will provide results to its clients in one business-week by 6:00pm EST after receipt of samples. For example, if samples are received on a Monday they are due on the following Monday by 6:00pm EST. Results are faxed or emailed to the requested location indicated on the Chain of Custody. Non-routine analysis may require more than the one business-week turnaround time. Please confirm non-routine sample turnaround times.

Reporting

Results are emailed or faxed at no additional charge. A hard copy of the result report is mailed

within 24 hours of the faxing or emailing of your results. Cat "B" like packages are within 3-4 weeks from time of analysis. Standard Electronic Disk Deliverables (EDD) is also available at no additional charge.

Payment Terms

Payment for all purchases shall be due within 30 days from date of invoice. The client agrees to pay a finance charge of 1.5% per month on the overdue balance and cost of collection, including attorney fees, if collection proceedings are necessary. You must have a completed credit application on file to extend credit. Purchase orders or checks information must be submitted for us to release results

Rush Turnaround Samples

Expedited turn around times is available. Please confirm rush turnaround times with Client Services before submitting samples.

Applicable Surcharges for Rush Turnaround Samples:
Same day TAT = 200%
Next business day TAT by Noon = 150%
Next business day TAT by 6:00pm = 100%
Second business day TAT by 6:00pm = 75%
Third business day TAT by 6:00pm = 50%
Fourth business day TAT by 6:00pm = 35%
Fifth business day = Standard

Statement of Confidentiality

Centek Laboratories, LLC is aware of the importance of the confidentiality of results to many of our clients. Your name and data will be held in the strictest of confidence. We will not accept business that may constitute a conflict of interest. We commonly sign Confidential Nondisclosure Agreements with clients prior to beginning work. All research, results and reports will be kept strictly confidential. Secrecy Agreements and Disclosure Statements will be signed for the client if so specified. Results will be provided only to the addressee specified on the Chain of Custody Form submitted with the samples unless law requires release. Written permission is required from the addressee to release results to any other party.

Limitation on Liability

Centek Laboratories, LLC warrants the test results to be accurate to the methodology and sample type for each sample submitted to Centek Laboratories, LLC. In no event shall Centek Laboratories, LLC be liable for direct, indirect, special, punitive, incidental, exemplary or consequential damages, or any damages whatsoever, even if Centek Laboratories, LLC has been previously advised of the possibility of such damages whether in an action under contract, negligence, or any other theory, arising out of or in connection with the use, inability to use or performance of the information, services, products and materials available from the laboratory or this site. These limitations shall apply notwithstanding any failure of essential purpose of any limited remedy. Because some jurisdictions do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of liability for consequential or incidental damages, the above limitations may not apply to you. This is a comprehensive limitation of liability that applies to all damages of any kind, including (without limitation) compensatory, direct, indirect or consequential damages, loss of data, income or profit and or loss of or damage to property and claims of third parties.

CENTEK LABORATORIES, LLC

Date: *20-Dec-12*

CLIENT: Arcadis - Newtown
Project: LMC Utica
Lab Order: C1211047

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Compendium of Methods for the Determination of Toxic Organic Compounds, Compendium Method TO-15, January 1999 and Centek Laboratories, LLC SOP TS-80:

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objective except as indicated in the corrective action report(s). All samples were received and analyzed within the EPA recommended holding times. Test results are not Method Blank (MB) corrected for contamination.

NYSDEC ASP samples:
Canisters should be evacuated to a reading of less than or equal to 50 millitorr prior to shipment to sampling personnel. The vacuum in the canister will be field checked prior to sampling, and must read 28" of Hg (±2", vacuum, absolute) before a sample can be collected. After the sample has been collected, the pressure of the canister will be read and recorded again, and must be 5" of Hg (±1", vacuum, absolute) for the sample to be valid. Once received at the laboratory, the canister vacuum should be confirmed to be 5" of Hg,±1". Please record and report the pressure/vacuum of received canisters on the sample receipt paperwork. A pressure/vacuum reading should also be taken just prior to the withdrawal of sample from the canister, and recorded on the sample preparation log sheet. All regulators are calibrated to meet these requirements before they leave the laboratory. However, due to environmental conditions and use of the equipment Centek can not guarantee that this criteria can always be achieved.

Centek Chain of Custody

Centek Laboratories
143 Midler Park Drive
Syracuse, NY 13206
315-431-9730
www.CentekLabs.com
Vapor Intrusion & IAQ

Site Name: LMC Utica
Project: Indium
PO#: NJ001032
Quote # Q-
Other:

Detection Limit	Report Level
☐ 5ppbv	☐ Level I
☐ 1ug/M3	☐ Level II
☐ 1ug/M3 +TCE .25	☐ Cat "B" Like

Turnaround Time:	Check One	Rush TAT Surcharge %	Due Date:
5 Business Days	☒	0%	
4 Business Days	☐	25%	
3 Business Days	☐	50%	
2 Business Days	☐	75%	
Next Day by 5pm	☐	100%	
Next Day by Noon	☐	150%	
Same Day	☐	200%	

Company: Arcadis
Report to: Jeff Bonsteel
Address: 10 Friends Lane Suite 200
City, State, Zip: Newtown, PA 18940
Email: JBonsteel@Arcadis-us.com
Phone: 267-685-1874

Company:
Check Here If Same: ☐
Invoice to:
Address:
City, State, Zip:
Email:
Phone:

Sample ID	Date Sampled	Canister Number	Regulator Number	Analysis Request	Comments	Vacuum Start/Stop
SG-IND-1 (Arc)	11/20/12 1432	458	342	TO-15		-28.5/11.5
SG-IND-2 (Arc)	1340	553	153	TO-15		-30/-7.5
SG-IND-3 (Arc)	1245	285	281	TO-15		-29/-7.5
AMB-112012	1017	322	263	TO-15		-31/-18

Chain of Custody	Print Name	Signature	Date/Time	Courier: CIRCLE ONE
Sampled by:	Daniel Zuck		11/20/12 1740	FedEx (UPS) Pickup/Dropoff
Relinquished by:				For LAB USE ONLY
Received at Lab by:	Jan Spata		11/21/12	Work Order # C121047

*** By signing Centek Labs Chain of Custody, you are accepting Centek Labs Terms and Conditions listed on the reverse side.

CENTEK LABORATORIES, LLC

Date: *20-Dec-12*

CLIENT: Arcadis - Newtown
Project: LMC Utica
Lab Order: C1211047

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Tag Number	Collection Date	Date Received
C1211047-001A	SG-IND-1 (ARC)	458,342	11/20/2012	11/21/2012
C1211047-002A	SG-IND-2 (ARC)	553,153	11/20/2012	11/21/2012
C1211047-003A	SG-IND-3 (ARC)	285,281	11/20/2012	11/21/2012
C1211047-004A	AMB-112012	322,263	11/20/2012	11/21/2012

CENTEK LABORATORIES, LLC

Sample Receipt Checklist

Client Name: **ARCADIS - NEWTOWN** Date and Time Received: **11/21/2012**

Work Order Number **C1211047** Received by: JDS

Checklist completed by: _____ 11/21/12 Reviewed by: M 11/21/12
Signature Date Initials Date

Matrix: Carrier name: UPS

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☑	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted: _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Lab Order: C1211047
Client: Arcadis - Newtown
Project: LMC Utica

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
C1211047-001A	SG-IND-1 (ARC)	11/20/2012		1ug/M3 by Method TO15			11/29/2012
				1ug/M3 by Method TO15			11/29/2012
				1ug/M3 by Method TO15			11/28/2012
C1211047-002A	SG-IND-2 (ARC)		Air	1ug/M3 by Method TO15			11/29/2012
				1ug/M3 by Method TO15			11/28/2012
C1211047-003A	SG-IND-3 (ARC)			1ug/M3 by Method TO15			11/29/2012
				1ug/M3 by Method TO15			11/28/2012
C1211047-004A	AMB-112012			1ug/M3 by Method TO15			11/29/2012
				1ug/M3 by Method TO15			11/28/2012

Centek Laboratories, LLC

CENTEK LABORATORIES, LLC
Air Quality Testing...It's a Gas
143 Midler Park Drive * Syracuse, NY 13206
TEL: 315-431-9730 * FAX: 315-431-9731

CANISTER ORDER

3353

20-Dec-12

SHIPPED TO:

Company: Arcadis - Newtown
Contact: Jeff Bonsteel
Address: 10 Friends Lane, Suite 200
Newtown, PA 18940
Phone: 267-685-1800
Quote ID: 0
Project:

Submitted By:
MadeBy: jan

Ship Date: 11/15/2012
VIA: FedEx
Due Date: 11/19/2012

Bottle Code	Bottle Type	TEST(s)	QTY
MC1000CC	1L Mini-Can	1ug/M3 by Method TO15	8

Can / Reg ID	Description
153	Time-Set Reg - 648 VI
263	Time-Set Reg - 838R VI
274	1L Mini-Can - 1189 VI
281	Time-Set Reg - 637 VI
285	1L Mini-Can - 1061 VI
322	1L Mini-Can - 1285 VI
342	Time-Set Reg - 739 VI
458	1L Mini-Can - 1361 VI
553	1L Mini-Can - 121 VI

Comments: 7 (1L) @ 2 hrs +T's for dupes + 1(L) @8hrs + full Helium setup dan zackWAC110312D-I

1 of 1

ASP CAT B DELIVERABLE PACKAGE
Table of Contents

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	C1211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-001A	**Matrix:**	

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS		FLD				Analyst:
Lab Vacuum In	-11			"Hg		11/21/2012
Lab Vacuum Out	-30			"Hg		11/21/2012
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,1,2,2-Tetrachloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,1,2-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,1-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,1-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2,4-Trichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2,4-Trimethylbenzene	2.5	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2-Dibromoethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2-Dichloropropane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,3,5-Trimethylbenzene	0.63	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,3-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,4-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,4-Dioxane	< 0.30	0.30		ppbV	1	11/28/2012 6:58:00 PM
2,2,4-trimethylpentane	3.5	1.5		ppbV	10	11/29/2012 1:27:00 AM
4-ethyltoluene	0.83	0.15		ppbV	1	11/28/2012 6:58:00 PM
Acetone	12	3.0		ppbV	10	11/29/2012 1:27:00 AM
Allyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Benzene	6.4	1.5		ppbV	10	11/29/2012 1:27:00 AM
Benzyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Bromodichloromethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Bromoform	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Bromomethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Carbon disulfide	0.22	0.15		ppbV	1	11/28/2012 6:58:00 PM
Carbon tetrachloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Chlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Chloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Chloroform	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Chloromethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
cis-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
cis-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Cyclohexane	46	6.0		ppbV	40	11/29/2012 2:01:00 AM
Dibromochloromethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Ethyl acetate	< 0.25	0.25		ppbV	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
JN	Non-routine analyte. Quantitation estimated.
S	Spike Recovery outside accepted recovery limits
.	Results reported are not blank corrected
E	Value above quantitation range
J	Analyte detected at or below quantitation limits
ND	Not Detected at the Reporting Limit

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	C1211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-001A	**Matrix:**	

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: **RJP**
Ethylbenzene	2.1	0.15		ppbV	1	11/28/2012 6:58:00 PM
Freon 11	0.19	0.15		ppbV	1	11/28/2012 6:58:00 PM
Freon 113	0.12	0.15	J	ppbV	1	11/28/2012 6:58:00 PM
Freon 114	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Freon 12	0.40	0.15		ppbV	1	11/28/2012 6:58:00 PM
Heptane	5.7	1.5		ppbV	10	11/29/2012 1:27:00 AM
Hexachloro-1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Hexane	37	6.0		ppbV	40	11/29/2012 2:01:00 AM
Isopropyl alcohol	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
m&p-Xylene	4.0	3.0		ppbV	10	11/29/2012 1:27:00 AM
Methyl Butyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 6:58:00 PM
Methyl Ethyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 6:58:00 PM
Methyl Isobutyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 6:58:00 PM
Methyl tert-butyl ether	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Methylene chloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
o-Xylene	2.6	0.15		ppbV	1	11/28/2012 6:58:00 PM
Propylene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Styrene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Tetrachloroethylene	0.55	0.15		ppbV	1	11/28/2012 6:58:00 PM
Tetrahydrofuran	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Toluene	15	1.5		ppbV	10	11/29/2012 1:27:00 AM
trans-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
trans-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Trichloroethene	0.46	0.15		ppbV	1	11/28/2012 6:58:00 PM
Vinyl acetate	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Vinyl Bromide	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Vinyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Surr: Bromofluorobenzene	109	70-130		%REC	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	C1211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-001A	**Matrix:**	

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: **RJP**
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 6:58:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 6:58:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 6:58:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 6:58:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 6:58:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 6:58:00 PM
1,2,4-Trimethylbenzene	12	0.75		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 6:58:00 PM
1,3,5-Trimethylbenzene	3.1	0.75		ug/m3	1	11/28/2012 6:58:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 6:58:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 6:58:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 6:58:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 6:58:00 PM
2,2,4-trimethylpentane	17	7.1		ug/m3	10	11/29/2012 1:27:00 AM
4-ethyltoluene	4.1	0.75		ug/m3	1	11/28/2012 6:58:00 PM
Acetone	29	7.2		ug/m3	10	11/29/2012 1:27:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 6:58:00 PM
Benzene	21	4.9		ug/m3	10	11/29/2012 1:27:00 AM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 6:58:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 6:58:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 6:58:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 6:58:00 PM
Carbon disulfide	0.70	0.47		ug/m3	1	11/28/2012 6:58:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 6:58:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 6:58:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 6:58:00 PM
Chloroform	< 0.74	0.74		ug/m3	1	11/28/2012 6:58:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 6:58:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 6:58:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 6:58:00 PM
Cyclohexane	160	21		ug/m3	40	11/29/2012 2:01:00 AM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 6:58:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 6:58:00 PM
Ethylbenzene	9.4	0.66		ug/m3	1	11/28/2012 6:58:00 PM
Freon 11	1.1	0.86		ug/m3	1	11/28/2012 6:58:00 PM
Freon 113	0.93	1.2	J	ug/m3	1	11/28/2012 6:58:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	C1211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-001A	**Matrix:**	

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
Freon 12	2.0	0.75		ug/m3	1	11/28/2012 6:58:00 PM
Heptane	24	6.2		ug/m3	10	11/29/2012 1:27:00 AM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 6:58:00 PM
Hexane	130	21		ug/m3	40	11/29/2012 2:01:00 AM
Isopropyl alcohol	< 0.37	0.37		ug/m3	1	11/28/2012 6:58:00 PM
m&p-Xylene	18	13		ug/m3	10	11/29/2012 1:27:00 AM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 6:58:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 6:58:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 6:58:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 6:58:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 6:58:00 PM
o-Xylene	11	0.66		ug/m3	1	11/28/2012 6:58:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 6:58:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 6:58:00 PM
Tetrachloroethylene	3.8	1.0		ug/m3	1	11/28/2012 6:58:00 PM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 6:58:00 PM
Toluene	57	5.7		ug/m3	10	11/29/2012 1:27:00 AM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 6:58:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 6:58:00 PM
Trichloroethene	2.5	0.82		ug/m3	1	11/28/2012 6:58:00 PM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 6:58:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 6:58:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS		FLD				Analyst:
Lab Vacuum In	-7			"Hg		11/21/2012
Lab Vacuum Out	-30			"Hg		11/21/2012
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,1,2,2-Tetrachloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,1,2-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,1-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,1-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2,4-Trichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2,4-Trimethylbenzene	0.40	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2-Dibromoethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2-Dichloropropane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,3,5-Trimethylbenzene	0.10	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,3-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,4-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,4-Dioxane	< 0.30	0.30		ppbV	1	11/28/2012 7:33:00 PM
2,2,4-trimethylpentane	0.12	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
4-ethyltoluene	0.13	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
Acetone	12	3.0		ppbV	10	11/29/2012 2:35:00 AM
Allyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Benzene	0.41	0.15		ppbV	1	11/28/2012 7:33:00 PM
Benzyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Bromodichloromethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Bromoform	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Bromomethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Carbon disulfide	0.58	0.15		ppbV	1	11/28/2012 7:33:00 PM
Carbon tetrachloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Chlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Chloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Chloroform	0.27	0.15		ppbV	1	11/28/2012 7:33:00 PM
Chloromethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
cis-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
cis-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Cyclohexane	0.74	0.15		ppbV	1	11/28/2012 7:33:00 PM
Dibromochloromethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Ethyl acetate	< 0.25	0.25		ppbV	1	11/28/2012 7:33:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: **RJP**
Ethylbenzene	0.26	0.15		ppbV	1	11/28/2012 7:33:00 PM
Freon 11	0.19	0.15		ppbV	1	11/28/2012 7:33:00 PM
Freon 113	0.14	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
Freon 114	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Freon 12	0.48	0.15		ppbV	1	11/28/2012 7:33:00 PM
Heptane	0.31	0.15		ppbV	1	11/28/2012 7:33:00 PM
Hexachloro-1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Hexane	0.76	0.15		ppbV	1	11/28/2012 7:33:00 PM
Isopropyl alcohol	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
m&p-Xylene	0.84	0.30		ppbV	1	11/28/2012 7:33:00 PM
Methyl Butyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 7:33:00 PM
Methyl Ethyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 7:33:00 PM
Methyl Isobutyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 7:33:00 PM
Methyl tert-butyl ether	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Methylene chloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
o-Xylene	0.25	0.15		ppbV	1	11/28/2012 7:33:00 PM
Propylene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Styrene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Tetrachloroethylene	0.57	0.15		ppbV	1	11/28/2012 7:33:00 PM
Tetrahydrofuran	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Toluene	1.8	0.15		ppbV	1	11/28/2012 7:33:00 PM
trans-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
trans-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Trichloroethene	0.12	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
Vinyl acetate	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Vinyl Bromide	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Vinyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Surr: Bromofluorobenzene	107	70-130		%REC	1	11/28/2012 7:33:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: RJP
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 7:33:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 7:33:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 7:33:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 7:33:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 7:33:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 7:33:00 PM
1,2,4-Trimethylbenzene	2.0	0.75		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 7:33:00 PM
1,3,5-Trimethylbenzene	0.50	0.75	J	ug/m3	1	11/28/2012 7:33:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 7:33:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 7:33:00 PM
2,2,4-trimethylpentane	0.57	0.71	J	ug/m3	1	11/28/2012 7:33:00 PM
4-ethyltoluene	0.65	0.75	J	ug/m3	1	11/28/2012 7:33:00 PM
Acetone	28	7.2		ug/m3	10	11/29/2012 2:35:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 7:33:00 PM
Benzene	1.3	0.49		ug/m3	1	11/28/2012 7:33:00 PM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 7:33:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 7:33:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 7:33:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 7:33:00 PM
Carbon disulfide	1.8	0.47		ug/m3	1	11/28/2012 7:33:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 7:33:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 7:33:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 7:33:00 PM
Chloroform	1.3	0.74		ug/m3	1	11/28/2012 7:33:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 7:33:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 7:33:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 7:33:00 PM
Cyclohexane	2.6	0.52		ug/m3	1	11/28/2012 7:33:00 PM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 7:33:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
Ethylbenzene	1.1	0.66		ug/m3	1	11/28/2012 7:33:00 PM
Freon 11	1.1	0.86		ug/m3	1	11/28/2012 7:33:00 PM
Freon 113	1.1	1.2	J	ug/m3	1	11/28/2012 7:33:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 7:33:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: **RJP**
Freon 12	2.4	0.75		ug/m3	1	11/28/2012 7:33:00 PM
Heptane	1.3	0.62		ug/m3	1	11/28/2012 7:33:00 PM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 7:33:00 PM
Hexane	2.7	0.54		ug/m3	1	11/28/2012 7:33:00 PM
Isopropyl alcohol	< 0.37	0.37		ug/m3	1	11/28/2012 7:33:00 PM
m&p-Xylene	3.7	1.3		ug/m3	1	11/28/2012 7:33:00 PM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 7:33:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 7:33:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 7:33:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 7:33:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 7:33:00 PM
o-Xylene	1.1	0.66		ug/m3	1	11/28/2012 7:33:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 7:33:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 7:33:00 PM
Tetrachloroethylene	3.9	1.0		ug/m3	1	11/28/2012 7:33:00 PM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 7:33:00 PM
Toluene	6.8	0.57		ug/m3	1	11/28/2012 7:33:00 PM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 7:33:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 7:33:00 PM
Trichloroethene	0.66	0.82	J	ug/m3	1	11/28/2012 7:33:00 PM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 7:33:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 7:33:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 7:33:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS		FLD				Analyst:
Lab Vacuum In	-7			"Hg		11/21/2012
Lab Vacuum Out	-30			"Hg		11/21/2012
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,1,2,2-Tetrachloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,1,2-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,1-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,1-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2,4-Trichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2,4-Trimethylbenzene	0.45	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2-Dibromoethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2-Dichloropropane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,3,5-Trimethylbenzene	0.10	0.15	J	ppbV	1	11/28/2012 8:09:00 PM
1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,3-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,4-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,4-Dioxane	< 0.30	0.30		ppbV	1	11/28/2012 8:09:00 PM
2,2,4-trimethylpentane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
4-ethyltoluene	0.12	0.15	J	ppbV	1	11/28/2012 8:09:00 PM
Acetone	9.4	3.0		ppbV	10	11/29/2012 3:45:00 AM
Allyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Benzene	0.20	0.15		ppbV	1	11/28/2012 8:09:00 PM
Benzyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Bromodichloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Bromoform	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Bromomethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Carbon disulfide	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Carbon tetrachloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Chlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Chloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Chloroform	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Chloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
cis-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
cis-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Cyclohexane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Dibromochloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Ethyl acetate	< 0.25	0.25		ppbV	1	11/28/2012 8:09:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
Ethylbenzene	0.24	0.15		ppbV	1	11/28/2012 8:09:00 PM
Freon 11	0.16	0.15		ppbV	1	11/28/2012 8:09:00 PM
Freon 113	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Freon 114	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Freon 12	21	1.5		ppbV	10	11/29/2012 3:45:00 AM
Heptane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Hexachloro-1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Hexane	0.61	0.15		ppbV	1	11/28/2012 8:09:00 PM
Isopropyl alcohol	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
m&p-Xylene	0.97	0.30		ppbV	1	11/28/2012 8:09:00 PM
Methyl Butyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:09:00 PM
Methyl Ethyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:09:00 PM
Methyl Isobutyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:09:00 PM
Methyl tert-butyl ether	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Methylene chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
o-Xylene	0.29	0.15		ppbV	1	11/28/2012 8:09:00 PM
Propylene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Styrene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Tetrachloroethylene	2.2	1.5		ppbV	10	11/29/2012 3:45:00 AM
Tetrahydrofuran	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Toluene	1.7	0.15		ppbV	1	11/28/2012 8:09:00 PM
trans-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
trans-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Trichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Vinyl acetate	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Vinyl Bromide	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Vinyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Surr: Bromofluorobenzene	90.0	70-130		%REC	1	11/28/2012 8:09:00 PM

NOTES:
Sample has large interfering compound in begging of run. Used 10x dilution for Freon 12.

Qualifiers:	**	Reporting Limit	.	Results reported are not blank corrected
	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
	JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
	S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: **RJP**
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:09:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:09:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:09:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:09:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:09:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 8:09:00 PM
1,2,4-Trimethylbenzene	2.2	0.75		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 8:09:00 PM
1,3,5-Trimethylbenzene	0.50	0.75	J	ug/m3	1	11/28/2012 8:09:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 8:09:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 8:09:00 PM
2,2,4-trimethylpentane	< 0.71	0.71		ug/m3	1	11/28/2012 8:09:00 PM
4-ethyltoluene	0.60	0.75	J	ug/m3	1	11/28/2012 8:09:00 PM
Acetone	23	7.2		ug/m3	10	11/29/2012 3:45:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 8:09:00 PM
Benzene	0.65	0.49		ug/m3	1	11/28/2012 8:09:00 PM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 8:09:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:09:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 8:09:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 8:09:00 PM
Carbon disulfide	< 0.47	0.47		ug/m3	1	11/28/2012 8:09:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 8:09:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 8:09:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 8:09:00 PM
Chloroform	< 0.74	0.74		ug/m3	1	11/28/2012 8:09:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 8:09:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:09:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:09:00 PM
Cyclohexane	< 0.52	0.52		ug/m3	1	11/28/2012 8:09:00 PM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 8:09:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
Ethylbenzene	1.1	0.66		ug/m3	1	11/28/2012 8:09:00 PM
Freon 11	0.91	0.86		ug/m3	1	11/28/2012 8:09:00 PM
Freon 113	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 8:09:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: **RJP**
Freon 12	110	7.5		ug/m3	10	11/29/2012 3:45:00 AM
Heptane	< 0.62	0.62		ug/m3	1	11/28/2012 8:09:00 PM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 8:09:00 PM
Hexane	2.2	0.54		ug/m3	1	11/28/2012 8:09:00 PM
Isopropyl alcohol	< 0.37	0.37		ug/m3	1	11/28/2012 8:09:00 PM
m&p-Xylene	4.3	1.3		ug/m3	1	11/28/2012 8:09:00 PM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 8:09:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 8:09:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 8:09:00 PM
o-Xylene	1.3	0.66		ug/m3	1	11/28/2012 8:09:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 8:09:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 8:09:00 PM
Tetrachloroethylene	15	10		ug/m3	10	11/29/2012 3:45:00 AM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 8:09:00 PM
Toluene	6.7	0.57		ug/m3	1	11/28/2012 8:09:00 PM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:09:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:09:00 PM
Trichloroethene	< 0.82	0.82		ug/m3	1	11/28/2012 8:09:00 PM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 8:09:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 8:09:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 8:09:00 PM

NOTES:
Sample has large interfering compound in begging of run. Used 10x dilution for Freon 12.

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS		FLD				Analyst:
Lab Vacuum In	-18			"Hg		11/21/2012
Lab Vacuum Out	-30			"Hg		11/21/2012
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,1,2,2-Tetrachloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,1,2-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,1-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,1-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2,4-Trichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2,4-Trimethylbenzene	1.5	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2-Dibromoethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2-Dichloropropane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,3,5-Trimethylbenzene	0.52	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,3-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,4-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,4-Dioxane	< 0.30	0.30		ppbV	1	11/28/2012 8:46:00 PM
2,2,4-trimethylpentane	1.7	1.5		ppbV	10	11/29/2012 4:55:00 AM
4-ethyltoluene	0.55	0.15		ppbV	1	11/28/2012 8:46:00 PM
Acetone	7.7	3.0		ppbV	10	11/29/2012 4:55:00 AM
Allyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Benzene	2.8	1.5		ppbV	10	11/29/2012 4:55:00 AM
Benzyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Bromodichloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Bromoform	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Bromomethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Carbon disulfide	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Carbon tetrachloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Chlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Chloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Chloroform	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Chloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
cis-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
cis-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Cyclohexane	8.6	1.5		ppbV	10	11/29/2012 4:55:00 AM
Dibromochloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Ethyl acetate	< 0.25	0.25		ppbV	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: **RJP**
Ethylbenzene	1.2	0.15		ppbV	1	11/28/2012 8:46:00 PM
Freon 11	0.25	0.15		ppbV	1	11/28/2012 8:46:00 PM
Freon 113	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Freon 114	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Freon 12	0.52	0.15		ppbV	1	11/28/2012 8:46:00 PM
Heptane	2.3	1.5		ppbV	10	11/29/2012 4:55:00 AM
Hexachloro-1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Hexane	8.5	1.5		ppbV	10	11/29/2012 4:55:00 AM
Isopropyl alcohol	11	1.5		ppbV	10	11/29/2012 4:55:00 AM
m&p-Xylene	3.4	3.0		ppbV	10	11/29/2012 4:55:00 AM
Methyl Butyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:46:00 PM
Methyl Ethyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:46:00 PM
Methyl Isobutyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:46:00 PM
Methyl tert-butyl ether	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Methylene chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
o-Xylene	1.5	0.15		ppbV	1	11/28/2012 8:46:00 PM
Propylene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Styrene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Tetrachloroethylene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Tetrahydrofuran	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Toluene	6.9	1.5		ppbV	10	11/29/2012 4:55:00 AM
trans-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
trans-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Trichloroethene	2.5	1.5		ppbV	10	11/29/2012 4:55:00 AM
Vinyl acetate	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Vinyl Bromide	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Vinyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Surr: Bromofluorobenzene	100	70-130		%REC	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:46:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:46:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:46:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:46:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:46:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 8:46:00 PM
1,2,4-Trimethylbenzene	7.5	0.75		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 8:46:00 PM
1,3,5-Trimethylbenzene	2.6	0.75		ug/m3	1	11/28/2012 8:46:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 8:46:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 8:46:00 PM
2,2,4-trimethylpentane	8.1	7.1		ug/m3	10	11/29/2012 4:55:00 AM
4-ethyltoluene	2.7	0.75		ug/m3	1	11/28/2012 8:46:00 PM
Acetone	19	7.2		ug/m3	10	11/29/2012 4:55:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 8:46:00 PM
Benzene	9.1	4.9		ug/m3	10	11/29/2012 4:55:00 AM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 8:46:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:46:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 8:46:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 8:46:00 PM
Carbon disulfide	< 0.47	0.47		ug/m3	1	11/28/2012 8:46:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 8:46:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 8:46:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 8:46:00 PM
Chloroform	< 0.74	0.74		ug/m3	1	11/28/2012 8:46:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 8:46:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:46:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:46:00 PM
Cyclohexane	30	5.2		ug/m3	10	11/29/2012 4:55:00 AM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 8:46:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
Ethylbenzene	5.2	0.66		ug/m3	1	11/28/2012 8:46:00 PM
Freon 11	1.4	0.86		ug/m3	1	11/28/2012 8:46:00 PM
Freon 113	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: RJP
Freon 12	2.6	0.75		ug/m3	1	11/28/2012 8:46:00 PM
Heptane	9.6	6.2		ug/m3	10	11/29/2012 4:55:00 AM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 8:46:00 PM
Hexane	30	5.4		ug/m3	10	11/29/2012 4:55:00 AM
Isopropyl alcohol	28	3.7		ug/m3	10	11/29/2012 4:55:00 AM
m&p-Xylene	15	13		ug/m3	10	11/29/2012 4:55:00 AM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 8:46:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 8:46:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 8:46:00 PM
o-Xylene	6.6	0.66		ug/m3	1	11/28/2012 8:46:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 8:46:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 8:46:00 PM
Tetrachloroethylene	< 1.0	1.0		ug/m3	1	11/28/2012 8:46:00 PM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 8:46:00 PM
Toluene	26	5.7		ug/m3	10	11/29/2012 4:55:00 AM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:46:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:46:00 PM
Trichloroethene	14	8.2		ug/m3	10	11/29/2012 4:55:00 AM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 8:46:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 8:46:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
JN	Non-routine analyte. Quantitation estimated.
S	Spike Recovery outside accepted recovery limits
.	Results reported are not blank corrected
E	Value above quantitation range
J	Analyte detected at or below quantitation limits
ND	Not Detected at the Reporting Limit

GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

ANALYTICAL RESULTS

GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

QUALITY CONTROL SUMMARY

CENTEK LABORATORIES, LLC

Date: 14-Dec-12

QC SUMMARY REPORT
SURROGATE RECOVERIES

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica
Test No: TO-15 **Matrix:** A

Sample ID	BR4FBZ							
ALCS1UG-112812	100							
AMB1UG-112812	85.0							
C1211047-001A	109							
C1211047-002A	107							
C1211047-003A	90.0							
C1211047-004A	100							

Acronym		Surrogate	QC Limits
BR4FBZ	=	Bromofluorobenzene	70-130

*** Surrogate recovery outside acceptance limits**

1

Tune File : C:\HPCHEM\1\DATA\AJ112802.D
Tune Time : 28 Nov 2012 9:59 am

Daily Calibration File : C:\HPCHEM\1\DATA\AJ112802.D

			(BFB)	(IS1)	(IS2)	(IS3)
				26582	101349	90677
File	Sample	DL	Surrogate Recovery %	Internal Standard Responses		
AJ112803.D	ALCS1UG-112812	100		25336	100153	89043
AJ112804.D	AMB1UG-112812	85		23038	88115	69769
AJ112817.D	C1211047-001A	109		26264	101406	104815
AJ112818.D	C1211047-002A	107		25017	97070	84857
AJ112819.D	C1211047-003A	90		30800	99719	75084
AJ112820.D	C1211047-004A	100		25027	106641	98628
AJ112828.D	C1211047-001A 10X	82		22808	92158	78659
AJ112829.D	C1211047-001A 40X	78		22685	85075	69040
AJ112830.D	C1211047-002A 10X	83		21393	77764	62413
AJ112832.D	C1211047-003A 10X	93		21713	80707	63880
AJ112834.D	C1211047-004A 10X	83		21355	83187	67510
AJ112836.D	ALCS1UGD-112812	99		21995	85116	73497

t - fails 24hr time check * - fails criteria

Created: Fri Dec 14 14:39:08 2012 MSD #1/

CENTEK LABORATORIES, LLC

Date: *14-Dec-12*

ANALYTICAL QC SUMMARY REPORT

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID **ALCS1UG-112812** SampType: **LCS** TestCode: **1ugM3_TO15** Units: **ppbV** Prep Date: RunNo: **6410**
Client ID: **ZZZZZ** Batch ID: **R6410** TestNo: **TO-15** Analysis Date: **11/28/2012** SeqNo: **75163**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	0.9600	0.15	1	0	96.0	70	130				
1,1,2,2-Tetrachloroethane	0.9500	0.15	1	0	95.0	70	130				
1,1,2-Trichloroethane	0.9600	0.15	1	0	96.0	70	130				
1,1-Dichloroethane	0.9400	0.15	1	0	94.0	70	130				
1,1-Dichloroethene	1.060	0.15	1	0	106	70	130				
1,2,4-Trichlorobenzene	0.8100	0.15	1	0	81.0	70	130				
1,2,4-Trimethylbenzene	0.9500	0.15	1	0	95.0	70	130				
1,2-Dibromoethane	0.9500	0.15	1	0	95.0	70	130				
1,2-Dichlorobenzene	0.9100	0.15	1	0	91.0	70	130				
1,2-Dichloroethane	1.000	0.15	1	0	100	70	130				
1,2-Dichloropropane	1.000	0.15	1	0	100	70	130				
1,3,5-Trimethylbenzene	1.030	0.15	1	0	103	70	130				
1,3-butadiene	1.010	0.15	1	0	101	70	130				
1,3-Dichlorobenzene	0.9400	0.15	1	0	94.0	70	130				
1,4-Dichlorobenzene	0.9700	0.15	1	0	97.0	70	130				
1,4-Dioxane	0.9200	0.30	1	0	92.0	70	130				
2,2,4-trimethylpentane	0.9800	0.15	1	0	98.0	70	130				
4-ethyltoluene	1.040	0.15	1	0	104	70	130				
Acetone	1.110	0.30	1	0	111	70	130				
Allyl chloride	1.080	0.15	1	0	108	70	130				
Benzene	1.020	0.15	1	0	102	70	130				
Benzyl chloride	0.9100	0.15	1	0	91.0	70	130				
Bromodichloromethane	0.9600	0.15	1	0	96.0	70	130				
Bromoform	0.7900	0.15	1	0	79.0	70	130				
Bromomethane	1.050	0.15	1	0	105	70	130				

Qualifiers:
. Results reported are not blank corrected
J Analyte detected at or below quantitation limits
S Spike Recovery outside accepted recovery limits
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID ALCS1UG-112812	SampType: LCS	TestCode: 1ugM3_TO15	Units: ppbV	Prep Date:	RunNo: 6410
Client ID: ZZZZZ	Batch ID: R6410	TestNo: TO-15		Analysis Date: 11/28/2012	SeqNo: 75163

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon disulfide	0.7300	0.15	1	0	73.0	70	130				
Carbon tetrachloride	0.8700	0.15	1	0	87.0	70	130				
Chlorobenzene	0.9700	0.15	1	0	97.0	70	130				
Chloroethane	1.020	0.15	1	0	102	70	130				
Chloroform	1.000	0.15	1	0	100	70	130				
Chloromethane	1.060	0.15	1	0	106	70	130				
cis-1,2-Dichloroethene	1.040	0.15	1	0	104	70	130				
cis-1,3-Dichloropropene	0.9500	0.15	1	0	95.0	70	130				
Cyclohexane	0.9400	0.15	1	0	94.0	70	130				
Dibromochloromethane	0.9400	0.15	1	0	94.0	70	130				
Ethyl acetate	0.9800	0.25	1	0	98.0	70	130				
Ethylbenzene	0.9800	0.15	1	0	98.0	70	130				
Freon 11	1.030	0.15	1	0	103	70	130				
Freon 113	1.010	0.15	1	0	101	70	130				
Freon 114	1.070	0.15	1	0	107	70	130				
Freon 12	1.050	0.15	1	0	105	70	130				
Heptane	0.9900	0.15	1	0	99.0	70	130				
Hexachloro-1,3-butadiene	0.9500	0.15	1	0	95.0	70	130				
Hexane	1.040	0.15	1	0	104	70	130				
Isopropyl alcohol	1.110	0.15	1	0	111	70	130				
m&p-Xylene	2.070	0.30	2	0	104	70	130				
Methyl Butyl Ketone	0.8500	0.30	1	0	85.0	70	130				
Methyl Ethyl Ketone	0.9400	0.30	1	0	94.0	70	130				
Methyl Isobutyl Ketone	0.9000	0.30	1	0	90.0	70	130				
Methyl tert-butyl ether	0.9700	0.15	1	0	97.0	70	130				
Methylene chloride	0.8700	0.15	1	0	87.0	70	130				
o-Xylene	0.9900	0.15	1	0	99.0	70	130				
Propylene	1.040	0.15	1	0	104	70	130				
Styrene	1.000	0.15	1	0	100	70	130				
Tetrachloroethylene	1.000	0.15	1	0	100	70	130				
Tetrahydrofuran	0.8300	0.15	1	0	83.0	70	130				

Qualifiers:
. Results reported are not blank corrected
J Analyte detected at or below quantitation limits
S Spike Recovery outside accepted recovery limits
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID ALCS1UG-112812	SampType: LCS	TestCode: 1ugM3_TO15	Units: ppbV	Prep Date:	RunNo: 6410
Client ID: ZZZZZ	Batch ID: R6410	TestNo: TO-15		Analysis Date: 11/28/2012	SeqNo: 75163

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	0.9800	0.15	1	0	98.0	70	130				
trans-1,2-Dichloroethene	0.8500	0.15	1	0	85.0	70	130				
trans-1,3-Dichloropropene	0.9200	0.15	1	0	92.0	70	130				
Trichloroethene	0.9100	0.15	1	0	91.0	70	130				
Vinyl acetate	0.9700	0.15	1	0	97.0	70	130				
Vinyl Bromide	1.060	0.15	1	0	106	70	130				
Vinyl chloride	1.010	0.15	1	0	101	70	130				

Qualifiers:

.	Results reported are not blank corrected	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected at or below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits				

CENTEK LABORATORIES, LLC

Date: *14-Dec-12*

ANALYTICAL QC SUMMARY REPORT

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID AMB1UG-112812	SampType: MBLK	TestCode: 1ugM3_TO15	Units: ppbV	Prep Date:	RunNo: 6410
Client ID: ZZZZZ	Batch ID: R6410	TestNo: TO-15		Analysis Date: 11/28/2012	SeqNo: 75162

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	< 0.15	0.15									
1,1,2,2-Tetrachloroethane	< 0.15	0.15									
1,1,2-Trichloroethane	< 0.15	0.15									
1,1-Dichloroethane	< 0.15	0.15									
1,1-Dichloroethene	< 0.15	0.15									
1,2,4-Trichlorobenzene	< 0.15	0.15									
1,2,4-Trimethylbenzene	< 0.15	0.15									
1,2-Dibromoethane	< 0.15	0.15									
1,2-Dichlorobenzene	< 0.15	0.15									
1,2-Dichloroethane	< 0.15	0.15									
1,2-Dichloropropane	< 0.15	0.15									
1,3,5-Trimethylbenzene	< 0.15	0.15									
1,3-butadiene	< 0.15	0.15									
1,3-Dichlorobenzene	< 0.15	0.15									
1,4-Dichlorobenzene	< 0.15	0.15									
1,4-Dioxane	< 0.30	0.30									
2,2,4-trimethylpentane	< 0.15	0.15									
4-ethyltoluene	< 0.15	0.15									
Acetone	< 0.30	0.30									
Allyl chloride	< 0.15	0.15									
Benzene	< 0.15	0.15									
Benzyl chloride	< 0.15	0.15									
Bromodichloromethane	< 0.15	0.15									
Bromoform	< 0.15	0.15									
Bromomethane	< 0.15	0.15									

Qualifiers:

.	Results reported are not blank corrected	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected at or below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits				

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID AMB1UG-112812	SampType: MBLK	TestCode: 1ugM3_TO15	Units: ppbV	Prep Date:	RunNo: 6410
Client ID: ZZZZZ	Batch ID: R6410	TestNo: TO-15		Analysis Date: 11/28/2012	SeqNo: 75162

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon disulfide	< 0.15	0.15									
Carbon tetrachloride	< 0.15	0.15									
Chlorobenzene	< 0.15	0.15									
Chloroethane	< 0.15	0.15									
Chloroform	< 0.15	0.15									
Chloromethane	< 0.15	0.15									
cis-1,2-Dichloroethene	< 0.15	0.15									
cis-1,3-Dichloropropene	< 0.15	0.15									
Cyclohexane	< 0.15	0.15									
Dibromochloromethane	< 0.15	0.15									
Ethyl acetate	< 0.25	0.25									
Ethylbenzene	< 0.15	0.15									
Freon 11	< 0.15	0.15									
Freon 113	< 0.15	0.15									
Freon 114	< 0.15	0.15									
Freon 12	< 0.15	0.15									
Heptane	< 0.15	0.15									
Hexachloro-1,3-butadiene	< 0.15	0.15									
Hexane	< 0.15	0.15									
Isopropyl alcohol	< 0.15	0.15									
m&p-Xylene	< 0.30	0.30									
Methyl Butyl Ketone	< 0.30	0.30									
Methyl Ethyl Ketone	< 0.30	0.30									
Methyl Isobutyl Ketone	< 0.30	0.30									
Methyl tert-butyl ether	< 0.15	0.15									
Methylene chloride	< 0.15	0.15									
o-Xylene	< 0.15	0.15									
Propylene	< 0.15	0.15									
Styrene	< 0.15	0.15									
Tetrachloroethylene	< 0.15	0.15									
Tetrahydrofuran	< 0.15	0.15									

Qualifiers:

.	Results reported are not blank corrected	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected at or below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits				

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID	AMB1UG-112812	SampType:	MBLK	TestCode:	1ugM3_TO15	Units:	ppbV	Prep Date:		RunNo:	6410
Client ID:	ZZZZZ	Batch ID:	R6410	TestNo:	TO-15			Analysis Date:	11/28/2012	SeqNo:	75162

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	< 0.15	0.15									
trans-1,2-Dichloroethene	< 0.15	0.15									
trans-1,3-Dichloropropene	< 0.15	0.15									
Trichloroethene	< 0.15	0.15									
Vinyl acetate	< 0.15	0.15									
Vinyl Bromide	< 0.15	0.15									
Vinyl chloride	< 0.15	0.15									

Qualifiers:

.	Results reported are not blank corrected	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected at or below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits				

1ug/m3 Detection Limit
January 2012

Method TO-15
Units=ppb

Compound	Amt	IDL #1	IDL #2	IDL #3	IDL #4	IDL #5	IDL #6	IDL #7	AVG	StdDev	%Rec	IDL
Propylene	0.4	0.34	0.3	0.32	0.32	0.32	0.33	0.32	0.32	0.01	80.4%	0.038
Freon 12	0.4	0.35	0.38	0.36	0.37	0.34	0.37	0.37	0.36	0.01	90.7%	0.043
Chloromethane	0.4	0.35	0.32	0.36	0.37	0.35	0.33	0.38	0.35	0.02	87.9%	0.066
Freon 114	0.4	0.36	0.35	0.35	0.37	0.36	0.37	0.39	0.36	0.01	91.1%	0.044
Vinyl Chloride	0.4	0.32	0.31	0.31	0.32	0.31	0.32	0.33	0.32	0.01	79.3%	0.024
1,3-butadiene	0.4	0.37	0.35	0.37	0.4	0.33	0.35	0.39	0.37	0.02	91.4%	0.077
Bromomethane	0.4	0.39	0.36	0.34	0.35	0.35	0.35	0.35	0.36	0.02	88.9%	0.051
Ethanol	0.4	0.33	0.31	0.41	0.35	0.32	0.35	0.33	0.34	0.03	85.7%	0.104
Acrolein	0.4	0.39	0.34	0.36	0.31	0.36	0.36	0.34	0.35	0.02	87.9%	0.078
Chloroethane	0.4	0.39	0.32	0.39	0.38	0.36	0.36	0.36	0.37	0.02	91.4%	0.077
Vinyl Bromide	0.4	0.35	0.36	0.34	0.35	0.37	0.35	0.4	0.36	0.02	90.0%	0.063
Freon 11	0.4	0.37	0.36	0.37	0.37	0.37	0.37	0.39	0.37	0.01	92.9%	0.028
Acetone	0.4	0.39	0.31	0.36	0.36	0.35	0.31	0.35	0.35	0.03	86.8%	0.090
Isopropyl alcohol	0.4	0.4	0.41	0.39	0.41	0.4	0.36	0.37	0.39	0.02	97.9%	0.061
1,1-dichloroethene	0.4	0.36	0.36	0.36	0.35	0.37	0.34	0.37	0.36	0.01	89.6%	0.034
Freon 113	0.4	0.35	0.34	0.34	0.36	0.32	0.42	0.37	0.36	0.03	89.3%	0.101
Methylene chloride	0.4	0.33	0.34	0.35	0.35	0.32	0.42	0.34	0.35	0.03	87.5%	0.103
Allyl chloride	0.4	0.34	0.32	0.38	0.36	0.38	0.31	0.32	0.34	0.03	86.1%	0.092
Carbon disulfide	0.4	0.36	0.4	0.35	0.36	0.32	0.4	0.4	0.37	0.03	92.5%	0.098
trans-1,2-dichloroethene	0.4	0.37	0.34	0.29	0.33	0.31	0.32	0.37	0.33	0.03	83.2%	0.094
methyl tert-butyl ether	0.4	0.35	0.3	0.33	0.33	0.33	0.28	0.27	0.31	0.03	78.2%	0.094
1,1-dichloroethane	0.4	0.35	0.34	0.38	0.36	0.35	0.35	0.34	0.35	0.01	88.2%	0.043
Vinyl acetate	0.4	0.33	0.33	0.37	0.36	0.32	0.3	0.3	0.33	0.03	82.5%	0.085
Methyl Ethyl Ketone	0.4	0.36	0.33	0.34	0.37	0.32	0.33	0.3	0.34	0.02	83.9%	0.075
cis-1,2-dichloroethene	0.4	0.35	0.34	0.32	0.34	0.36	0.33	0.36	0.34	0.01	85.7%	0.047
Hexane	0.4	0.34	0.28	0.34	0.34	0.36	0.3	0.32	0.33	0.03	81.4%	0.087
Ethyl acetate	0.4	0.38	0.31	0.36	0.35	0.35	0.32	0.3	0.34	0.03	84.6%	0.092
Chloroform	0.4	0.37	0.35	0.39	0.38	0.35	0.35	0.35	0.36	0.02	90.7%	0.054
Tetrahydrofuran	0.4	0.38	0.33	0.32	0.36	0.3	0.31	0.31	0.33	0.03	82.5%	0.093
1,2-dichloroethane	0.4	0.38	0.33	0.37	0.38	0.35	0.34	0.38	0.36	0.02	90.4%	0.066
1,1,1-trichloroethane	0.4	0.42	0.4	0.38	0.38	0.37	0.37	0.38	0.39	0.02	96.4%	0.057
Cyclohexane	0.4	0.35	0.36	0.37	0.36	0.33	0.33	0.35	0.35	0.02	87.5%	0.048
Carbon tetrachloride	0.4	0.39	0.37	0.37	0.36	0.34	0.36	0.36	0.36	0.02	91.1%	0.048
Benzene	0.4	0.38	0.38	0.37	0.39	0.4	0.34	0.38	0.38	0.02	94.3%	0.059
Methyl methacrylate	0.4	0.36	0.32	0.32	0.3	0.33	0.31	0.3	0.32	0.02	80.0%	0.065
1,4-dioxane	0.4	0.36	0.33	0.33	0.3	0.36	0.28	0.3	0.32	0.03	80.7%	0.097
2,2,4-trimethylpentane	0.4	0.35	0.34	0.35	0.35	0.32	0.32	0.33	0.34	0.01	84.3%	0.043
Heptane	0.4	0.37	0.32	0.35	0.35	0.29	0.3	0.32	0.33	0.03	82.1%	0.092

Compound	Amt	IDL #1	IDL #2	IDL #3	IDL #4	IDL #5	IDL #6	IDL #7	AVG	StdDev	%Rec	IDL
Trichloroethene	0.4	0.39	0.4	0.39	0.38	0.35	0.38	0.35	0.38	0.02	94.3%	0.062
1,2-dichloropropane	0.4	0.42	0.43	0.39	0.39	0.35	0.36	0.37	0.39	0.03	96.8%	0.094
Bromodichloromethane	0.4	0.4	0.4	0.39	0.4	0.37	0.35	0.37	0.38	0.02	95.7%	0.062
cis-1,3-dichloropropene	0.4	0.36	0.34	0.39	0.37	0.35	0.3	0.32	0.35	0.03	86.8%	0.096
trans-1,3-dichloropropene	0.4	0.41	0.39	0.39	0.38	0.35	0.31	0.35	0.37	0.03	92.1%	0.106
1,1,2-trichloroethane	0.4	0.43	0.4	0.4	0.4	0.36	0.37	0.35	0.39	0.03	96.8%	0.088
Toluene	0.4	0.33	0.33	0.33	0.35	0.31	0.3	0.3	0.32	0.02	80.4%	0.059
Methyl Isobutyl Ketone	0.4	0.33	0.32	0.26	0.26	0.28	0.26	0.26	0.28	0.03	70.4%	0.097
Dibromochloromethane	0.4	0.41	0.39	0.38	0.38	0.36	0.35	0.37	0.38	0.02	94.3%	0.062
Methyl Butyl Ketone	0.4	0.34	0.27	0.27	0.27	0.28	0.32	0.29	0.29	0.03	72.9%	0.088
1,2-dibromoethane	0.4	0.4	0.39	0.39	0.4	0.37	0.34	0.37	0.38	0.02	95.0%	0.068
Tetrachloroethylene	0.4	0.42	0.4	0.39	0.4	0.4	0.38	0.4	0.40	0.01	99.6%	0.038
Chlorobenzene	0.4	0.4	0.37	0.39	0.39	0.35	0.33	0.34	0.37	0.03	91.8%	0.086
Ethylbenzene	0.4	0.31	0.31	0.32	0.31	0.29	0.27	0.26	0.30	0.02	73.9%	0.072
m&p-xylene	0.8	0.64	0.57	0.63	0.63	0.53	0.58	0.54	0.59	0.05	73.6%	0.142
Styrene	0.4	0.32	0.29	0.31	0.29	0.3	0.26	0.29	0.29	0.02	73.6%	0.060
Bromoform	0.4	0.35	0.36	0.38	0.35	0.35	0.31	0.32	0.35	0.02	86.4%	0.075
o-xylene	0.4	0.26	0.3	0.27	0.31	0.23	0.22	0.26	0.26	0.03	66.1%	0.104
Bromofluorobenzene	1	1.05	1.04	1.06	1.04	1.07	0.95	1.01	1.03	0.04	103.1%	0.128
1,1,2,2-tetrachloroethane	0.4	0.4	0.39	0.39	0.37	0.36	0.34	0.33	0.37	0.03	92.1%	0.084
2-Chlorotoluene	0.4	0.41	0.33	0.32	0.32	0.3	0.34	0.34	0.34	0.03	84.3%	0.110
4-ethyltoluene	0.4	0.33	0.29	0.3	0.28	0.26	0.25	0.24	0.28	0.03	69.6%	0.098
1,3,5-trimethylbenzene	0.4	0.32	0.28	0.27	0.29	0.28	0.26	0.23	0.28	0.03	68.9%	0.087
1,2,4-trimethylbenzene	0.4	0.32	0.28	0.29	0.29	0.28	0.25	0.23	0.28	0.03	69.3%	0.092
1,3-dichlorobenzene	0.4	0.41	0.37	0.37	0.36	0.36	0.3	0.35	0.36	0.03	90.0%	0.103
benzyl chloride	0.4	0.34	0.38	0.38	0.35	0.38	0.33	0.33	0.36	0.02	88.9%	0.075
1,4-dichlorobenzene	0.4	0.41	0.35	0.37	0.38	0.35	0.31	0.35	0.36	0.03	90.0%	0.098
1,2-dichlorobenzene	0.4	0.39	0.36	0.38	0.37	0.35	0.31	0.32	0.35	0.03	88.6%	0.094
1,2,4-trichlorobenzene	0.4	0.47	0.42	0.43	0.4	0.42	0.35	0.41	0.41	0.04	103.6%	0.113
Naphthalene	0.4	0.45	0.33	0.34	0.32	0.34	0.32	0.33	0.35	0.05	86.8%	0.145
Hexachloro-1,3-butadiene	0.4	0.61	0.57	0.54	0.52	0.53	0.48	0.5	0.54	0.04	133.9%	0.137

0.25ug/m3 Detection Limit
January 2012

Method TO-15
Units=ppb

Compound	Amt	IDL #1	IDL #2	IDL #3	IDL #4	IDL #5	IDL #6	IDL #7	AVG	StdDev	%Rec	IDL
Vinyl Chloride	0.1	0.11	0.1	0.1	0.11	0.1	0.1	0.12	0.11	0.01	105.7%	0.025
Carbon tetrachloride	0.1	0.13	0.12	0.13	0.13	0.12	0.11	0.12	0.12	0.01	122.9%	0.024
Trichloroethene	0.1	0.11	0.13	0.11	0.12	0.12	0.09	0.1	0.11	0.01	111.4%	0.042
Tetrachloroethylene	0.1	0.14	0.12	0.12	0.12	0.12	0.09	0.14	0.12	0.02	121.4%	0.053

GC/MS-Whole Air Calculations

Relative Response Factor (RRF)

$$RRF = \frac{Ax * Cis}{Ais * Cx}$$

where: Ax = area of the characteristic ion for the compound being measured
Ais = area of the characteristic ion for the specific internal standard of the compound being measured
Cx = concentration of the compound being measured (ppbv)
Cis = concentration of the internal standard (ppbv)

Percent Relative Standard Deviation (%RSD)

$$\% RSD = \frac{\text{Standard deviation of RRF values} * 100}{\text{mean RRF}}$$

Percent Difference (%D)

$$\% D = \frac{(RRFc - \text{mean RRFi}) * 100}{\text{mean RRFi}}$$

where: RRFc = relative response factor from the continuing calibration
mean RRFi = mean relative response factor from the initial calibration

Sample Calculations

$$ppbv = \frac{Ax * Is * Df}{Ais * RRF}$$

where: Ax = area of the characteristic ion for the compound being measured
Ais = area of the characteristic ion for the specific internal standard of the compound being measured
Is = Concentration of the internal standard injected (ppbv)
RRF= relative response factor for the compound being measured
Df = Dilution factor

GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

SAMPLE DATA

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	C1211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-001A	**Matrix:**	

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS		FLD				Analyst:
Lab Vacuum In	-11			"Hg		11/21/2012
Lab Vacuum Out	-30			"Hg		11/21/2012
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,1,2,2-Tetrachloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,1,2-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,1-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,1-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2,4-Trichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2,4-Trimethylbenzene	2.5	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2-Dibromoethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,2-Dichloropropane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,3,5-Trimethylbenzene	0.63	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,3-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,4-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
1,4-Dioxane	< 0.30	0.30		ppbV	1	11/28/2012 6:58:00 PM
2,2,4-trimethylpentane	3.5	1.5		ppbV	10	11/29/2012 1:27:00 AM
4-ethyltoluene	0.83	0.15		ppbV	1	11/28/2012 6:58:00 PM
Acetone	12	3.0		ppbV	10	11/29/2012 1:27:00 AM
Allyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Benzene	6.4	1.5		ppbV	10	11/29/2012 1:27:00 AM
Benzyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Bromodichloromethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Bromoform	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Bromomethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Carbon disulfide	0.22	0.15		ppbV	1	11/28/2012 6:58:00 PM
Carbon tetrachloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Chlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Chloroethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Chloroform	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Chloromethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
cis-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
cis-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Cyclohexane	46	6.0		ppbV	40	11/29/2012 2:01:00 AM
Dibromochloromethane	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Ethyl acetate	< 0.25	0.25		ppbV	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	C1211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-001A	**Matrix:**	

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: RJP
Ethylbenzene	2.1	0.15		ppbV	1	11/28/2012 6:58:00 PM
Freon 11	0.19	0.15		ppbV	1	11/28/2012 6:58:00 PM
Freon 113	0.12	0.15	J	ppbV	1	11/28/2012 6:58:00 PM
Freon 114	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Freon 12	0.40	0.15		ppbV	1	11/28/2012 6:58:00 PM
Heptane	5.7	1.5		ppbV	10	11/29/2012 1:27:00 AM
Hexachloro-1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Hexane	37	6.0		ppbV	40	11/29/2012 2:01:00 AM
Isopropyl alcohol	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
m&p-Xylene	4.0	3.0		ppbV	10	11/29/2012 1:27:00 AM
Methyl Butyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 6:58:00 PM
Methyl Ethyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 6:58:00 PM
Methyl Isobutyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 6:58:00 PM
Methyl tert-butyl ether	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Methylene chloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
o-Xylene	2.6	0.15		ppbV	1	11/28/2012 6:58:00 PM
Propylene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Styrene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Tetrachloroethylene	0.55	0.15		ppbV	1	11/28/2012 6:58:00 PM
Tetrahydrofuran	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Toluene	15	1.5		ppbV	10	11/29/2012 1:27:00 AM
trans-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
trans-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Trichloroethene	0.46	0.15		ppbV	1	11/28/2012 6:58:00 PM
Vinyl acetate	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Vinyl Bromide	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Vinyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 6:58:00 PM
Surr: Bromofluorobenzene	109	70-130		%REC	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	C1211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-001A	**Matrix:**	

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: **RJP**
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 6:58:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 6:58:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 6:58:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 6:58:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 6:58:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 6:58:00 PM
1,2,4-Trimethylbenzene	12	0.75		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 6:58:00 PM
1,3,5-Trimethylbenzene	3.1	0.75		ug/m3	1	11/28/2012 6:58:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 6:58:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 6:58:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 6:58:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 6:58:00 PM
2,2,4-trimethylpentane	17	7.1		ug/m3	10	11/29/2012 1:27:00 AM
4-ethyltoluene	4.1	0.75		ug/m3	1	11/28/2012 6:58:00 PM
Acetone	29	7.2		ug/m3	10	11/29/2012 1:27:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 6:58:00 PM
Benzene	21	4.9		ug/m3	10	11/29/2012 1:27:00 AM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 6:58:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 6:58:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 6:58:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 6:58:00 PM
Carbon disulfide	0.70	0.47		ug/m3	1	11/28/2012 6:58:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 6:58:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 6:58:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 6:58:00 PM
Chloroform	< 0.74	0.74		ug/m3	1	11/28/2012 6:58:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 6:58:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 6:58:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 6:58:00 PM
Cyclohexane	160	21		ug/m3	40	11/29/2012 2:01:00 AM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 6:58:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 6:58:00 PM
Ethylbenzene	9.4	0.66		ug/m3	1	11/28/2012 6:58:00 PM
Freon 11	1.1	0.86		ug/m3	1	11/28/2012 6:58:00 PM
Freon 113	0.93	1.2	J	ug/m3	1	11/28/2012 6:58:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	C1211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-001A	**Matrix:**	

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
Freon 12	2.0	0.75		ug/m3	1	11/28/2012 6:58:00 PM
Heptane	24	6.2		ug/m3	10	11/29/2012 1:27:00 AM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 6:58:00 PM
Hexane	130	21		ug/m3	40	11/29/2012 2:01:00 AM
Isopropyl alcohol	< 0.37	0.37		ug/m3	1	11/28/2012 6:58:00 PM
m&p-Xylene	18	13		ug/m3	10	11/29/2012 1:27:00 AM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 6:58:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 6:58:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 6:58:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 6:58:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 6:58:00 PM
o-Xylene	11	0.66		ug/m3	1	11/28/2012 6:58:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 6:58:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 6:58:00 PM
Tetrachloroethylene	3.8	1.0		ug/m3	1	11/28/2012 6:58:00 PM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 6:58:00 PM
Toluene	57	5.7		ug/m3	10	11/29/2012 1:27:00 AM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 6:58:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 6:58:00 PM
Trichloroethene	2.5	0.82		ug/m3	1	11/28/2012 6:58:00 PM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 6:58:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 6:58:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112817.D Vial: 10
Acq On : 28 Nov 2012 6:58 pm Operator: RJP
Sample : C1211047-001A Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:12 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.73	128	26264	1.00	ppb		0.00
33) 1,4-difluorobenzene	11.98	114	101406	1.00	ppb		0.00
48) Chlorobenzene-d5	16.35	117	104815	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	67091	1.09	ppb		-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 109.00%				
Target Compounds							Qvalue
3) Freon 12	4.20	85	93584	0.40	ppb		98
13) Freon 11	5.81	101	58229	0.19	ppb		92
14) Acetone	6.07	58	295553	12.42	ppb	#	1
17) Freon 113	6.75	101	18012	0.12	ppb	#	62
21) Carbon disulfide	7.16	76	38334	0.22	ppb		76
28) Hexane	8.89	57	1167423	32.47	ppb	#	77
35) Cyclohexane	8.89	56	720042	33.11	ppb	#	85
37) Benzene	11.31	78	717259	7.82	ppb		87
40) 2,2,4-trimethylpentane	12.15	57	604747	5.14	ppb	#	25
41) Heptane	12.48	43	320152	9.14	ppb		95
42) Trichloroethene	12.60	130	25034	0.46	ppb	#	83
49) Toluene	14.54	92	1399336	18.49	ppb		95
54) Tetrachloroethylene	15.49	164	38891	0.55	ppb		99
56) Ethylbenzene	16.62	91	344594	2.12	ppb		99
57) m&p-xylene	16.78	91	1176773	8.37	ppb		96
60) o-xylene	17.23	91	498643	2.58	ppb		90
64) 4-ethyltoluene	18.36	105	126283m	0.83	ppb		
65) 1,3,5-trimethylbenzene	18.41	105	129421m	0.63	ppb		
66) 1,2,4-trimethylbenzene	18.79	105	370515	2.48	ppb		100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

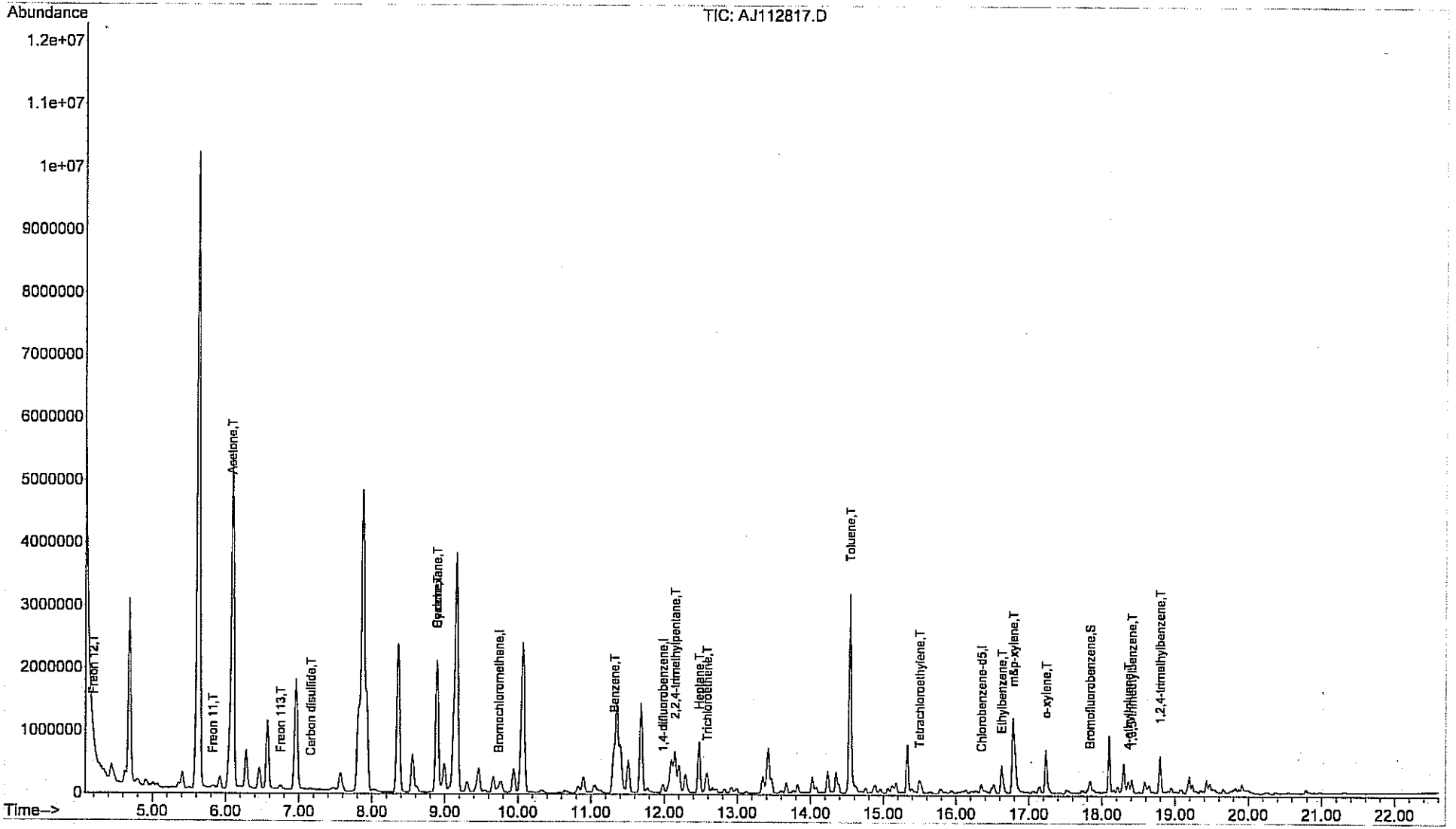
Quantitation Report (QT Reviewed)

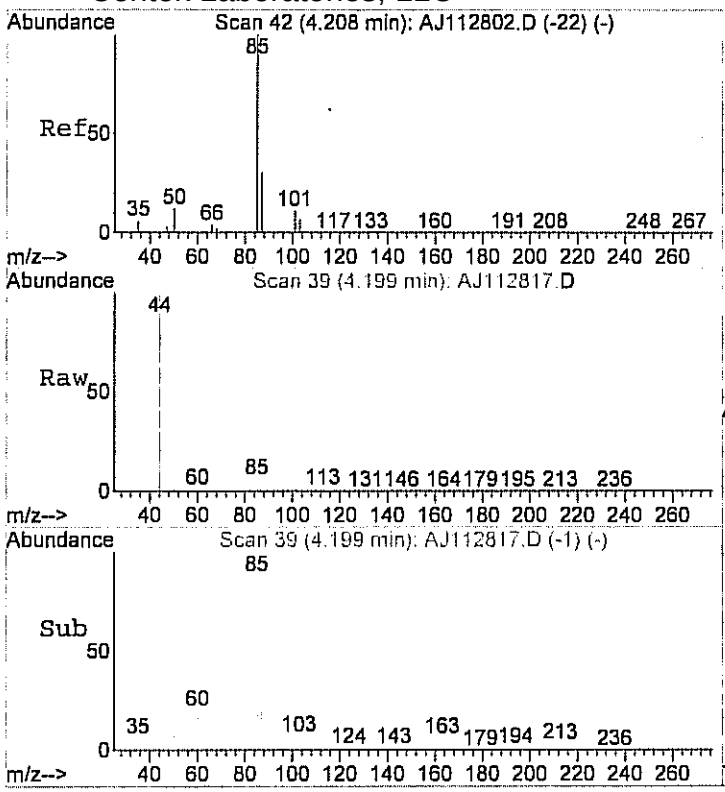
Data File : C:\HPCHEM\1\DATA\AJ112817.D
Acq On : 28 Nov 2012 6:58 pm
Sample : C1211047-001A
Misc : AN23_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 29 14:26 2012

Vial: 10
Operator: RJP
Inst : MSD #1
Multiplr: 1.00

Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration

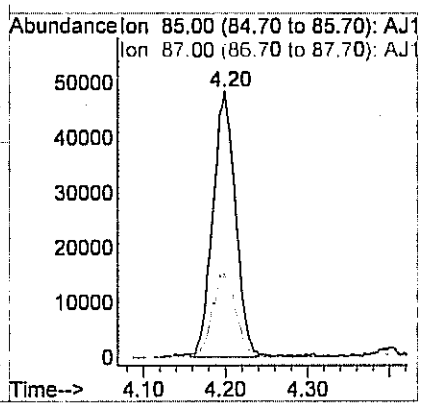


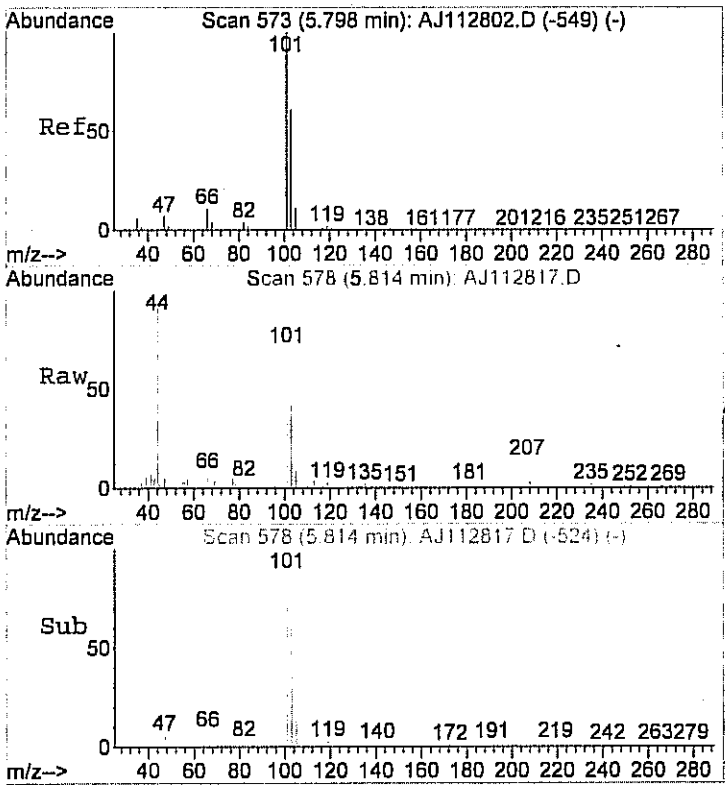


#3
Freon 12
Concen: 0.40 ppb
RT: 4.20 min Scan# 39
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 85 Resp: 93584

Ion	Ratio	Lower	Upper
85	100		
87	31.5	12.4	52.4

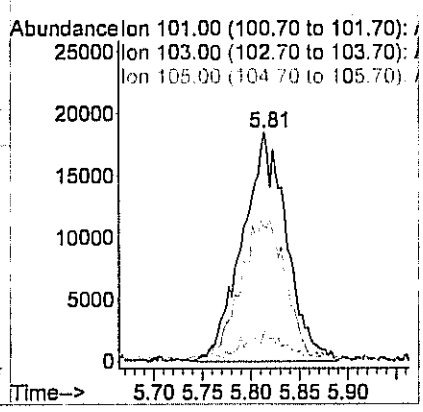


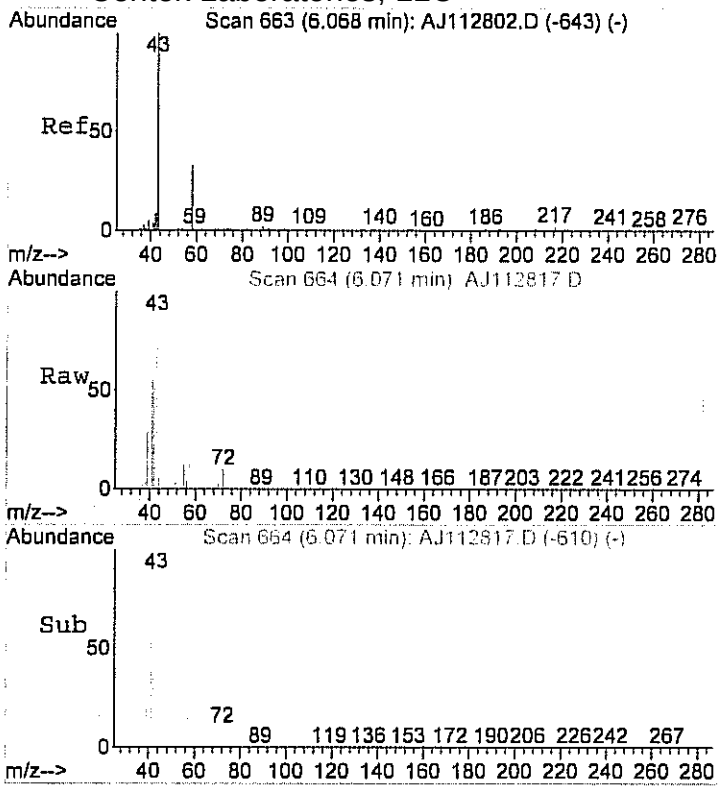


#13
Freon 11
Concen: 0.19 ppb
RT: 5.81 min Scan# 578
Delta R.T. 0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion:101 Resp: 58229

Ion	Ratio	Lower	Upper
101	100		
103	62.6	49.9	89.9
105	12.7	0.0	31.4

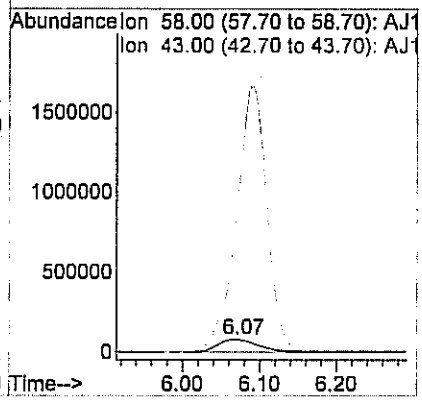


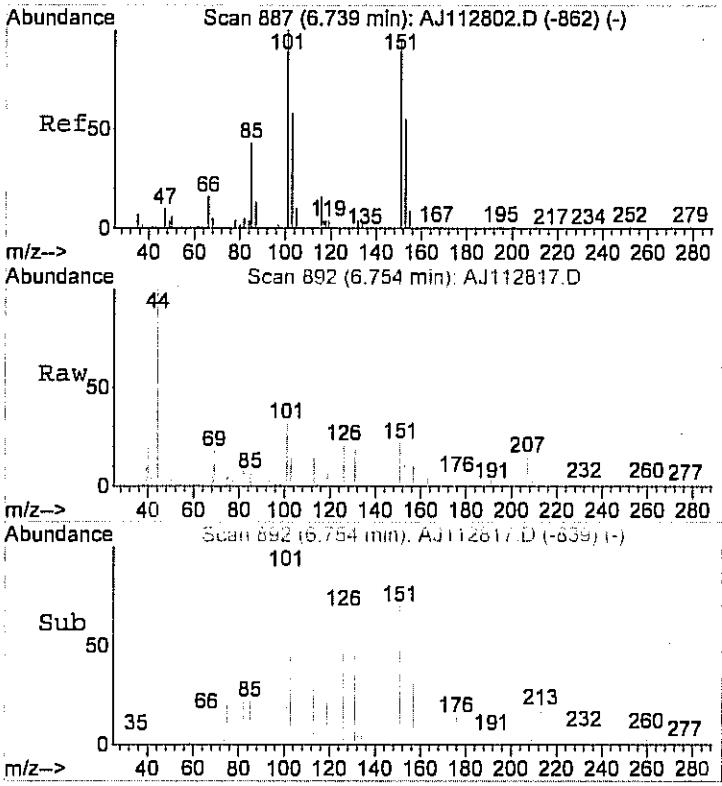


#14
Acetone
Concen: 12.42 ppb
RT: 6.07 min Scan# 664
Delta R.T. 0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 58 Resp: 295553

Ion	Ratio	Lower	Upper
58	100		
43	1562.9	320.8	380.8#

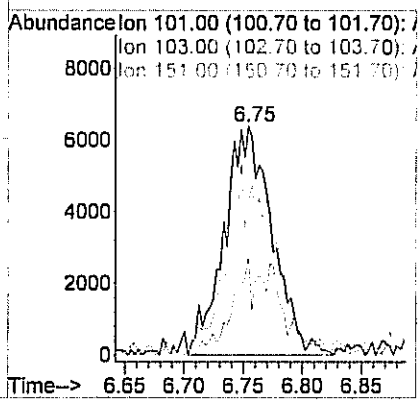


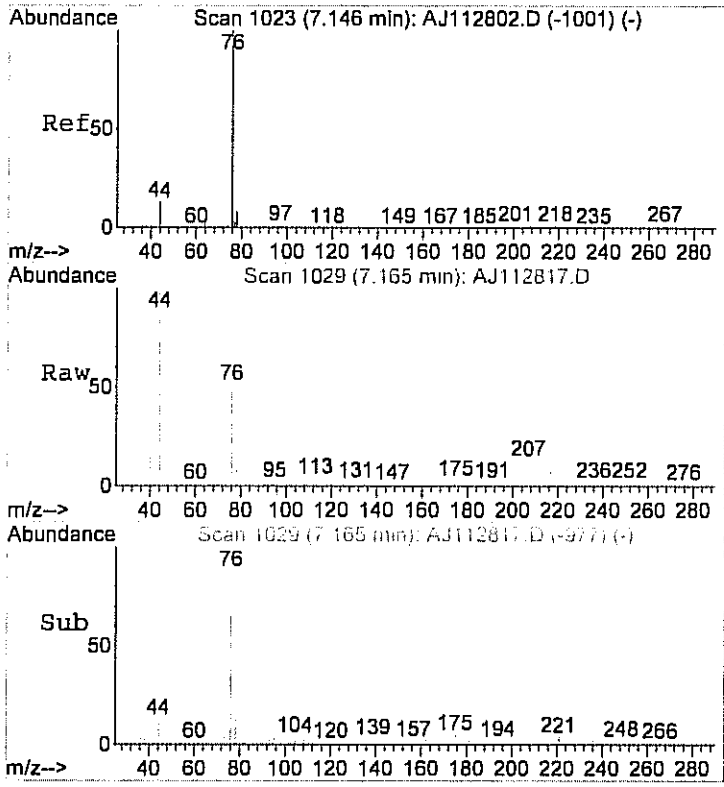


#17
Freon 113
Concen: 0.12 ppb
RT: 6.75 min Scan# 892
Delta R.T. 0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion:101 Resp: 18012

Ion	Ratio	Lower	Upper
101	100		
103	41.0	52.6	92.6#
151	78.2	101.5	141.5#

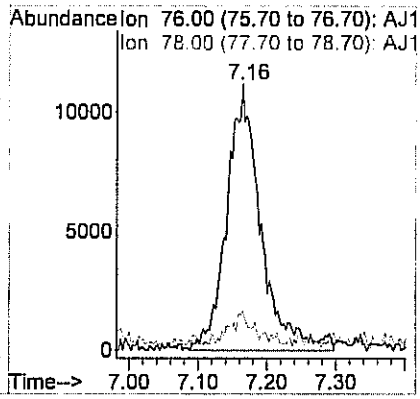


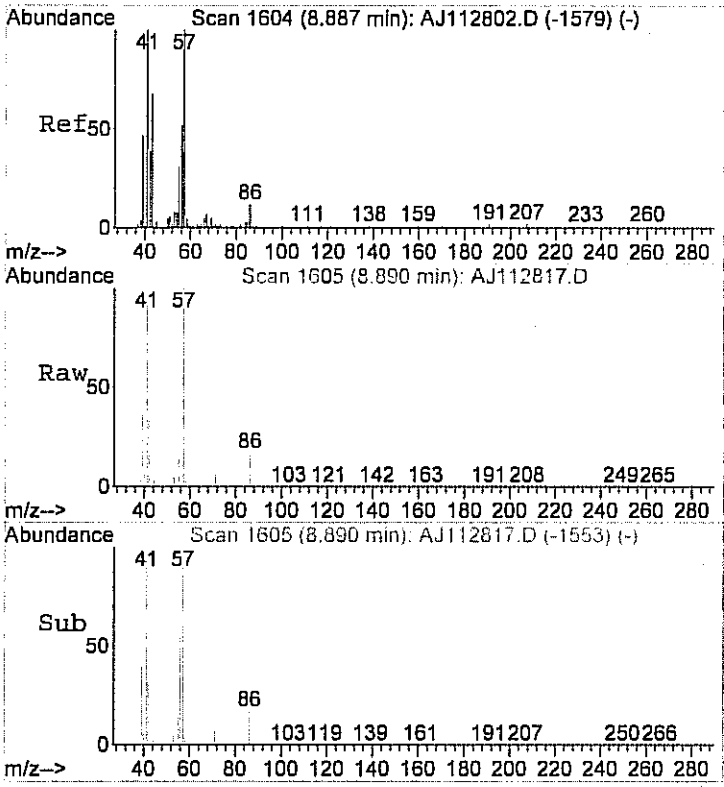


#21
Carbon disulfide
Concen: 0.22 ppb
RT: 7.16 min Scan# 1029
Delta R.T. 0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 76 Resp: 38334

Ion	Ratio	Lower	Upper
76	100		
78	2.0	0.0	30.9

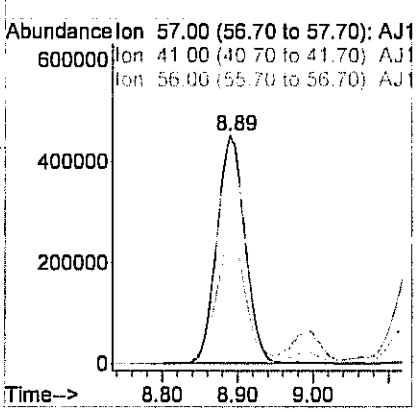


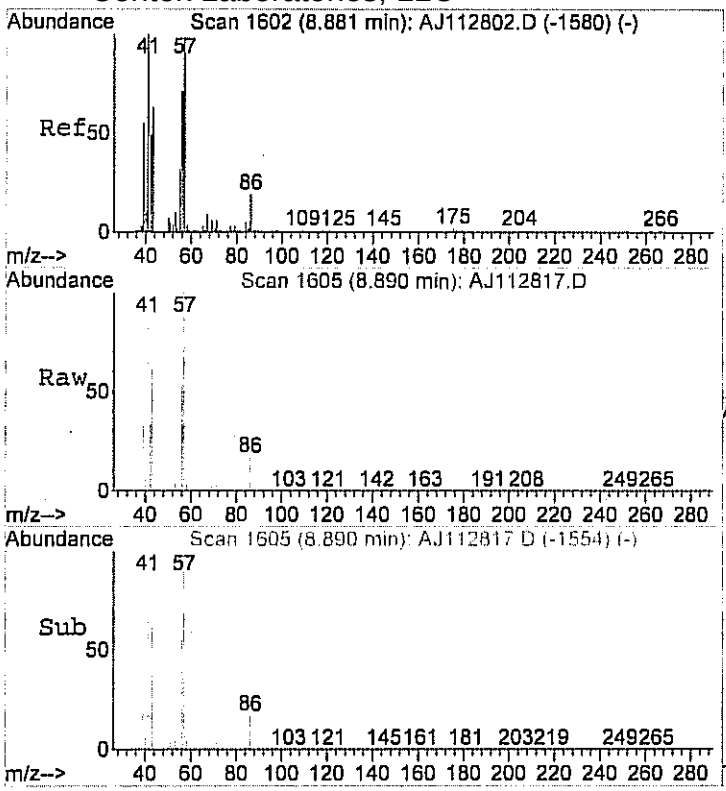


#28
Hexane
Concen: 32.47 ppb
RT: 8.89 min Scan# 1605
Delta R.T. 0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 57 Resp: 1167423

Ion	Ratio	Lower	Upper
57	100		
41	111.6	62.3	102.3#
56	61.7	34.8	74.8

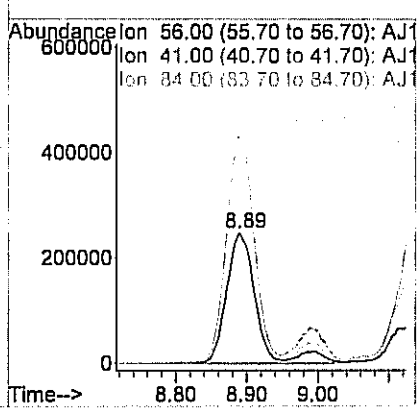


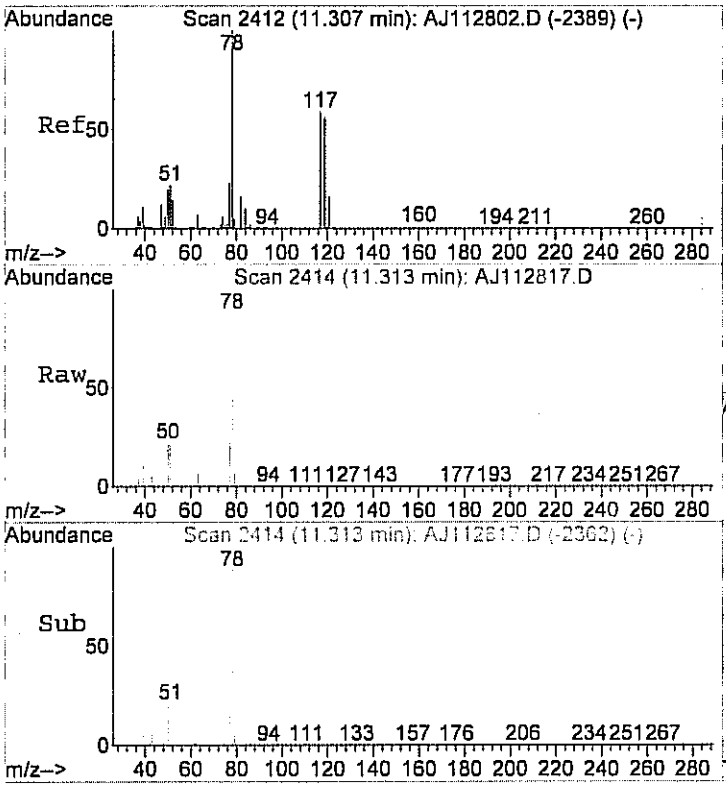


#35
Cyclohexane
Concen: 33.11 ppb
RT: 8.89 min Scan# 1605
Delta R.T. 0.00 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 56 Resp: 720042

Ion	Ratio	Lower	Upper
56	100		
41	180.8	141.3	181.3
84	0.0	0.0	27.7

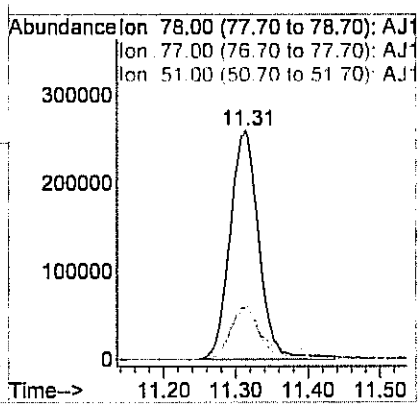


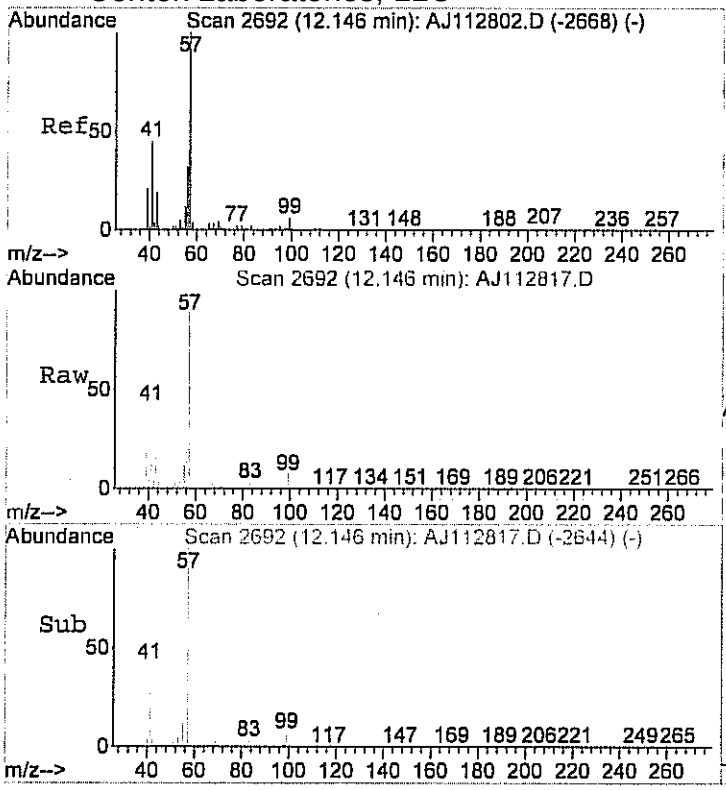


#37
Benzene
Concen: 7.82 ppb
RT: 11.31 min Scan# 2414
Delta R.T. 0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 78 Resp: 717259

Ion	Ratio	Lower	Upper
78	100		
77	25.8	2.9	42.9
51	29.6	0.0	40.0

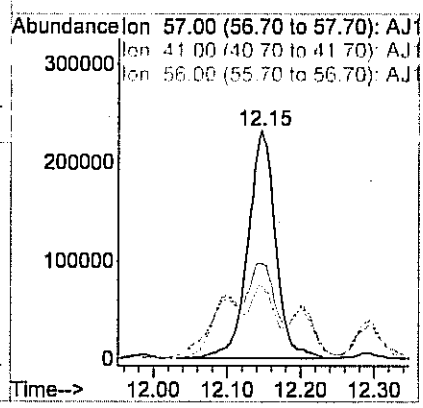


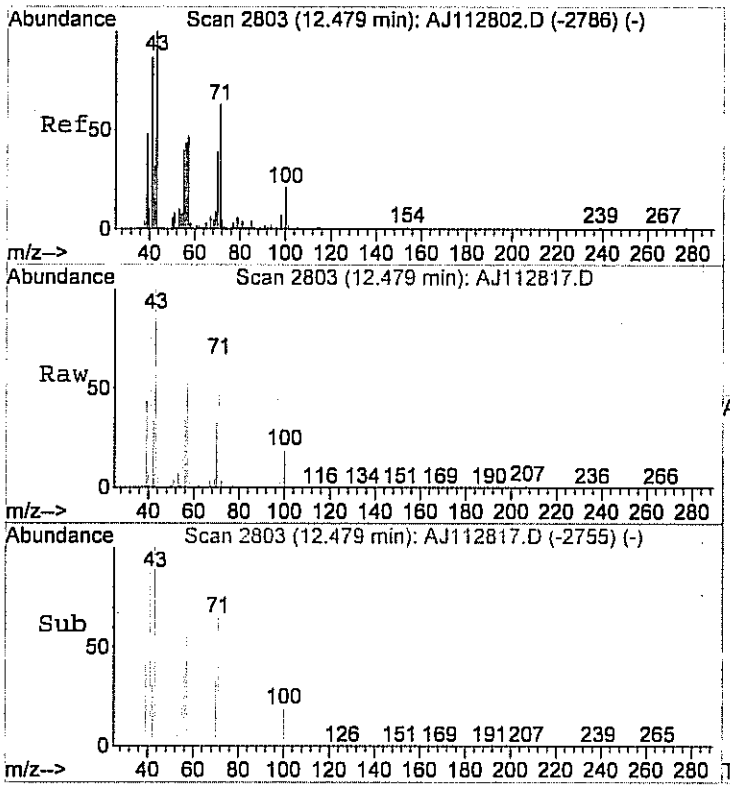


#40
2,2,4-trimethylpentane
Concen: 5.14 ppb
RT: 12:15 min Scan# 2692
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 57 Resp: 604747

Ion	Ratio	Lower	Upper
57	100		
41	91.3	26.2	66.2#
56	76.5	10.2	50.2#

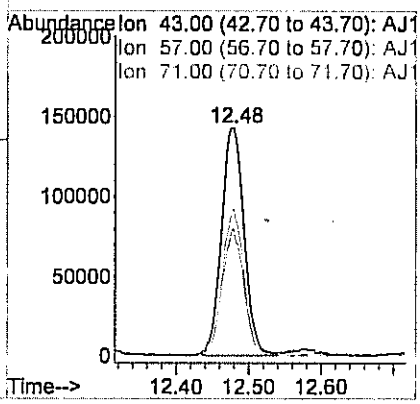


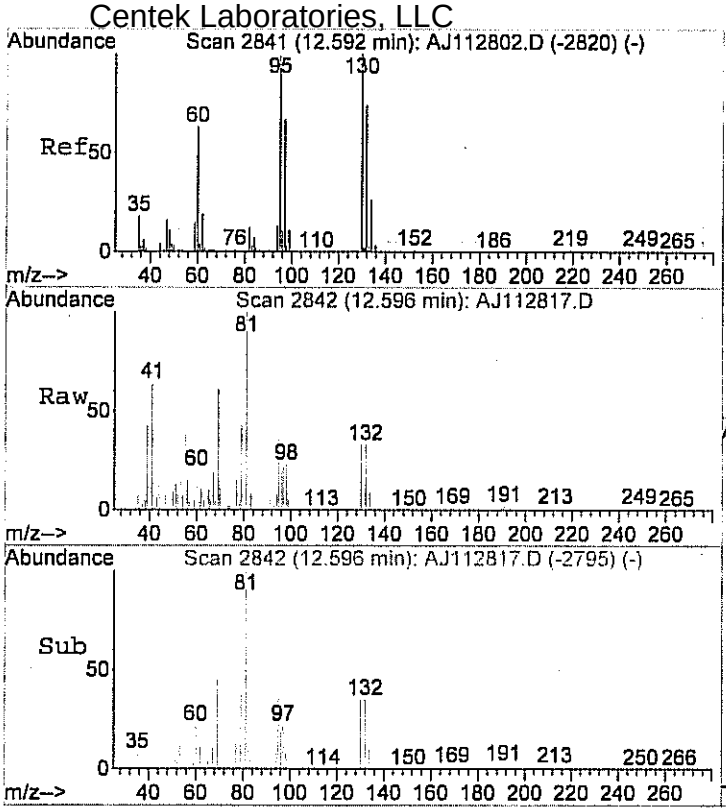


#41
Heptane
Concen: 9.14 ppb
RT: 12.48 min Scan# 2803
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 43 Resp: 320152

Ion	Ratio	Lower	Upper
43	100		
57	55.1	35.2	75.2
71	60.1	47.1	87.1

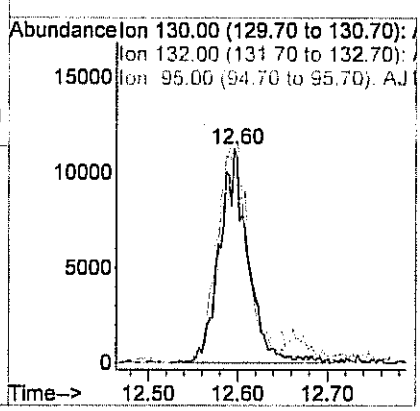


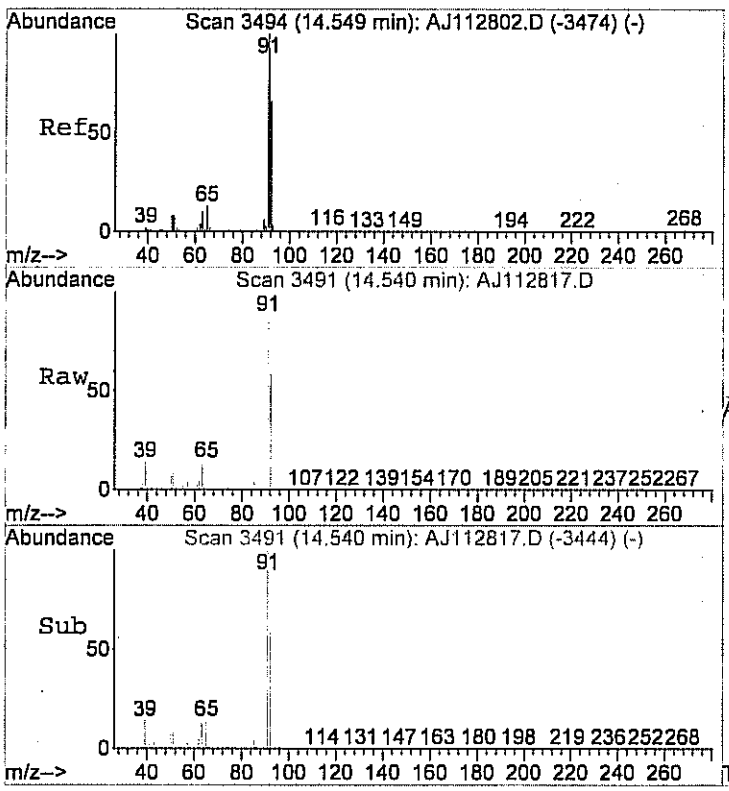


#42
Trichloroethene
Concen: 0.46 ppb
RT: 12.60 min Scan# 2842
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion:130 Resp: 25034

Ion	Ratio	Lower	Upper
130	100		
132	98.3	75.5	115.5
95	133.7	83.5	123.5#

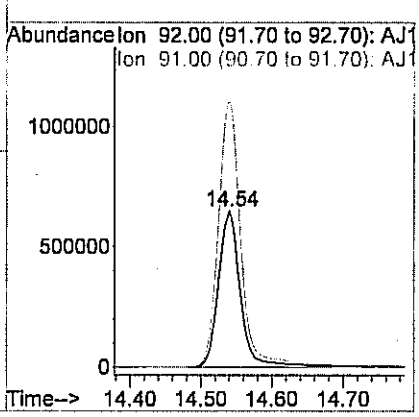


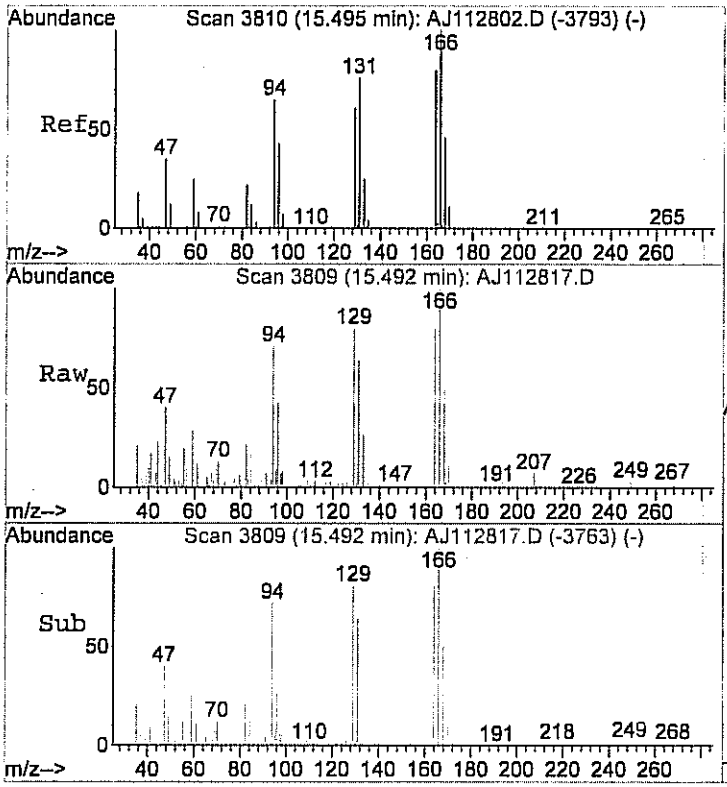


#49
Toluene
Concen: 18.49 ppb
RT: 14.54 min Scan# 3491
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 92 Resp: 1399336

Ion	Ratio	Lower	Upper
92	100		
91	173.2	160.2	200.2

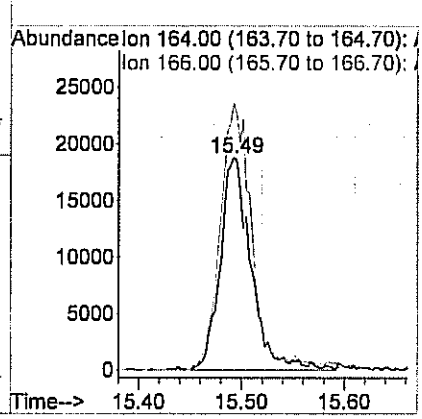


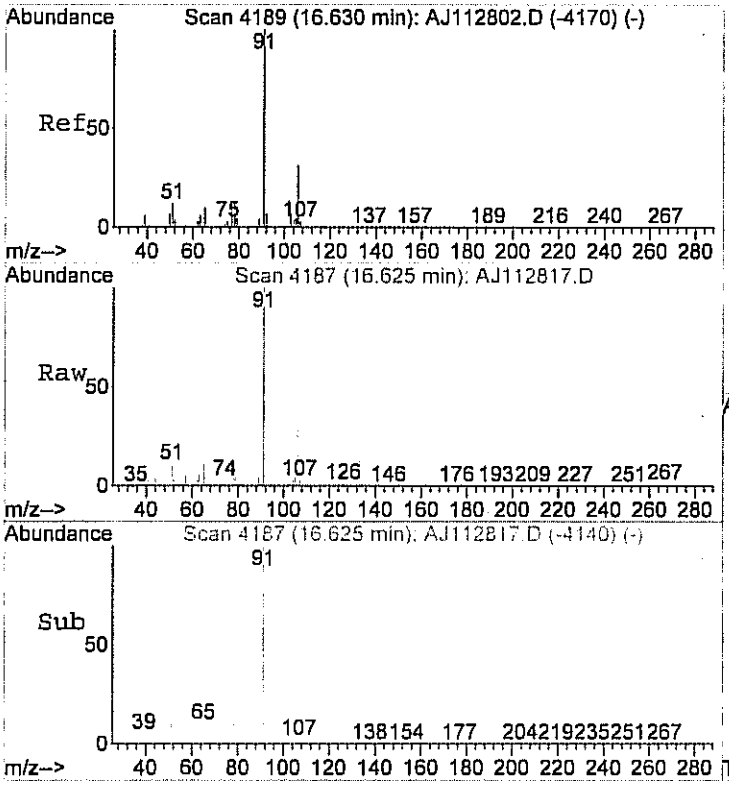


#54
Tetrachloroethylene
Concen: 0.55 ppb
RT: 15.49 min Scan# 3809
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion:164 Resp: 38891

Ion	Ratio	Lower	Upper
164	100		
166	131.1	110.0	150.0

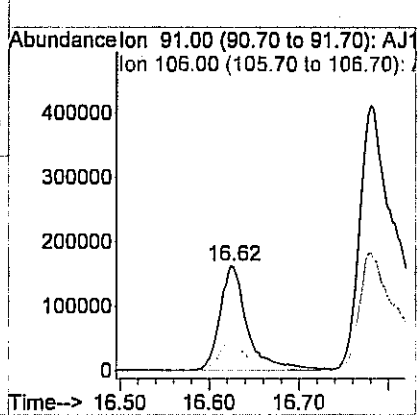


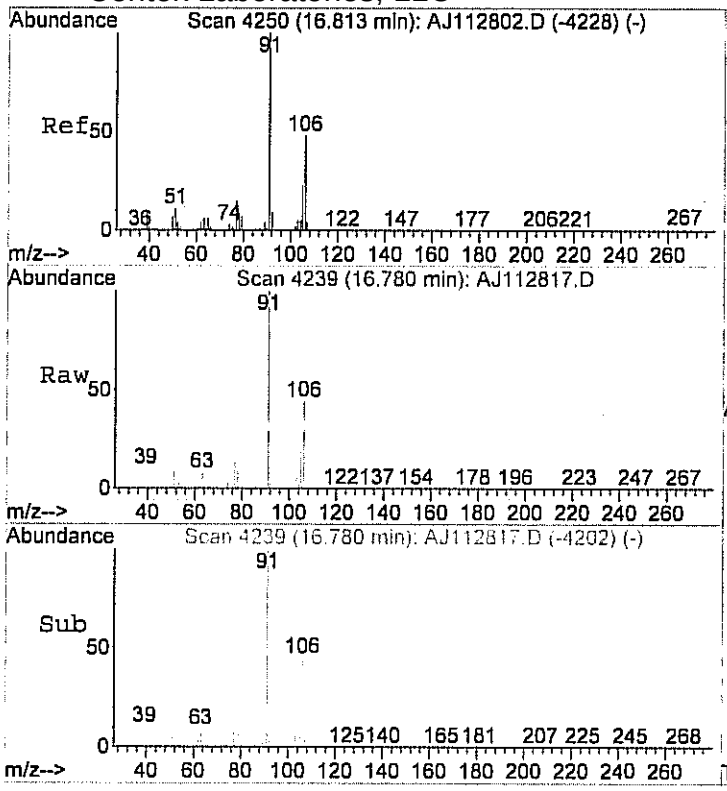


#56
Ethylbenzene
Concen: 2.12 ppb
RT: 16.62 min Scan# 4187
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 91 Resp: 344594

Ion	Ratio	Lower	Upper
91	100		
106	30.8	11.1	51.1

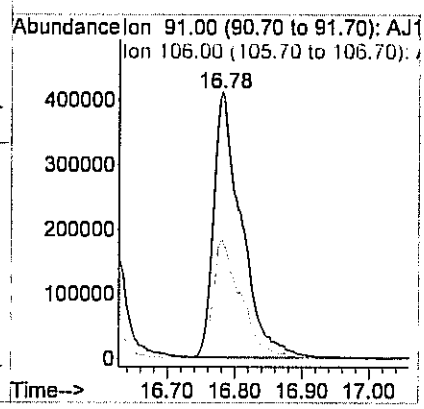


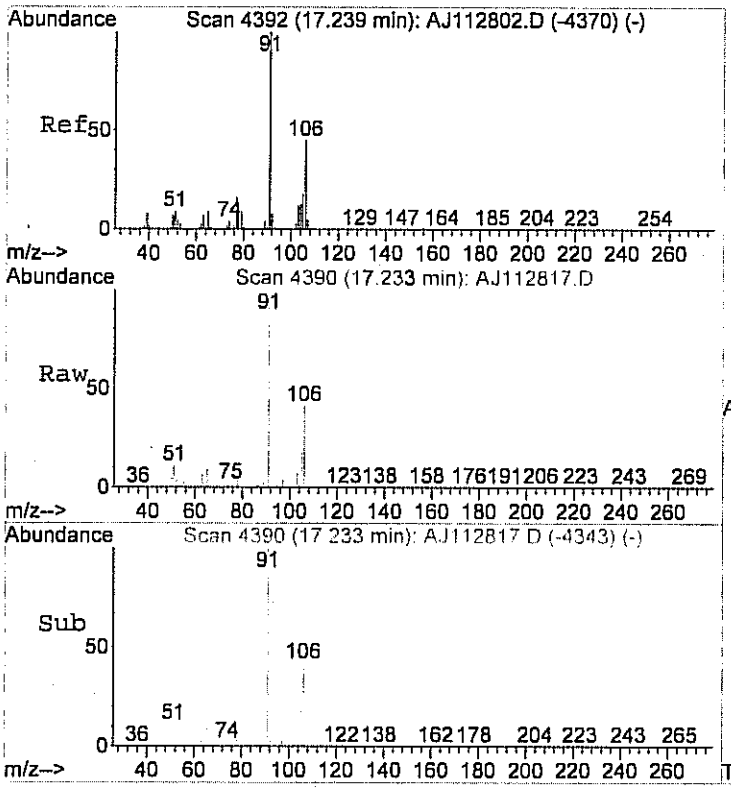


#57
m&p-xylene
Concen: 8.37 ppb
RT: 16.78 min Scan# 4239
Delta R.T. -0.04 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 91 Resp: 1176773

Ion	Ratio	Lower	Upper
91	100		
106	45.4	23.1	63.1

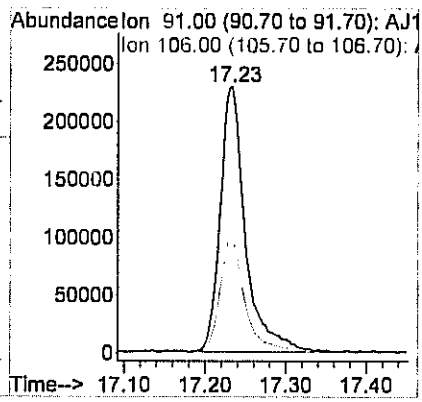


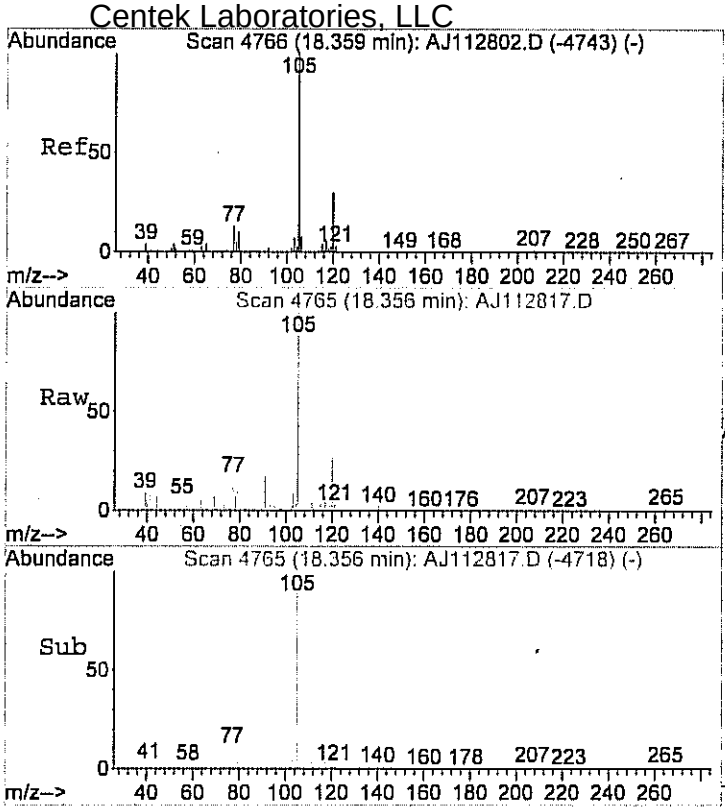


#60
o-xylene
Concen: 2.58 ppb
RT: 17.23 min Scan# 4390
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion: 91 Resp: 498643

Ion	Ratio	Lower	Upper
91	100		
106	42.6	16.6	56.6

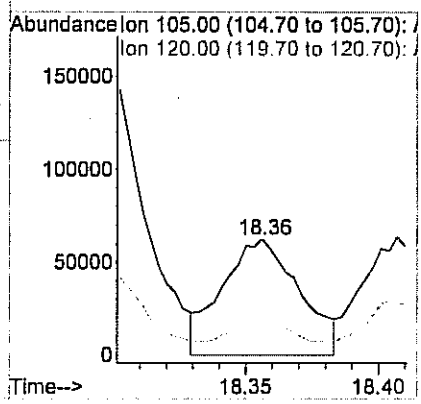


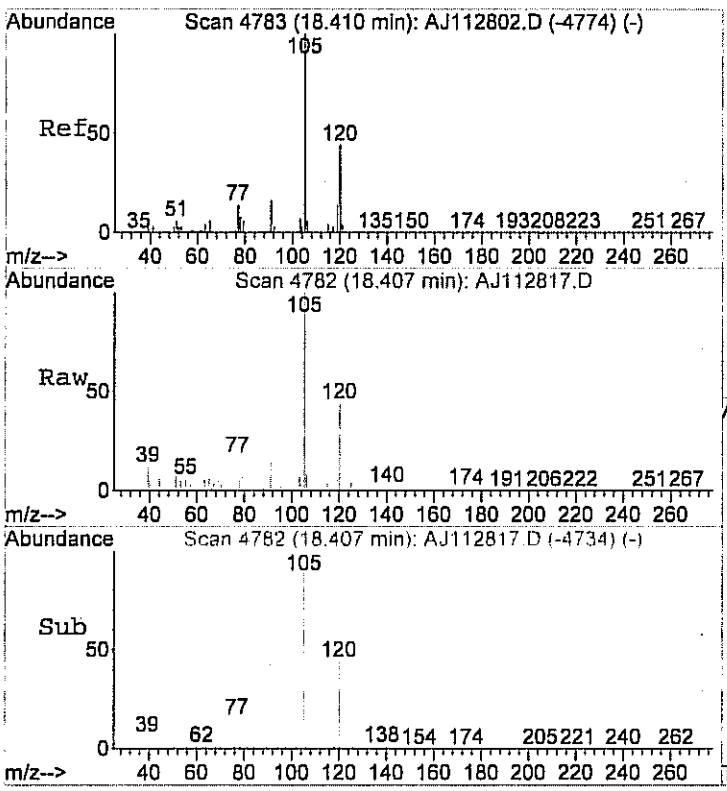


#64
4-ethyltoluene
Concen: 0.83 ppb m
RT: 18.36 min Scan# 4765
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion:105 Resp: 126283

Ion	Ratio	Lower	Upper
105	100		
120	140.1	28.4	68.4#

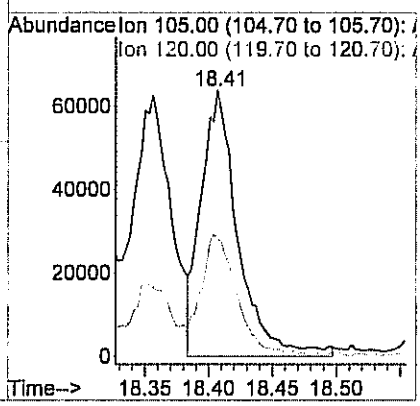


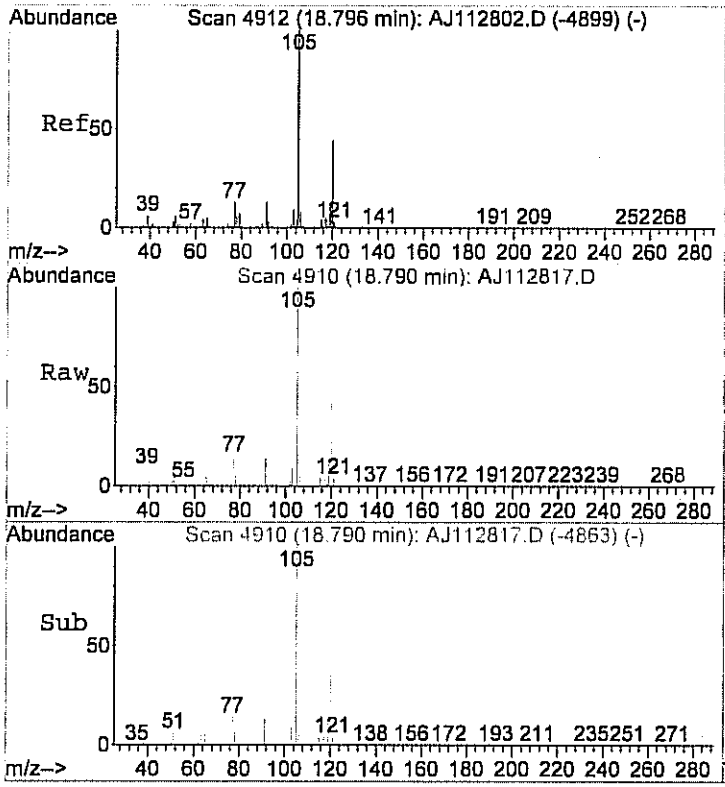


#65
1,3,5-trimethylbenzene
Concen: 0.63 ppb m
RT: 18.41 min Scan# 4782
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion:105 Resp: 129421

Ion	Ratio	Lower	Upper
105	100		
120	144.5	18.9	58.9#

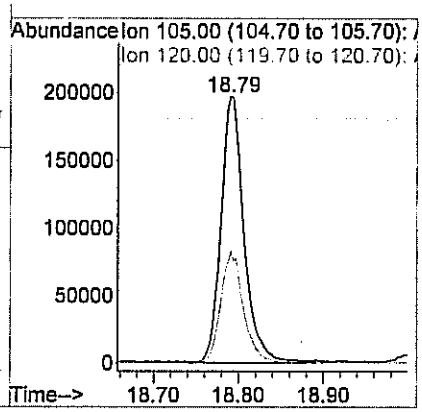




#66
1,2,4-trimethylbenzene
Concen: 2.48 ppb
RT: 18.79 min Scan# 4910
Delta R.T. -0.01 min
Lab File: AJ112817.D
Acq: 28 Nov 2012 6:58 pm

Tgt Ion:105 Resp: 370515

Ion	Ratio	Lower	Upper
105	100		
120	41.8	22.0	62.0



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112828.D Vial: 49
Acq On : 29 Nov 2012 1:27 am Operator: RJP
Sample : C1211047-001A 10X Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:23 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.73	128	22808	1.00	ppb		0.00
33) 1,4-difluorobenzene	11.98	114	92158	1.00	ppb		0.00
48) Chlorobenzene-d5	16.35	117	78659	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	37986	0.82	ppb		-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 82.00%				
Target Compounds							Qvalue
14) Acetone	6.08	58	25068	1.21	ppb	#	1
28) Hexane	8.88	57	85357	2.73	ppb	#	82
35) Cyclohexane	8.88	56	49341	2.50	ppb	#	83
37) Benzene	11.31	78	53217	0.64	ppb		89
40) 2,2,4-trimethylpentane	12.14	57	37898	0.35	ppb	#	30
41) Heptane	12.48	43	18182	0.57	ppb		94
49) Toluene	14.54	92	84215	1.48	ppb		96
57) m&p-xylene	16.79	91	41991	0.40	ppb		85

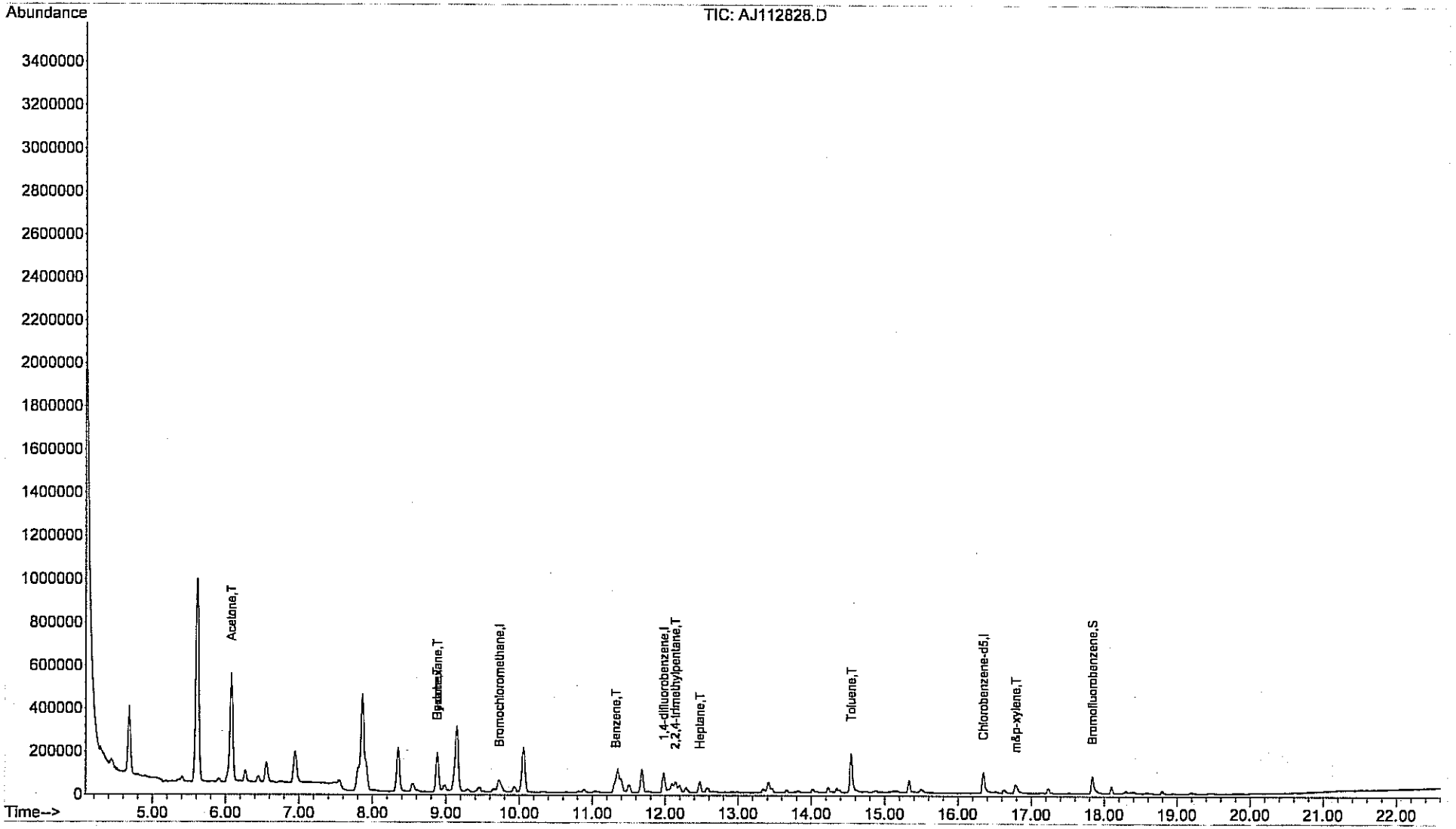
(#) = qualifier out of range (m) = manual integration (+) = signals summed

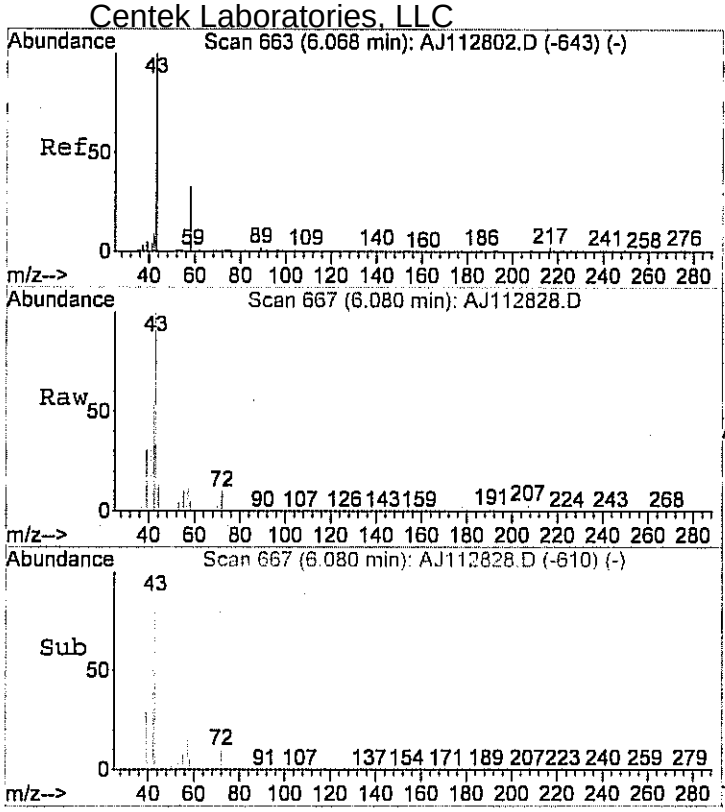
Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112828.D
Acq On : 29 Nov 2012 1:27 am
Sample : C1211047-001A 10X
Misc : AN23_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 30 8:44 2012

Vial: 49
Operator: RJP
Inst : MSD #1
Multiplr: 1.00
Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration

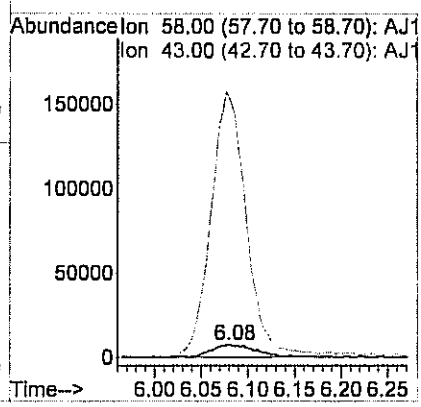


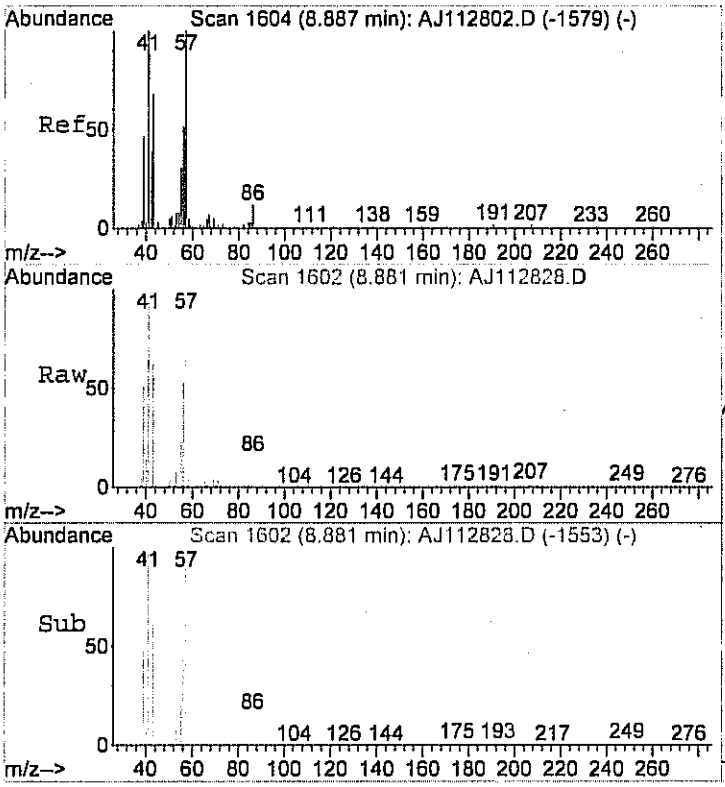


#14
Acetone
Concen: 1.21 ppb
RT: 6.08 min Scan# 667
Delta R.T. 0.02 min
Lab File: AJ112828.D
Acq: 29 Nov 2012 1:27 am

Tgt Ion: 58 Resp: 25068

Ion	Ratio	Lower	Upper
58	100		
43	1621.4	320.8	380.8#

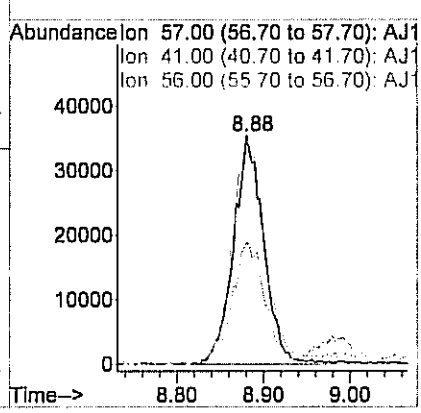


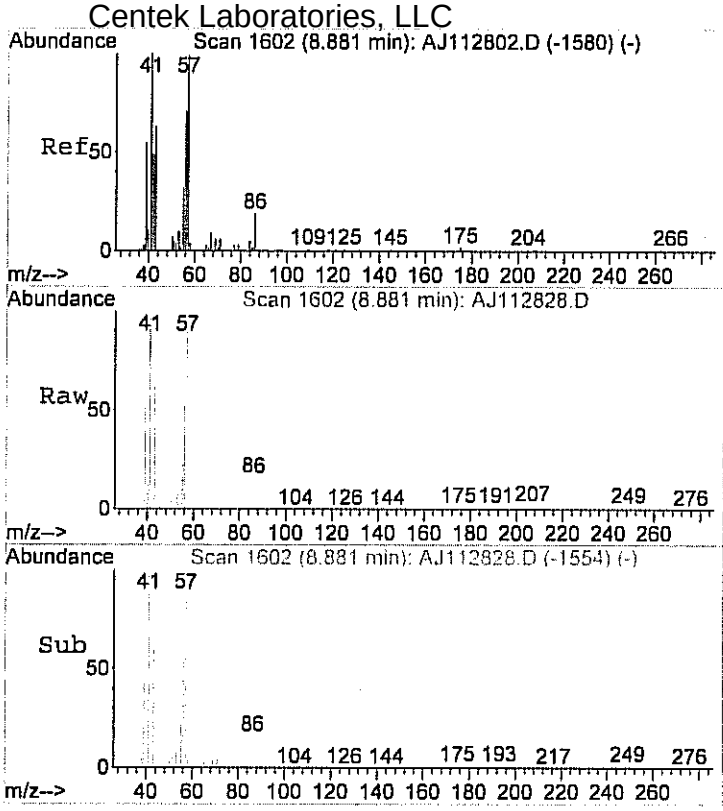


#28
Hexane
Concen: 2.73 ppb
RT: 8.88 min Scan# 1602
Delta R.T. -0.00 min
Lab File: AJ112828.D
Acq: 29 Nov 2012 1:27 am

Tgt Ion: 57 Resp: 85357

Ion	Ratio	Lower	Upper
57	100		
41	106.5	62.3	102.3#
56	57.8	34.8	74.8

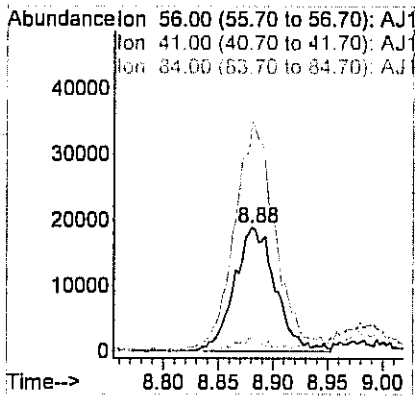


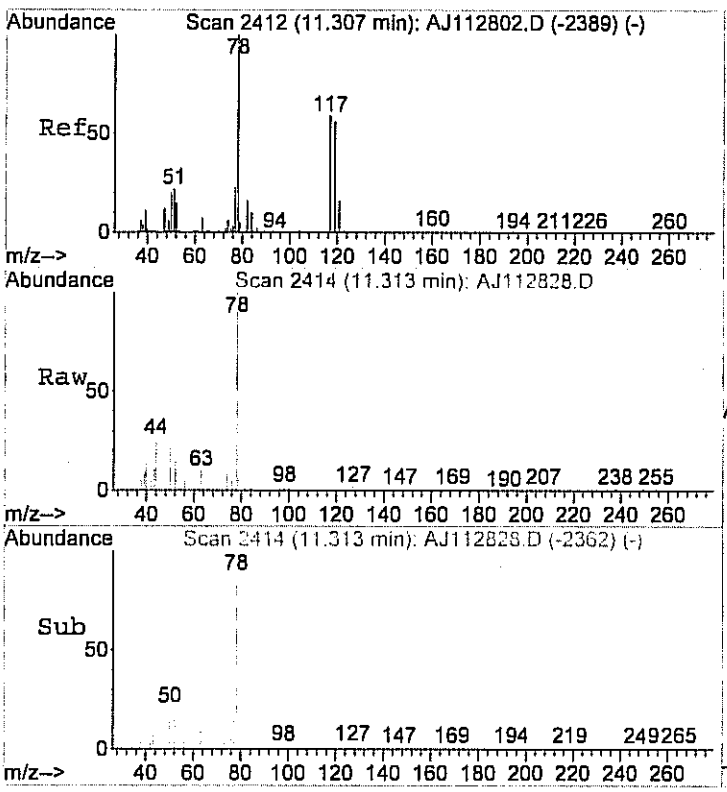


#35
Cyclohexane
Concen: 2.50 ppb
RT: 8.88 min Scan# 1602
Delta R.T. -0.01 min
Lab File: AJ112828.D
Acq: 29 Nov 2012 1:27 am

Tgt Ion: 56 Resp: 49341

Ion	Ratio	Lower	Upper
56	100		
41	184.2	141.3	181.3#
84	9.9	0.0	27.7

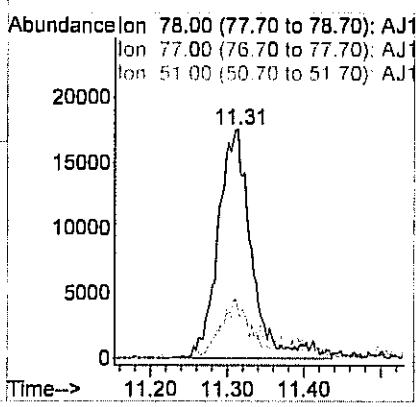


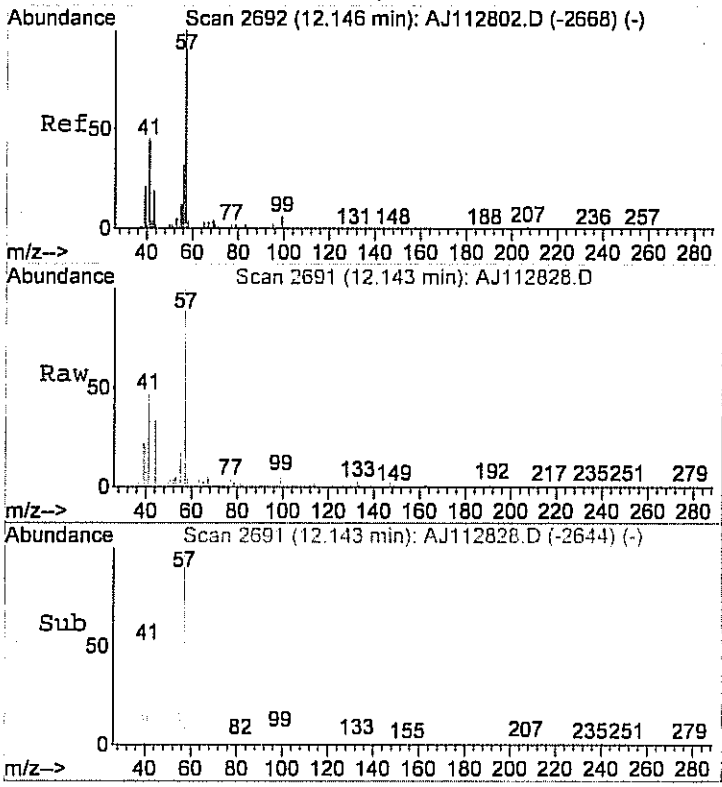


#37
Benzene
Concen: 0.64 ppb
RT: 11.31 min Scan# 2414
Delta R.T. 0.01 min
Lab File: AJ112828.D
Acq: 29 Nov 2012 1:27 am

Tgt Ion: 78 Resp: 53217

Ion	Ratio	Lower	Upper
78	100		
77	21.4	2.9	42.9
51	29.4	0.0	40.0

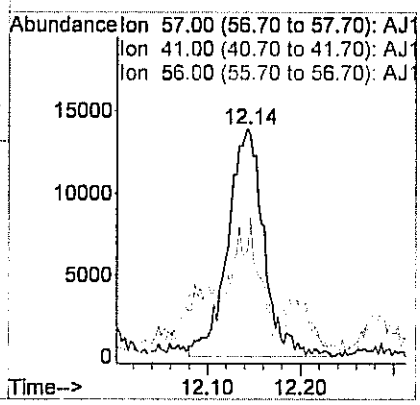


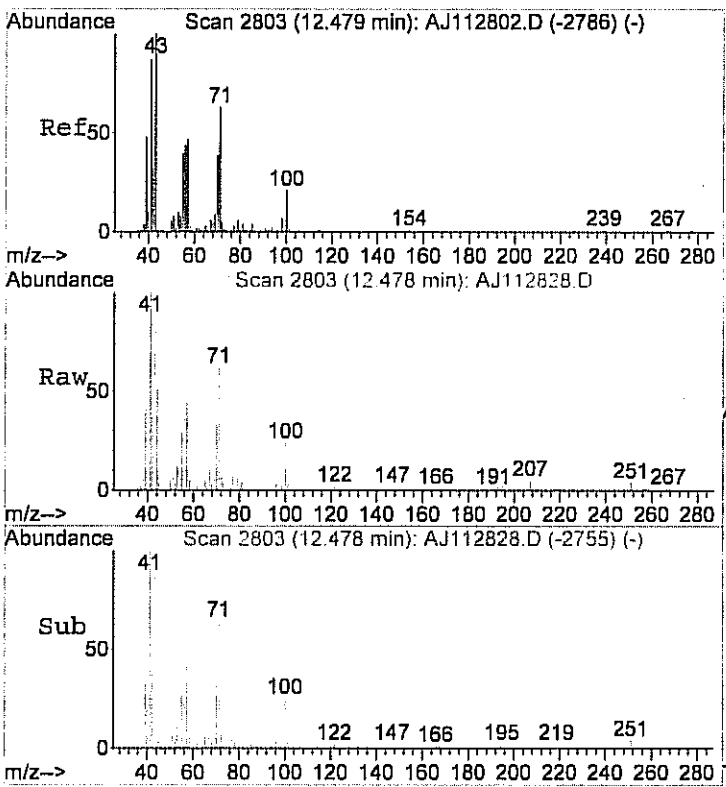


#40
2,2,4-trimethylpentane
Concen: 0.35 ppb
RT: 12.14 min Scan# 2691
Delta R.T. -0.01 min
Lab File: AJ112828.D
Acq: 29 Nov 2012 1:27 am

Tgt Ion: 57 Resp: 37898

Ion	Ratio	Lower	Upper
57	100		
41	91.3	26.2	66.2#
56	70.1	10.2	50.2#

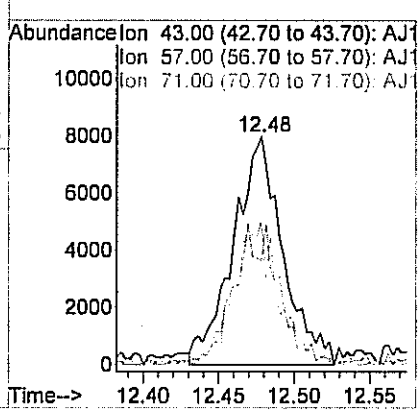


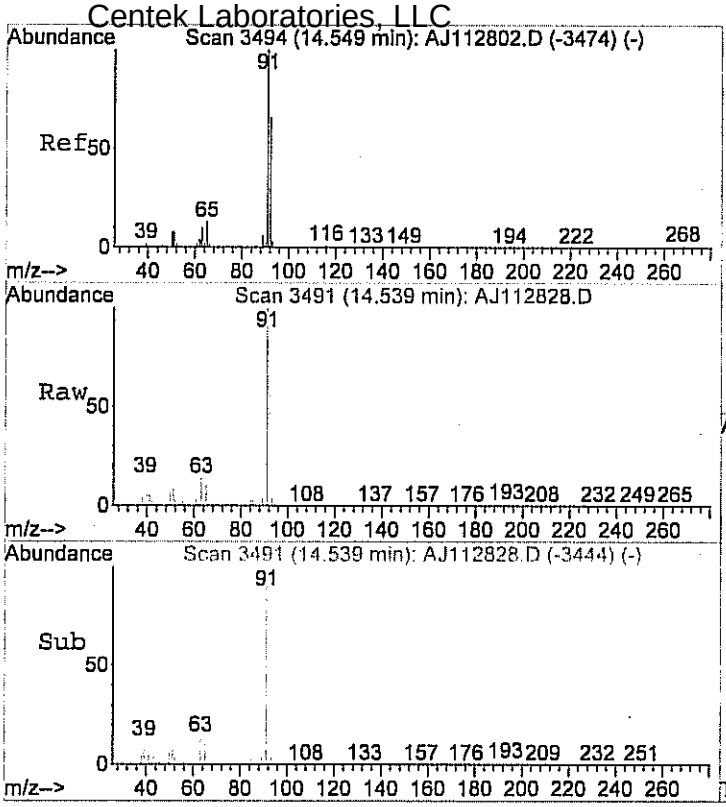


#41
Heptane
Concen: 0.57 ppb
RT: 12.48 min Scan# 2803
Delta R.T. -0.01 min
Lab File: AJ112828.D
Acq: 29 Nov 2012 1:27 am

Tgt Ion: 43 Resp: 18182

Ion	Ratio	Lower	Upper
43	100		
57	55.0	35.2	75.2
71	57.7	47.1	87.1

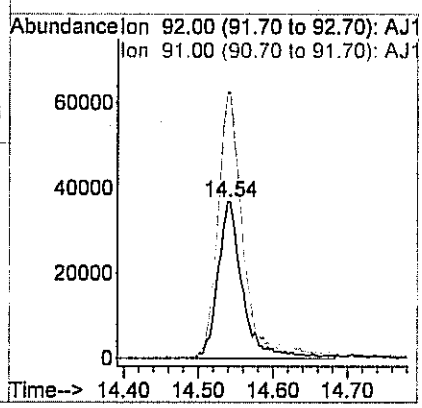


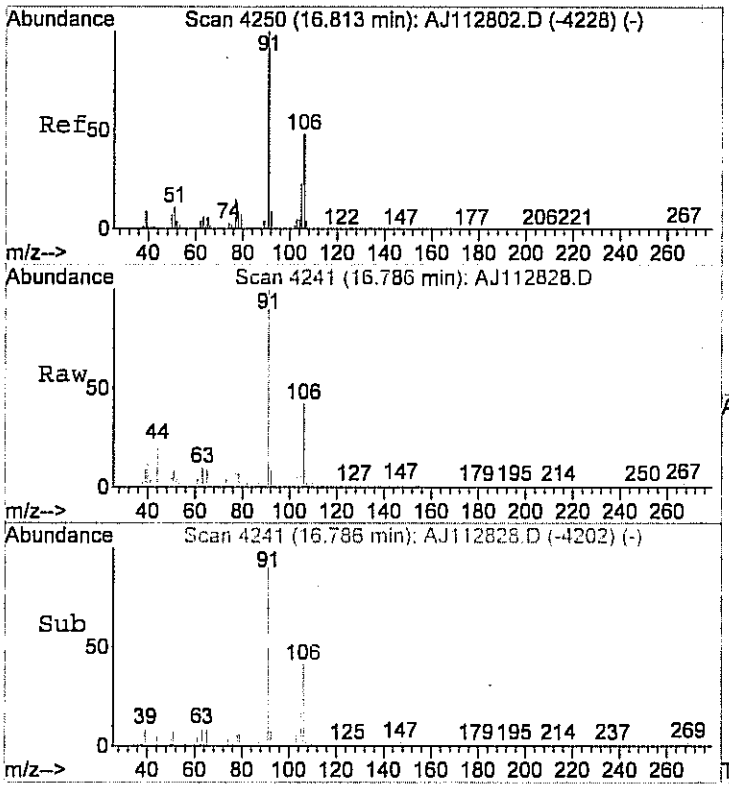


#49
Toluene
Concen: 1.48 ppb
RT: 14.54 min Scan# 3491
Delta R.T. -0.01 min
Lab File: AJ112828.D
Acq: 29 Nov 2012 1:27 am

Tgt Ion: 92 Resp: 84215

Ion	Ratio	Lower	Upper
92	100		
91	173.9	160.2	200.2

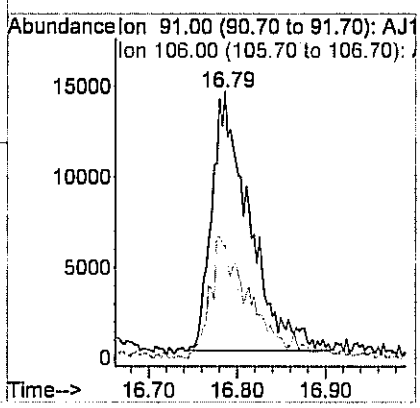




#57
m&p-xylene
Concen: 0.40 ppb
RT: 16.79 min Scan# 4241
Delta R.T. -0.03 min
Lab File: AJ112828.D
Acq: 29 Nov 2012 1:27 am

Tgt Ion: 91 Resp: 41991

Ion	Ratio	Lower	Upper
91	100		
106	53.0	23.1	63.1



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112829.D Vial: 50
Acq On : 29 Nov 2012 2:01 am Operator: RJP
Sample : C1211047-001A 40X Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:24 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

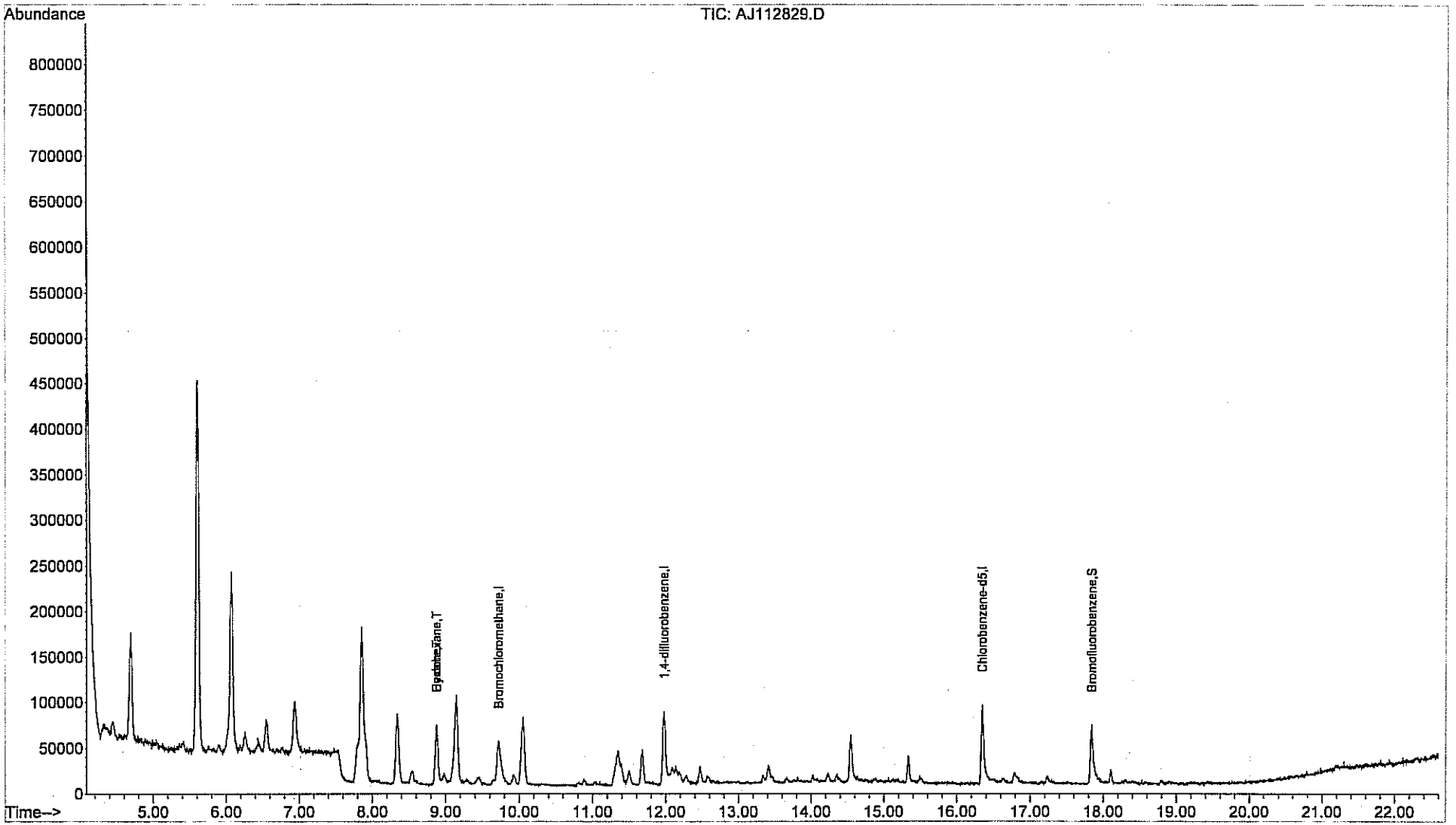
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.73	128	22685	1.00	ppb	0.00
33) 1,4-difluorobenzene	11.98	114	85075	1.00	ppb	0.00
48) Chlorobenzene-d5	16.35	117	69040	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.84	95	31645	0.78	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 78.00%			
Target Compounds						Qvalue
28) Hexane	8.88	57	28589	0.92	ppb	# 65
35) Cyclohexane	8.87	56	20777	1.14	ppb	97

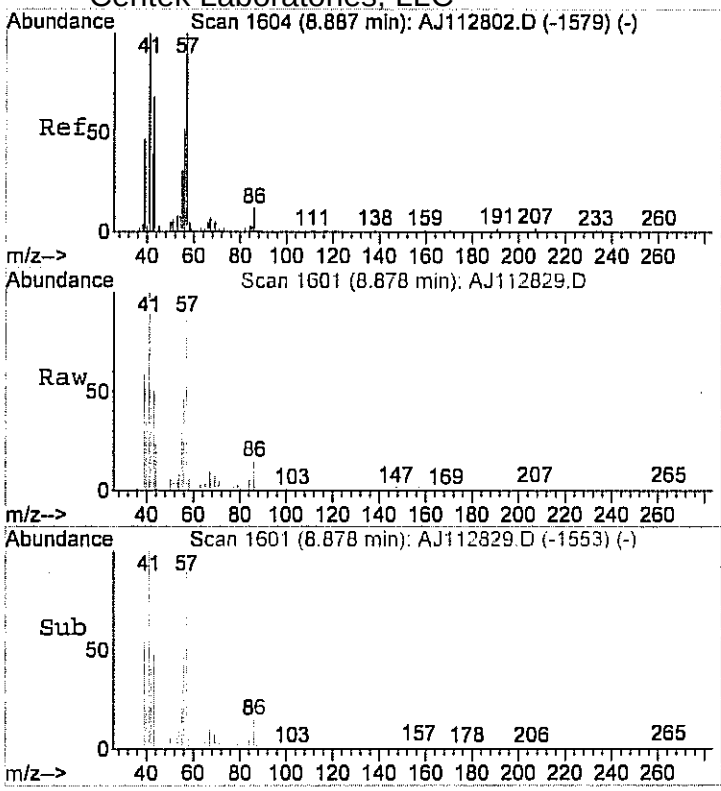
(#) = qualifier out of range (m) = manual integration (+) = signals summed
AJ112829.D AN23_1UG.M Fri Dec 14 12:50:39 2012 MSD1 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112829.D Vial: 50
Acq On : 29 Nov 2012 2:01 am Operator: RJP
Sample : C1211047-001A 40X Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 30 8:44 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration

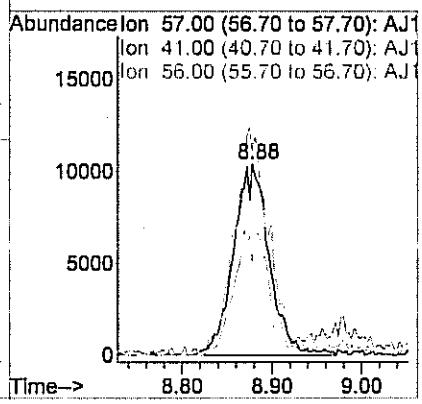


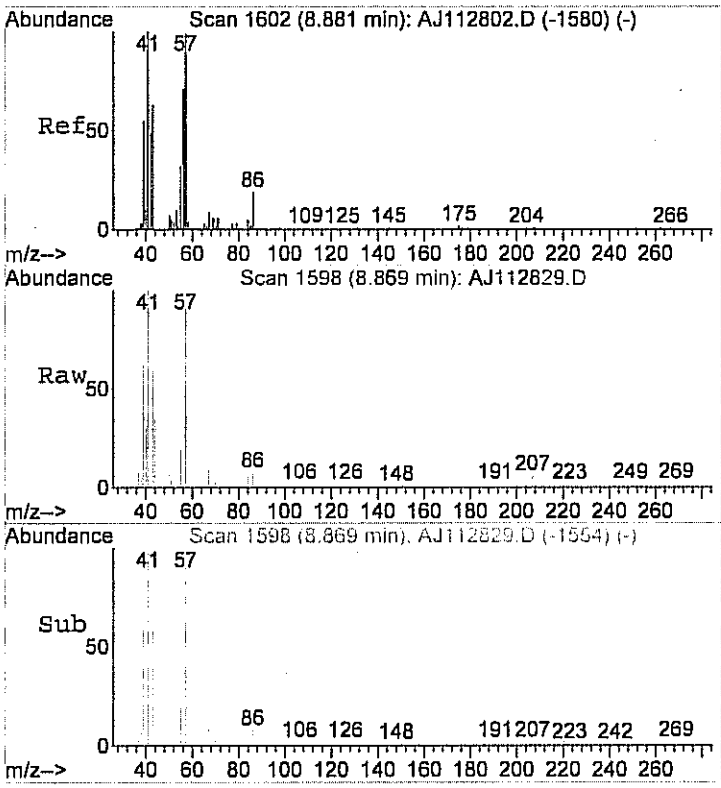


#28
Hexane
Concen: 0.92 ppb
RT: 8.88 min Scan# 1601
Delta R.T. -0.01 min
Lab File: AJ112829.D
Acq: 29 Nov 2012 2:01 am

Tgt Ion: 57 Resp: 28589

Ion	Ratio	Lower	Upper
57	100		
41	120.0	62.3	102.3#
56	72.9	34.8	74.8

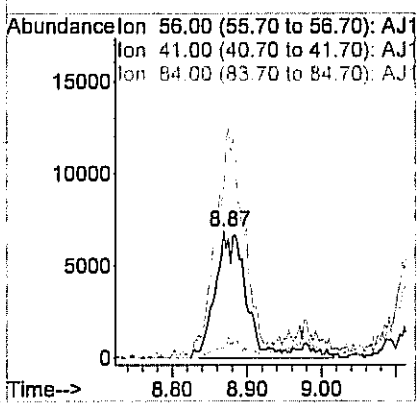




#35
Cyclohexane
Concen: 1.14 ppb
RT: 8.87 min Scan# 1598
Delta R.T. -0.02 min
Lab File: AJ112829.D
Acq: 29 Nov 2012 2:01 am

Tgt Ion: 56 Resp: 20777

Ion	Ratio	Lower	Upper
56	100		
41	164.7	141.3	181.3
84	9.4	0.0	27.7



Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS		FLD				Analyst:
Lab Vacuum In	-7			"Hg		11/21/2012
Lab Vacuum Out	-30			"Hg		11/21/2012
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,1,2,2-Tetrachloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,1,2-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,1-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,1-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2,4-Trichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2,4-Trimethylbenzene	0.40	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2-Dibromoethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,2-Dichloropropane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,3,5-Trimethylbenzene	0.10	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,3-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,4-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
1,4-Dioxane	< 0.30	0.30		ppbV	1	11/28/2012 7:33:00 PM
2,2,4-trimethylpentane	0.12	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
4-ethyltoluene	0.13	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
Acetone	12	3.0		ppbV	10	11/29/2012 2:35:00 AM
Allyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Benzene	0.41	0.15		ppbV	1	11/28/2012 7:33:00 PM
Benzyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Bromodichloromethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Bromoform	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Bromomethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Carbon disulfide	0.58	0.15		ppbV	1	11/28/2012 7:33:00 PM
Carbon tetrachloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Chlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Chloroethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Chloroform	0.27	0.15		ppbV	1	11/28/2012 7:33:00 PM
Chloromethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
cis-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
cis-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Cyclohexane	0.74	0.15		ppbV	1	11/28/2012 7:33:00 PM
Dibromochloromethane	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Ethyl acetate	< 0.25	0.25		ppbV	1	11/28/2012 7:33:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
Ethylbenzene	0.26	0.15		ppbV	1	11/28/2012 7:33:00 PM
Freon 11	0.19	0.15		ppbV	1	11/28/2012 7:33:00 PM
Freon 113	0.14	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
Freon 114	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Freon 12	0.48	0.15		ppbV	1	11/28/2012 7:33:00 PM
Heptane	0.31	0.15		ppbV	1	11/28/2012 7:33:00 PM
Hexachloro-1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Hexane	0.76	0.15		ppbV	1	11/28/2012 7:33:00 PM
Isopropyl alcohol	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
m&p-Xylene	0.84	0.30		ppbV	1	11/28/2012 7:33:00 PM
Methyl Butyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 7:33:00 PM
Methyl Ethyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 7:33:00 PM
Methyl Isobutyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 7:33:00 PM
Methyl tert-butyl ether	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Methylene chloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
o-Xylene	0.25	0.15		ppbV	1	11/28/2012 7:33:00 PM
Propylene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Styrene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Tetrachloroethylene	0.57	0.15		ppbV	1	11/28/2012 7:33:00 PM
Tetrahydrofuran	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Toluene	1.8	0.15		ppbV	1	11/28/2012 7:33:00 PM
trans-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
trans-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Trichloroethene	0.12	0.15	J	ppbV	1	11/28/2012 7:33:00 PM
Vinyl acetate	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Vinyl Bromide	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Vinyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 7:33:00 PM
Surr: Bromofluorobenzene	107	70-130		%REC	1	11/28/2012 7:33:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: RJP
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 7:33:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 7:33:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 7:33:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 7:33:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 7:33:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 7:33:00 PM
1,2,4-Trimethylbenzene	2.0	0.75		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 7:33:00 PM
1,3,5-Trimethylbenzene	0.50	0.75	J	ug/m3	1	11/28/2012 7:33:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 7:33:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 7:33:00 PM
2,2,4-trimethylpentane	0.57	0.71	J	ug/m3	1	11/28/2012 7:33:00 PM
4-ethyltoluene	0.65	0.75	J	ug/m3	1	11/28/2012 7:33:00 PM
Acetone	28	7.2		ug/m3	10	11/29/2012 2:35:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 7:33:00 PM
Benzene	1.3	0.49		ug/m3	1	11/28/2012 7:33:00 PM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 7:33:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 7:33:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 7:33:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 7:33:00 PM
Carbon disulfide	1.8	0.47		ug/m3	1	11/28/2012 7:33:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 7:33:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 7:33:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 7:33:00 PM
Chloroform	1.3	0.74		ug/m3	1	11/28/2012 7:33:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 7:33:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 7:33:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 7:33:00 PM
Cyclohexane	2.6	0.52		ug/m3	1	11/28/2012 7:33:00 PM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 7:33:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
Ethylbenzene	1.1	0.66		ug/m3	1	11/28/2012 7:33:00 PM
Freon 11	1.1	0.86		ug/m3	1	11/28/2012 7:33:00 PM
Freon 113	1.1	1.2	J	ug/m3	1	11/28/2012 7:33:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 7:33:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: **RJP**
Freon 12	2.4	0.75		ug/m3	1	11/28/2012 7:33:00 PM
Heptane	1.3	0.62		ug/m3	1	11/28/2012 7:33:00 PM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 7:33:00 PM
Hexane	2.7	0.54		ug/m3	1	11/28/2012 7:33:00 PM
Isopropyl alcohol	< 0.37	0.37		ug/m3	1	11/28/2012 7:33:00 PM
m&p-Xylene	3.7	1.3		ug/m3	1	11/28/2012 7:33:00 PM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 7:33:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 7:33:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 7:33:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 7:33:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 7:33:00 PM
o-Xylene	1.1	0.66		ug/m3	1	11/28/2012 7:33:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 7:33:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 7:33:00 PM
Tetrachloroethylene	3.9	1.0		ug/m3	1	11/28/2012 7:33:00 PM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 7:33:00 PM
Toluene	6.8	0.57		ug/m3	1	11/28/2012 7:33:00 PM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 7:33:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 7:33:00 PM
Trichloroethene	0.66	0.82	J	ug/m3	1	11/28/2012 7:33:00 PM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 7:33:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 7:33:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 7:33:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112818.D Vial: 11
Acq On : 28 Nov 2012 7:33 pm Operator: RJP
Sample : C1211047-002A Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:13 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

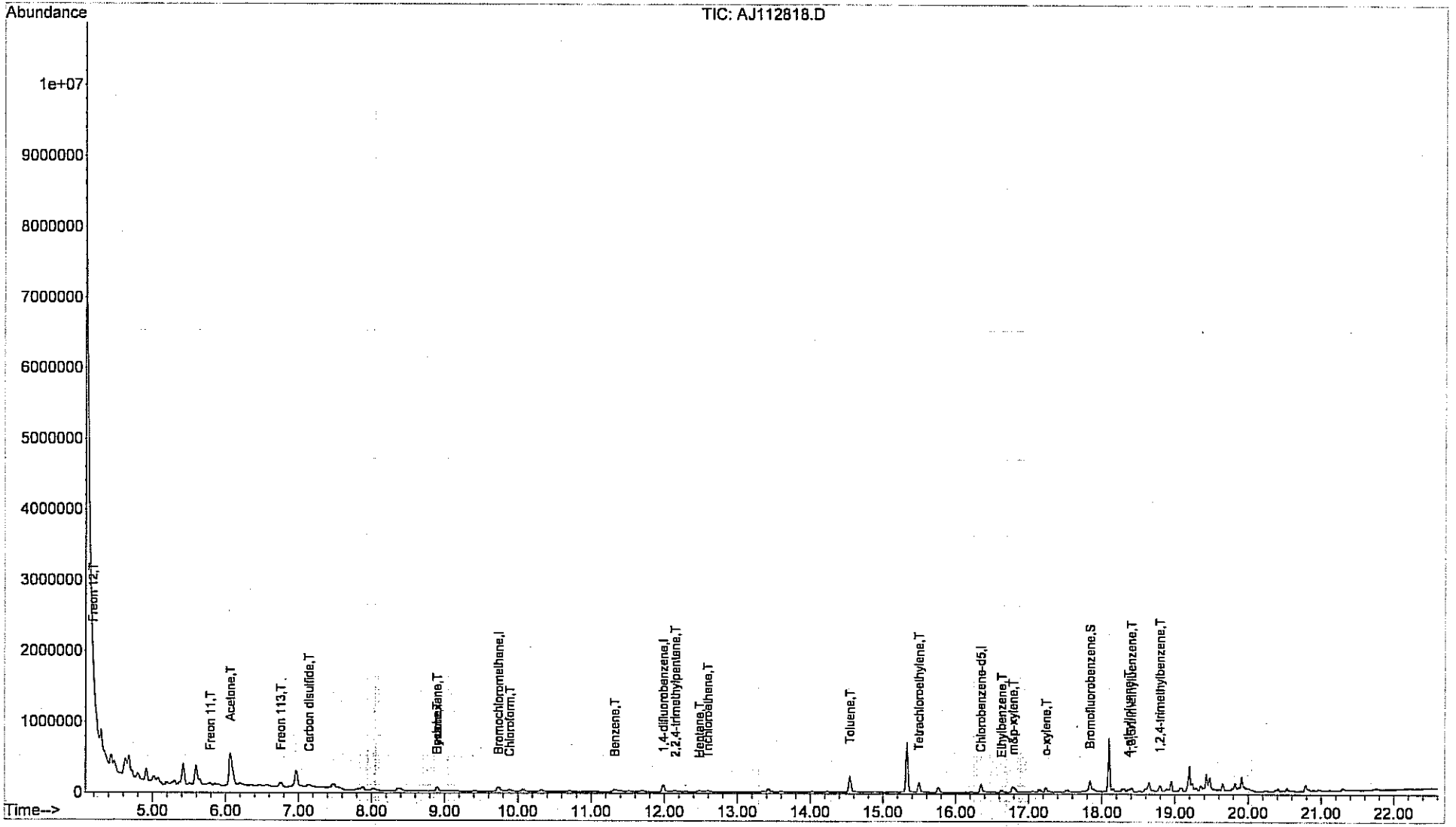
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.73	128	25017	1.00	ppb		0.00
33) 1,4-difluorobenzene	11.99	114	97070	1.00	ppb		0.00
48) Chlorobenzene-d5	16.35	117	84857	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	53299	1.07	ppb		-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 107.00%				
Target Compounds							Qvalue
3) Freon 12	4.19	85	106071	0.48	ppb		99
13) Freon 11	5.79	101	54010	0.19	ppb		93
14) Acetone	6.06	58	195044	8.60	ppb	#	69
17) Freon 113	6.76	101	20624	0.14	ppb	#	57
21) Carbon disulfide	7.14	76	94938	0.58	ppb		99
28) Hexane	8.89	57	26082	0.76	ppb	#	79
30) Chloroform	9.89	83	27711	0.27	ppb		94
35) Cyclohexane	8.90	56	15472	0.74	ppb		86
37) Benzene	11.31	78	36333	0.41	ppb		92
40) 2,2,4-trimethylpentane	12.14	57	13264	0.12	ppb		87
41) Heptane	12.48	43	10425	0.31	ppb	#	75
42) Trichloroethene	12.60	130	6175	0.12	ppb		96
49) Toluene	14.54	92	109338	1.78	ppb		96
54) Tetrachloroethylene	15.49	164	32229	0.57	ppb		99
56) Ethylbenzene	16.63	91	33728	0.26	ppb		99
57) m&p-xylene	16.79	91	95435	0.84	ppb		95
60) o-xylene	17.23	91	39326	0.25	ppb		80
64) 4-ethyltoluene	18.35	105	15651m	0.13	ppb		
65) 1,3,5-trimethylbenzene	18.41	105	17085m	0.10	ppb		
66) 1,2,4-trimethylbenzene	18.79	105	48788	0.40	ppb		98

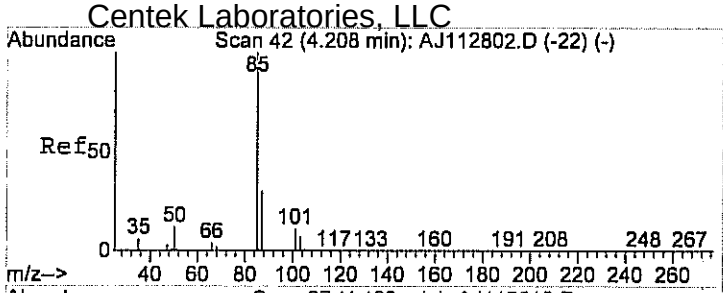
(#) = qualifier out of range (m) = manual integration (+) = signals summed

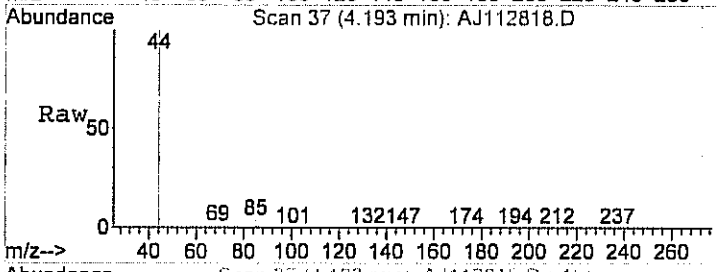
Quantitation Report (QT Reviewed)

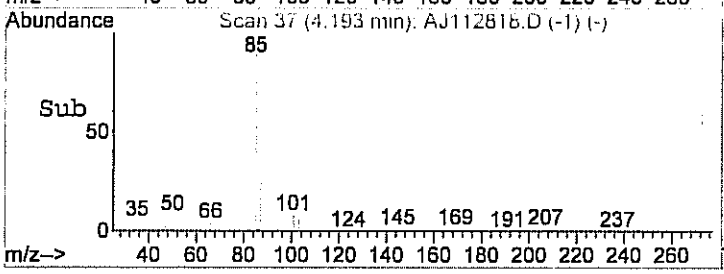
Data File : C:\HPCHEM\1\DATA\AJ112818.D Vial: 11
Acq On : 28 Nov 2012 7:33 pm Operator: RJP
Sample : C1211047-002A Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 14:27 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration





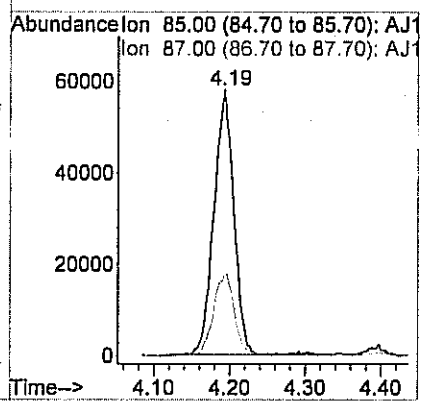


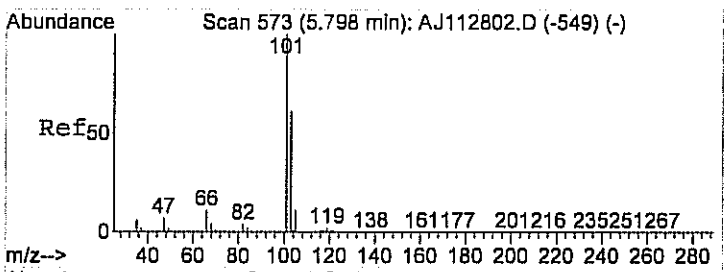


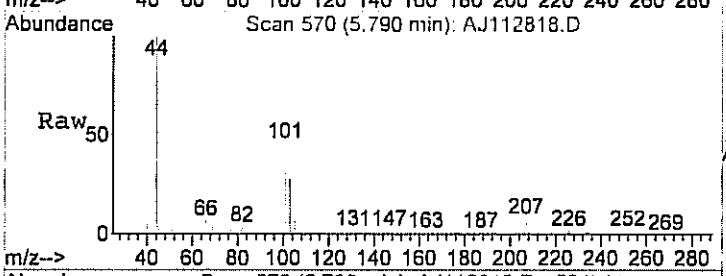
#3
Freon 12
Concen: 0.48 ppb
RT: 4.19 min Scan# 37
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

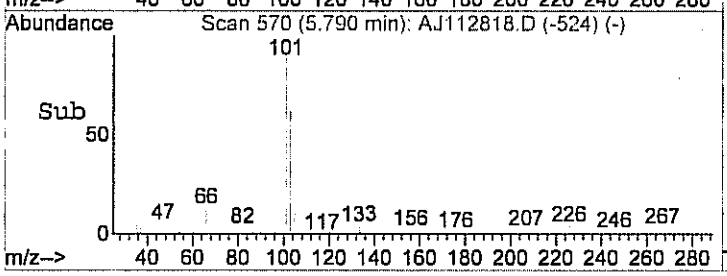
Tgt Ion: 85 Resp: 106071

Ion	Ratio	Lower	Upper
85	100		
87	32.0	12.4	52.4





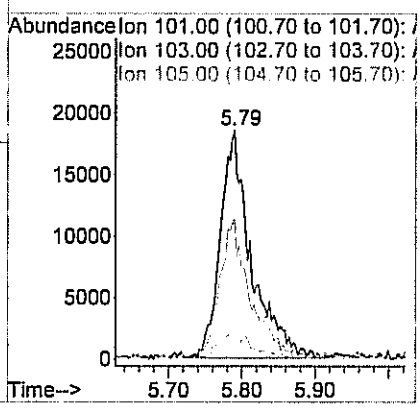


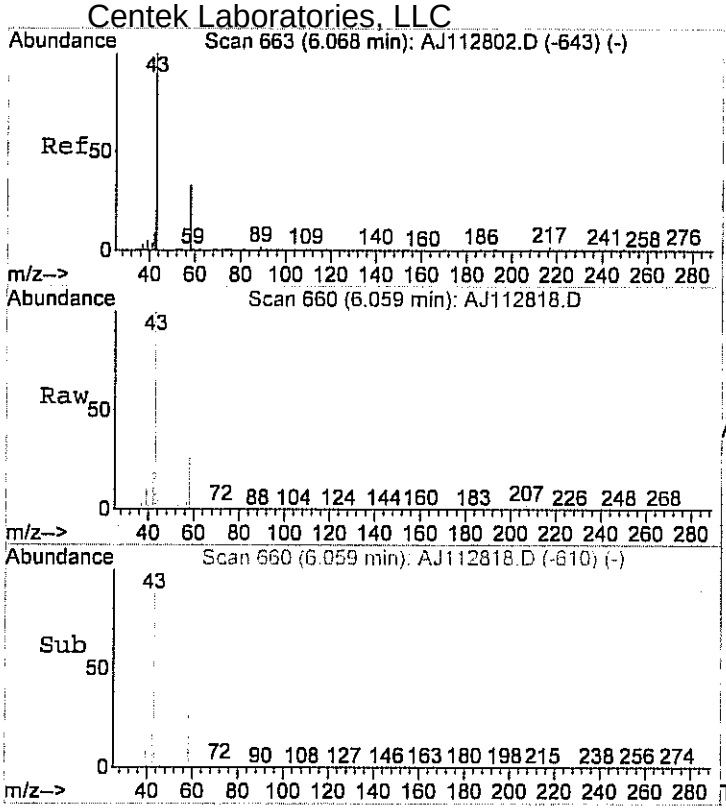


#13
Freon 11
Concen: 0.19 ppb
RT: 5.79 min Scan# 570
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion:101 Resp: 54010

Ion	Ratio	Lower	Upper
101	100		
103	63.4	49.9	89.9
105	11.4	0.0	31.4

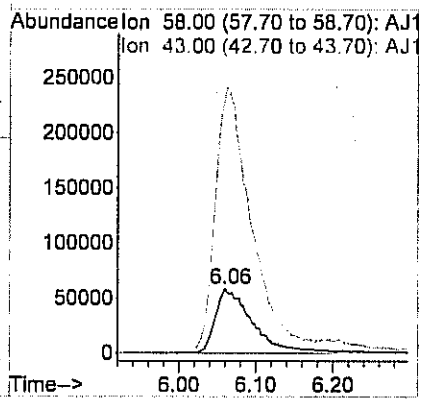


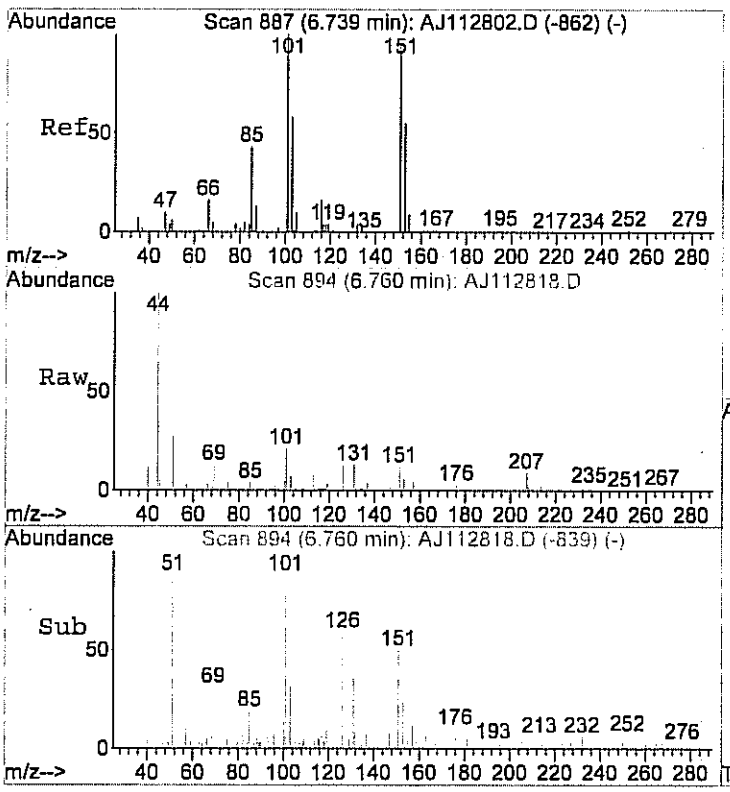


#14
Acetone
Concen: 8.60 ppb
RT: 6.06 min Scan# 660
Delta R.T. 0.00 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion: 58 Resp: 195044

Ion	Ratio	Lower	Upper
58	100		
43	417.8	320.8	380.8#

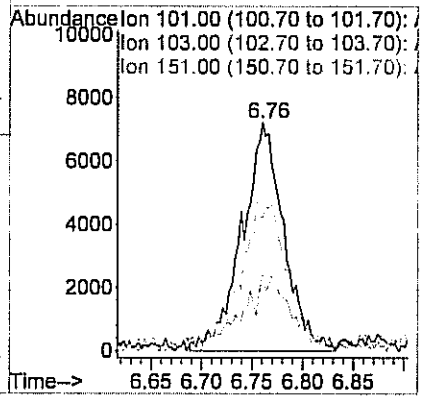


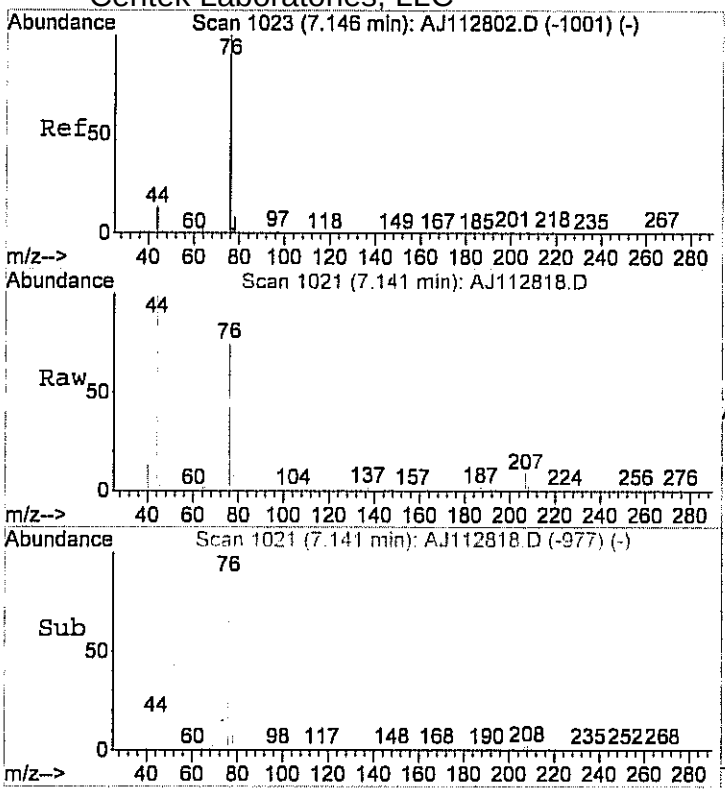


#17
Freon 113
Concen: 0.14 ppb
RT: 6.76 min Scan# 894
Delta R.T. 0.02 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion:101 Resp: 20624

Ion	Ratio	Lower	Upper
101	100		
103	40.2	52.6	92.6#
151	70.5	101.5	141.5#

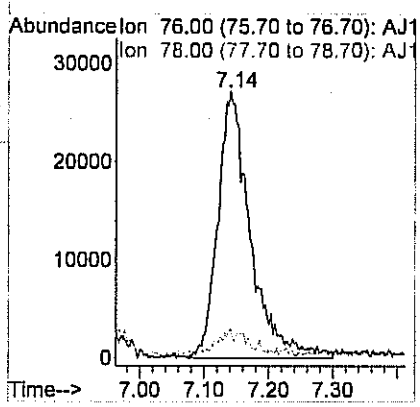


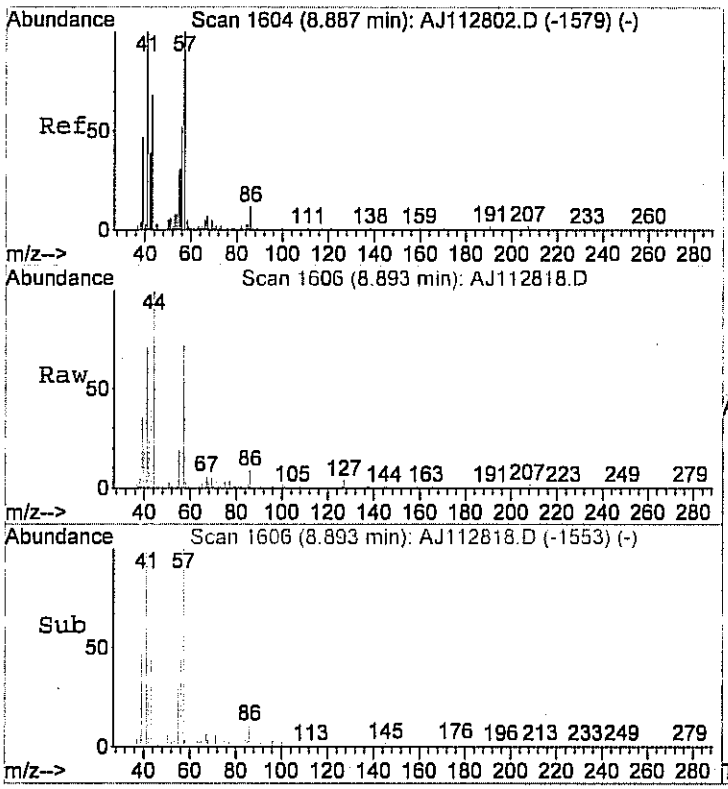


#21
Carbon disulfide
Concen: 0.58 ppb
RT: 7.14 min Scan# 1021
Delta R.T. -0.02 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion: 76 Resp: 94938

Ion	Ratio	Lower	Upper
76	100		
78	11.5	0.0	30.9

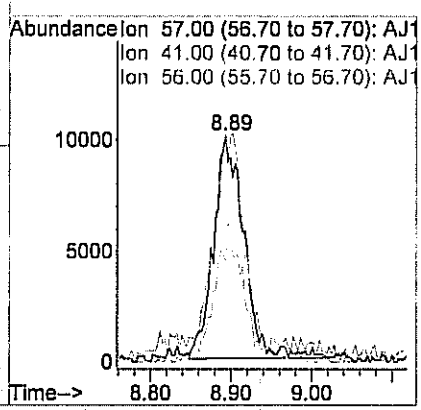


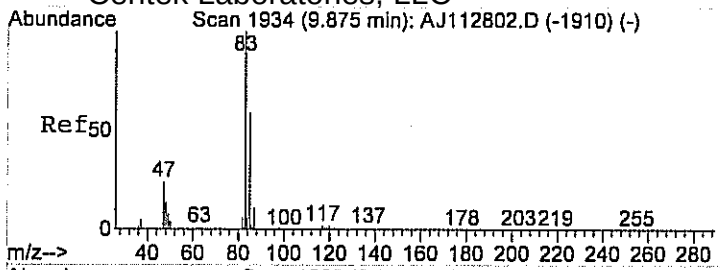


#28
Hexane
Concen: 0.76 ppb
RT: 8.89 min Scan# 1606
Delta R.T. 0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion: 57 Resp: 26082

Ion	Ratio	Lower	Upper
57	100		
41	109.9	62.3	102.3#
56	59.3	34.8	74.8

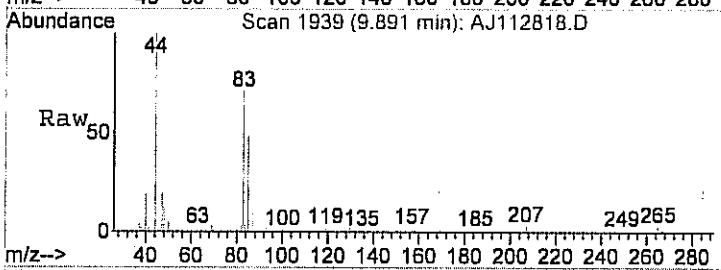


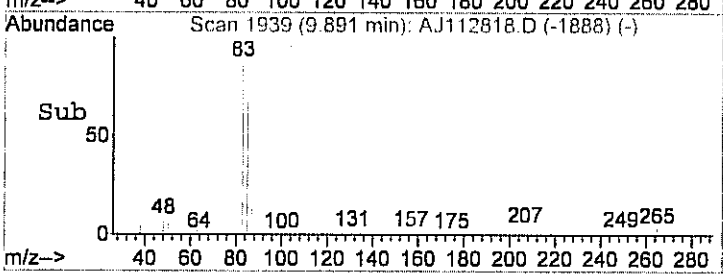


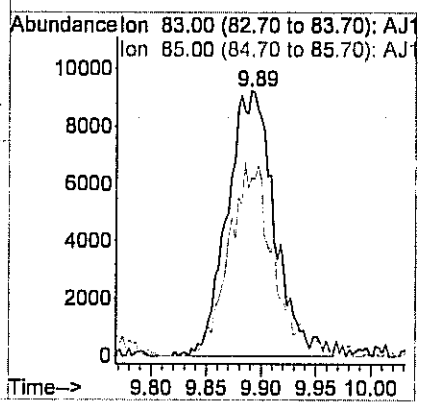
#30
Chloroform
Concen: 0.27 ppb
RT: 9.89 min Scan# 1939
Delta R.T. 0.00 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

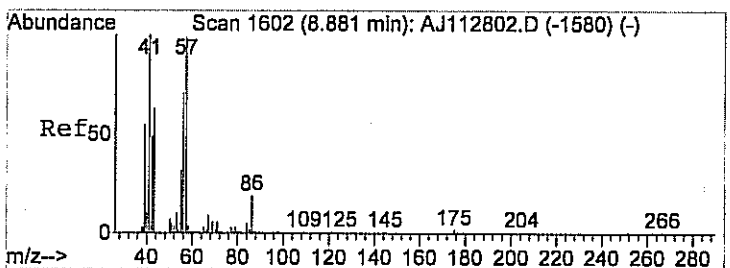
Tgt Ion: 83 Resp: 27711

Ion	Ratio	Lower	Upper
83	100		
85	69.3	44.2	84.2





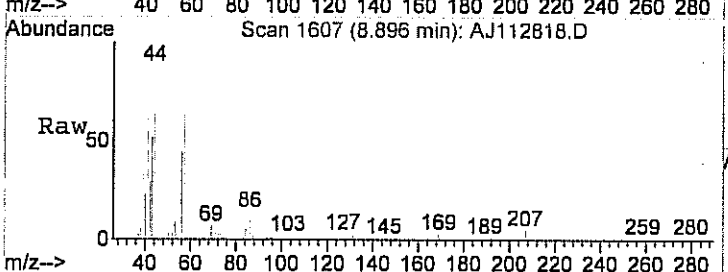


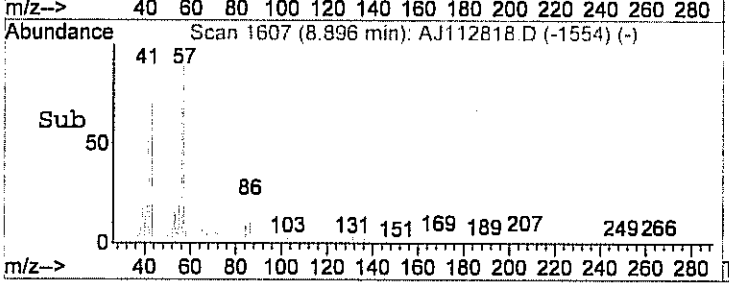


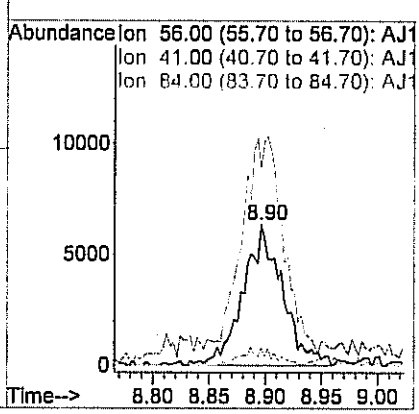
#35
Cyclohexane
Concen: 0.74 ppb
RT: 8.90 min Scan# 1607
Delta R.T. 0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

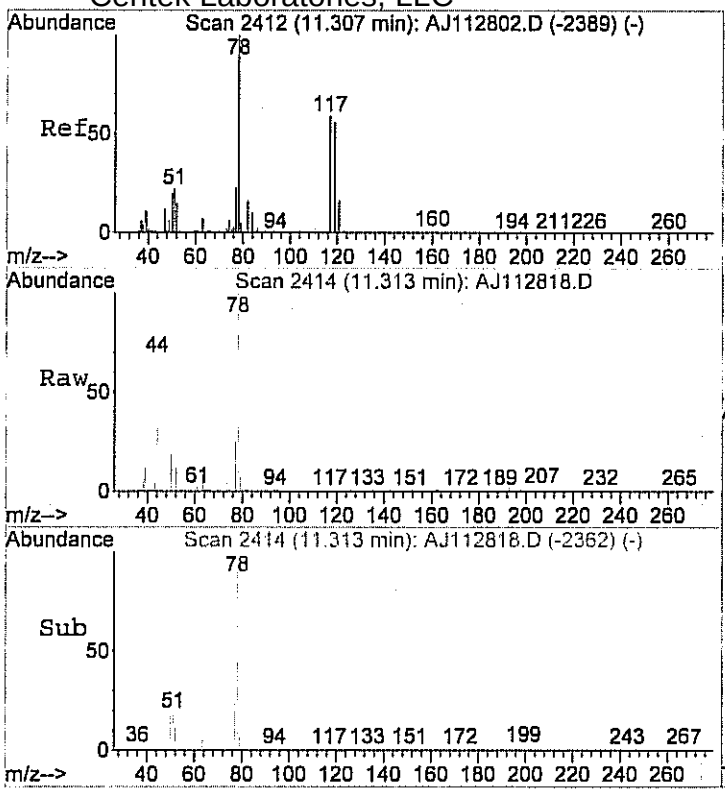
Tgt Ion: 56 Resp: 15472

Ion	Ratio	Lower	Upper
56	100		
41	180.3	141.3	181.3
84	9.7	0.0	27.7





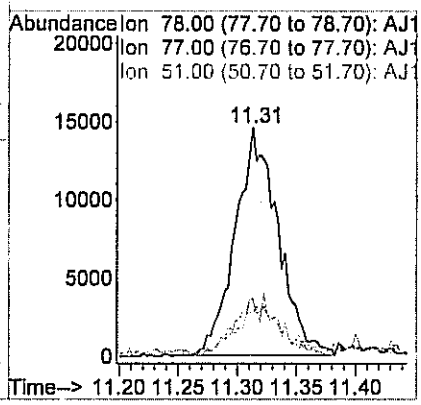


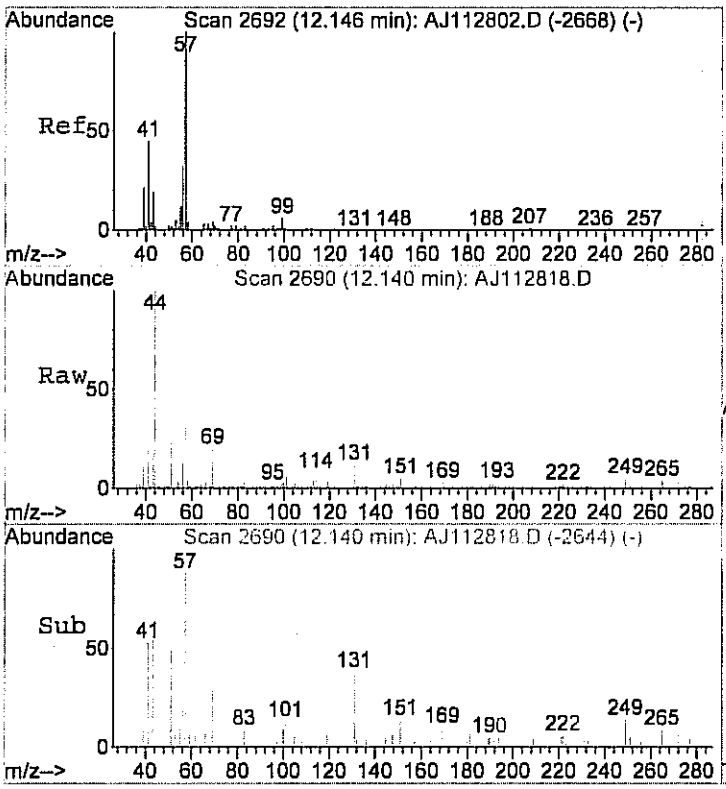


#37
Benzene
Concen: 0.41 ppb
RT: 11.31 min Scan# 2414
Delta R.T. 0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion: 78 Resp: 36333

Ion	Ratio	Lower	Upper
78	100		
77	23.3	2.9	42.9
51	27.6	0.0	40.0

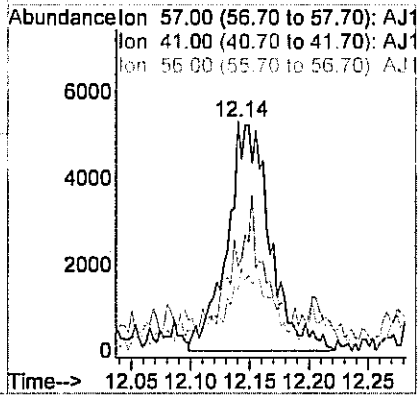


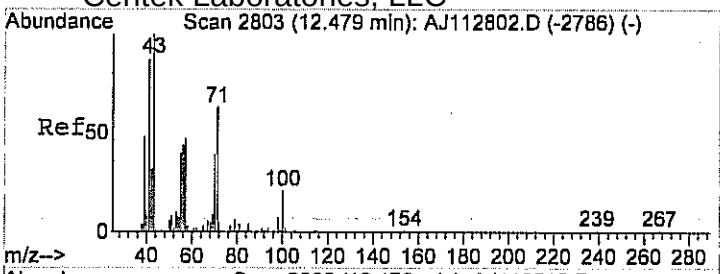


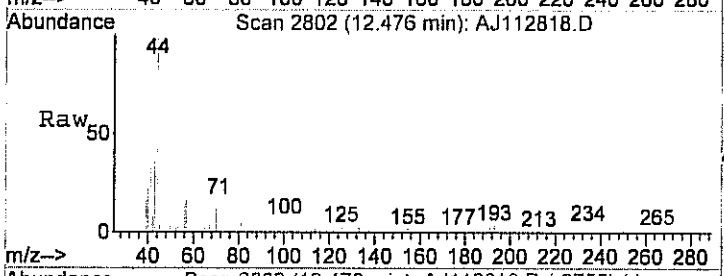
#40
2,2,4-trimethylpentane
Concen: 0.12 ppb
RT: 12.14 min Scan# 2690
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

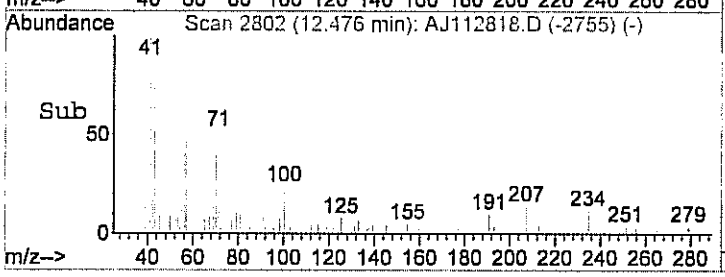
Tgt Ion: 57 Resp: 13264

Ion	Ratio	Lower	Upper
57	100		
41	36.1	26.2	66.2
56	34.9	10.2	50.2





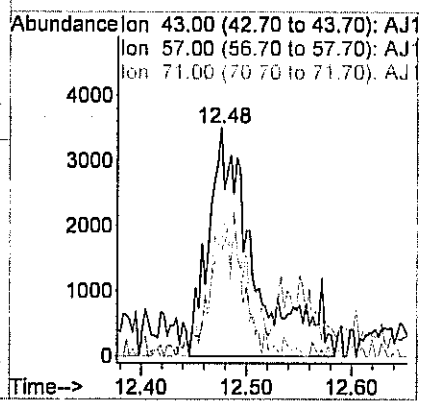


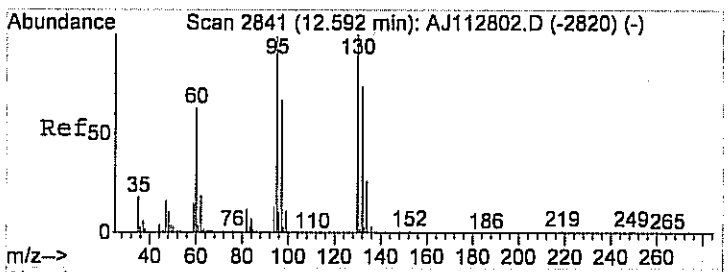


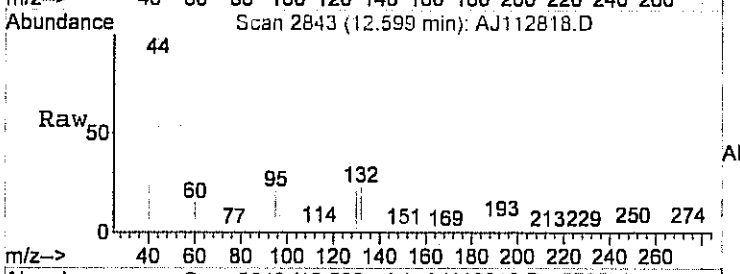
#41
Heptane
Concen: 0.31 ppb
RT: 12.48 min Scan# 2802
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

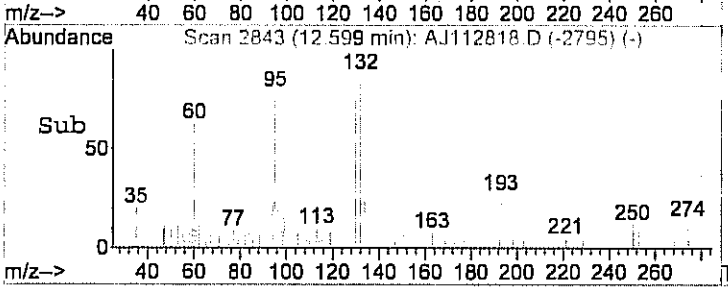
Tgt Ion: 43 Resp: 10425

Ion	Ratio	Lower	Upper
43	100		
57	45.1	35.2	75.2
71	40.3	47.1	87.1#





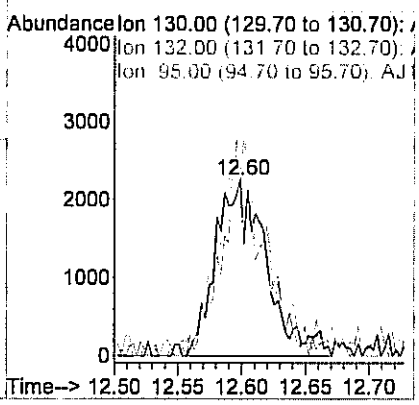


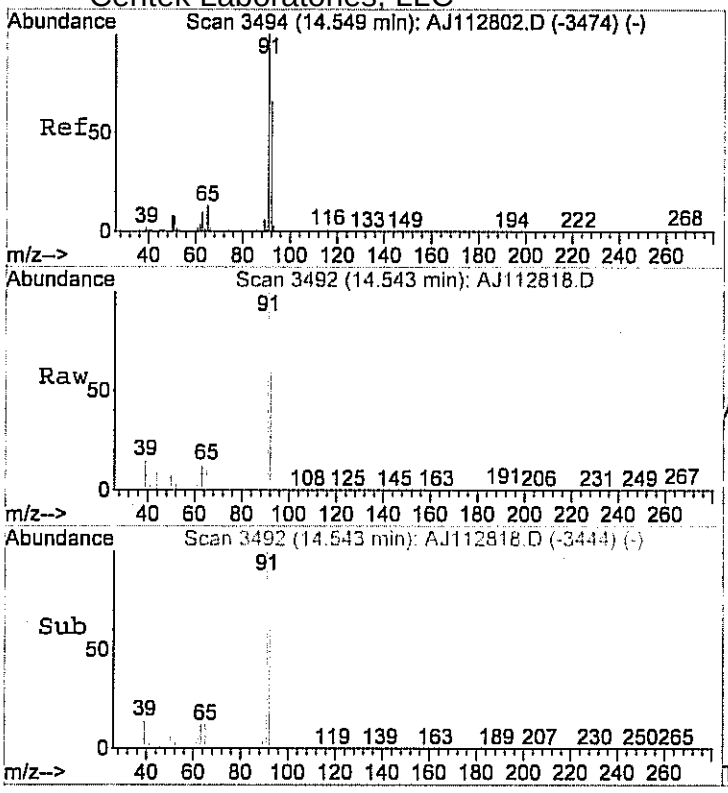


#42
Trichloroethene
Concen: 0.12 ppb
RT: 12.60 min Scan# 2843
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion:130 Resp: 6175

Ion	Ratio	Lower	Upper
130	100		
132	97.6	75.5	115.5
95	108.8	83.5	123.5

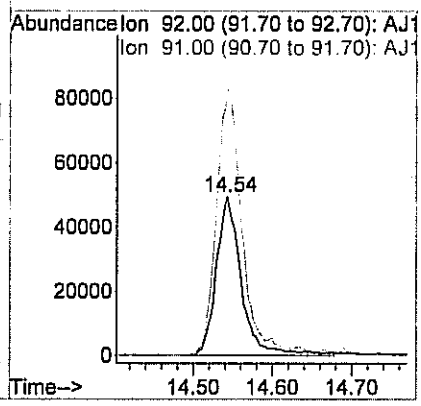


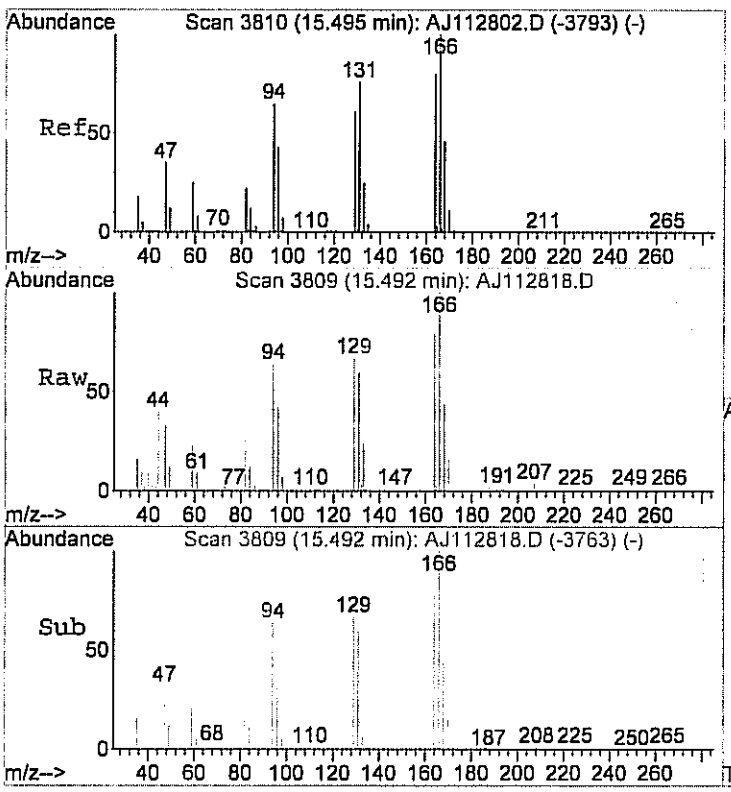


#49
Toluene
Concen: 1.78 ppb
RT: 14.54 min Scan# 3492
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion: 92 Resp: 109338

Ion	Ratio	Lower	Upper
92	100		
91	174.7	160.2	200.2

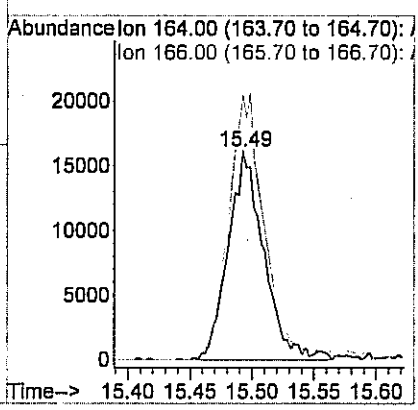


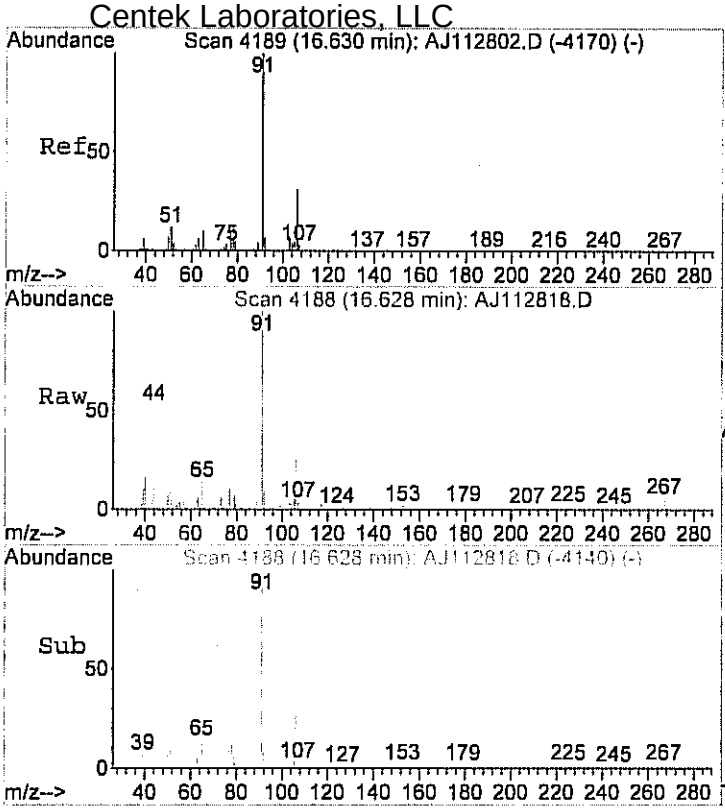


#54
Tetrachloroethylene
Concen: 0.57 ppb
RT: 15.49 min Scan# 3809
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion:164 Resp: 32229

Ion	Ratio	Lower	Upper
164	100		
166	128.4	110.0	150.0

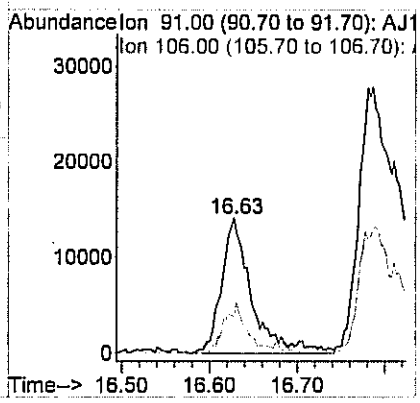


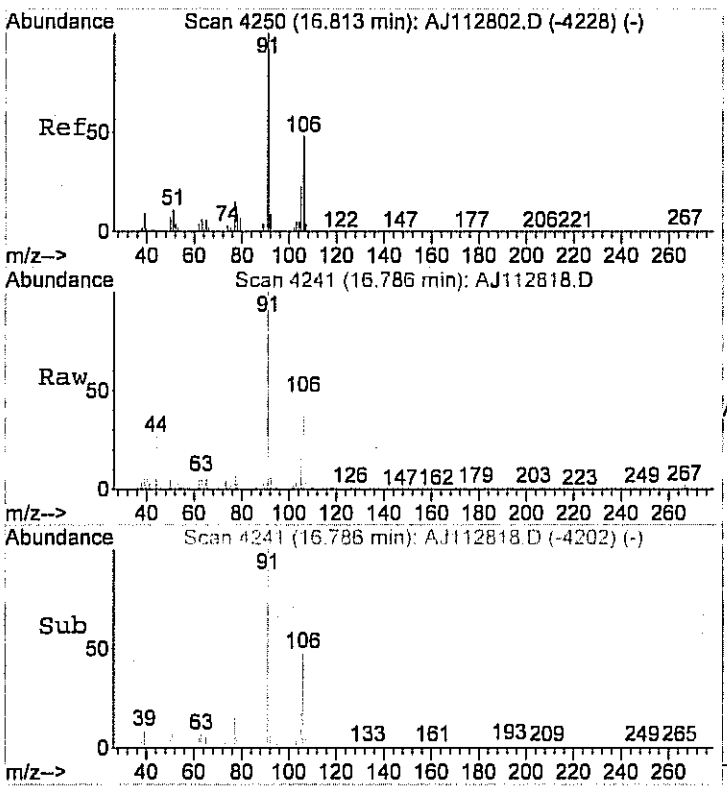


#56
Ethylbenzene
Concen: 0.26 ppb
RT: 16.63 min Scan# 4188
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion: 91 Resp: 33728

Ion	Ratio	Lower	Upper
91	100		
106	30.8	11.1	51.1

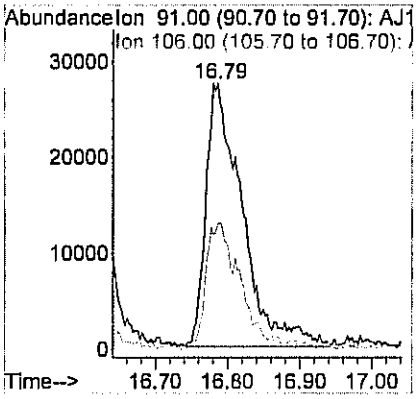


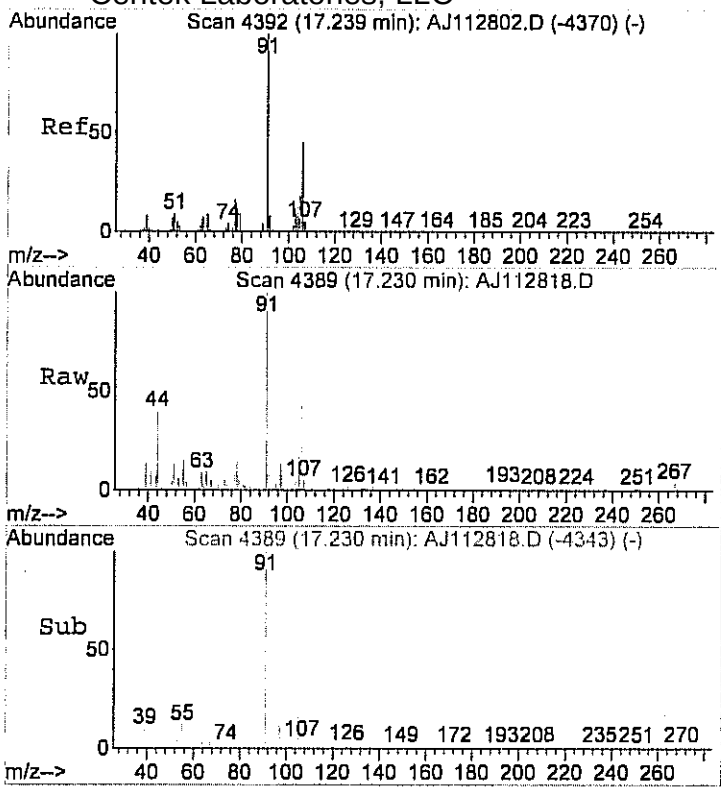


#57
m&p-xylene
Concen: 0.84 ppb
RT: 16.79 min Scan# 4241
Delta R.T. -0.03 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion: 91 Resp: 95435

Ion	Ratio	Lower	Upper
91	100		
106	46.1	23.1	63.1

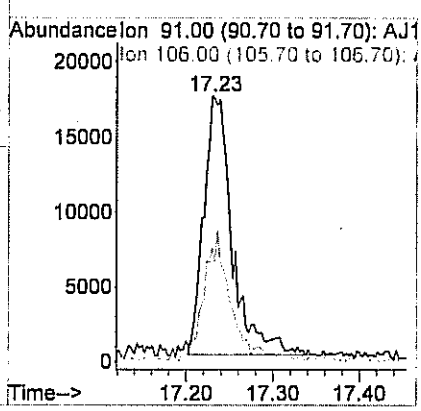


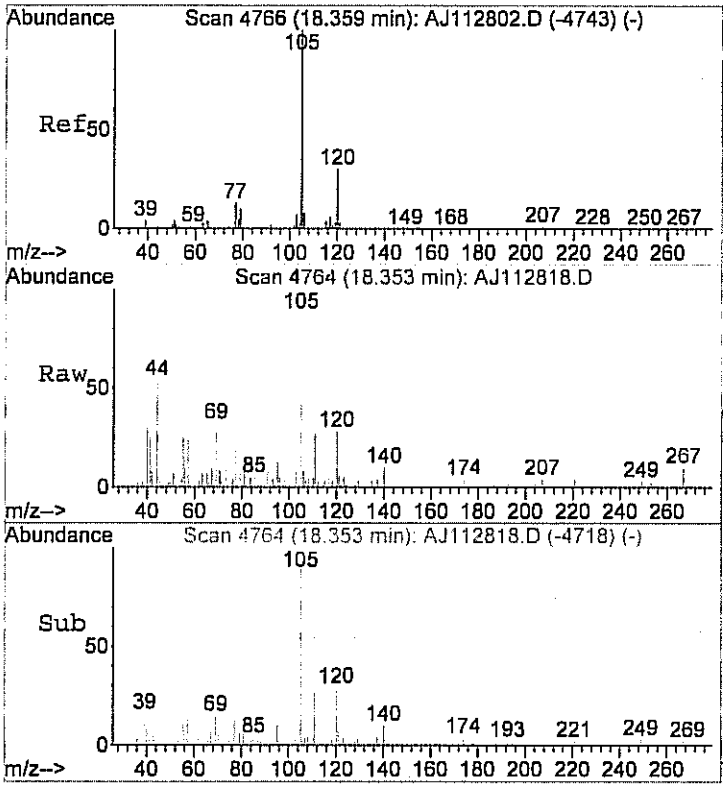


#60
o-xylene
Concen: 0.25 ppb
RT: 17.23 min Scan# 4389
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion: 91 Resp: 39326

Ion	Ratio	Lower	Upper
91	100		
106	48.7	16.6	56.6

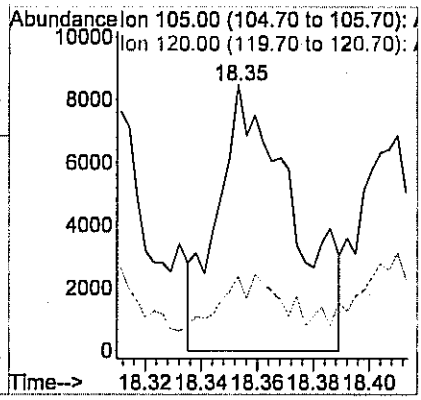


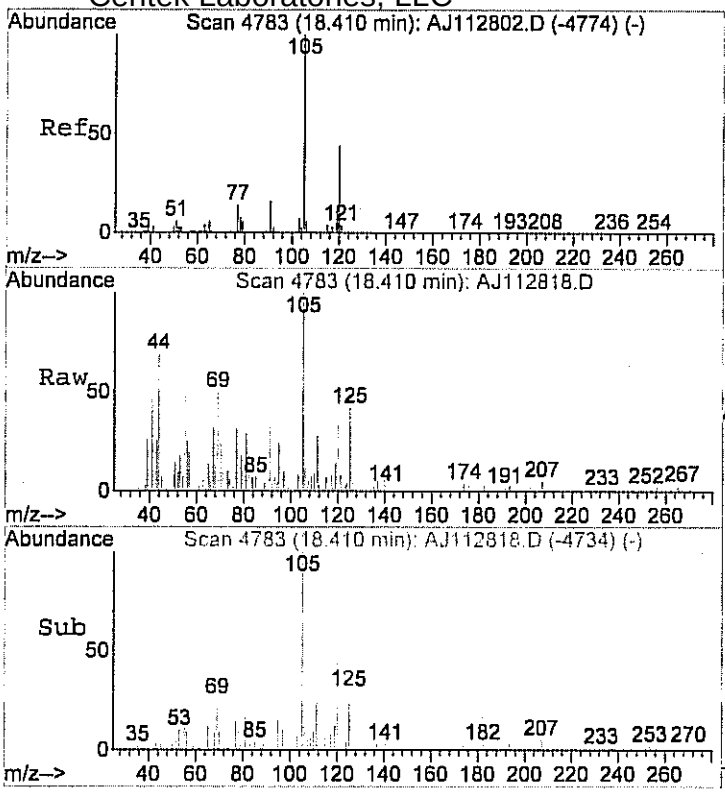


#64
4-ethyltoluene
Concen: 0.13 ppb m
RT: 18.35 min Scan# 4764
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion:105 Resp: 15651

Ion	Ratio	Lower	Upper
105	100		
120	115.6	28.4	68.4#

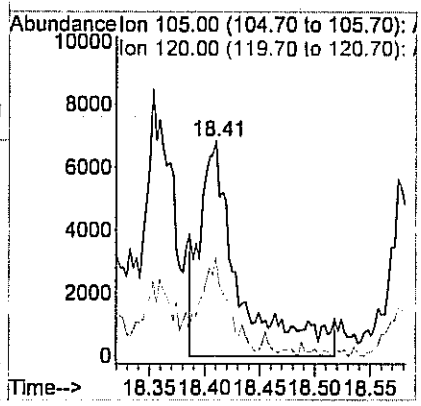


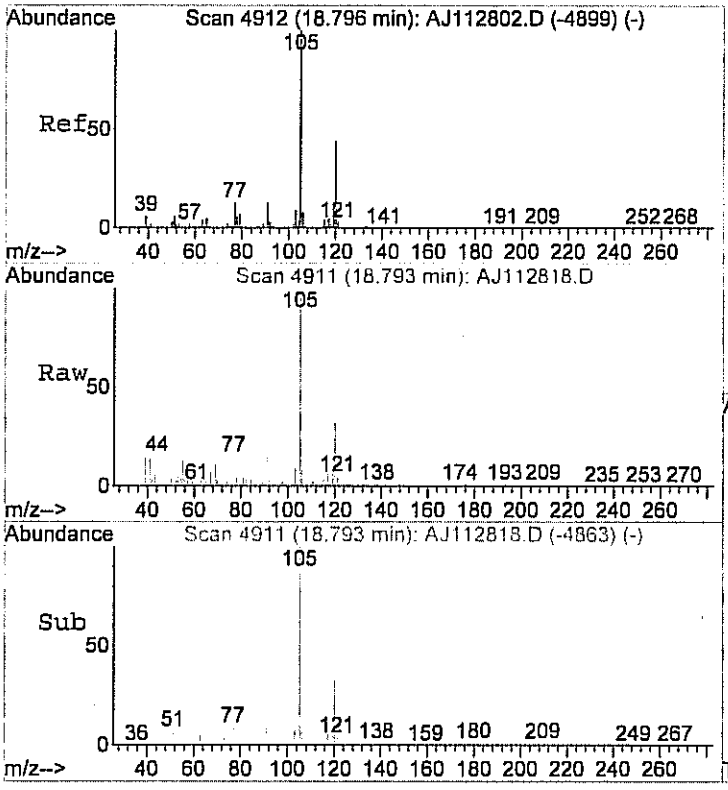

Abundance
Scan 4783 (18.410 min): AJ112802.D (-4774) (-)
Ref50
105
77
51
121
147
174 193208
236 254
m/z-->
Abundance
Scan 4783 (18.410 min): AJ112818.D
Raw50
105
44
69
125
85
141
174 191 207
233 252267
m/z-->
Abundance
Scan 4783 (18.410 min): AJ112818.D (-4734) (-)
Sub
50
105
69
125
53
35
85
141
182
207
233 253270
m/z-->

#65
1,3,5-trimethylbenzene
Concen: 0.10 ppb m
RT: 18.41 min Scan# 4783
Delta R.T. -0.00 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion:105 Resp: 17085

Ion	Ratio	Lower	Upper
105	100		
120	0.0	18.9	58.9#

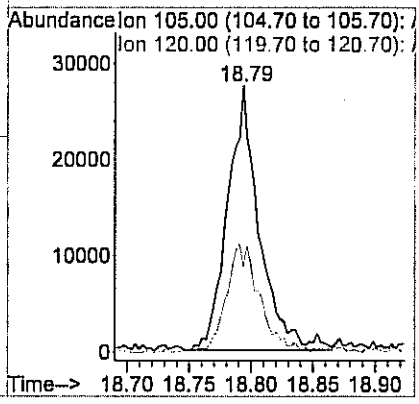

Abundance
Ion 105.00 (104.70 to 105.70): A
Ion 120.00 (119.70 to 120.70): A
10000
8000
6000
4000
2000
0
18.41
Time-->
18.35 18.40 18.45 18.50 18.55


Abundance
Scan 4912 (18.796 min): AJ112802.D (-4899) (-)
Ref50
105
77
39
57
121
141
191 209
252268
m/z-->
Abundance
Scan 4911 (18.793 min): AJ112818.D
Raw50
105
44
77
61
121
138
174 193209
235 253 270
m/z-->
Abundance
Scan 4911 (18.793 min): AJ112818.D (-4863) (-)
Sub
50
105
36
51
77
121
138
159
180
209
249 267
m/z-->

#66
1,2,4-trimethylbenzene
Concen: 0.40 ppb
RT: 18.79 min Scan# 4911
Delta R.T. -0.01 min
Lab File: AJ112818.D
Acq: 28 Nov 2012 7:33 pm

Tgt Ion:105 Resp: 48788

Ion	Ratio	Lower	Upper
105	100		
120	43.1	22.0	62.0


Abundance
Ion 105.00 (104.70 to 105.70): A
Ion 120.00 (119.70 to 120.70): A
30000
20000
10000
0
18.79
Time-->
18.70 18.75 18.80 18.85 18.90

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112830.D Vial: 51
Acq On : 29 Nov 2012 2:35 am Operator: RJP
Sample : C1211047-002A 10X Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:25 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

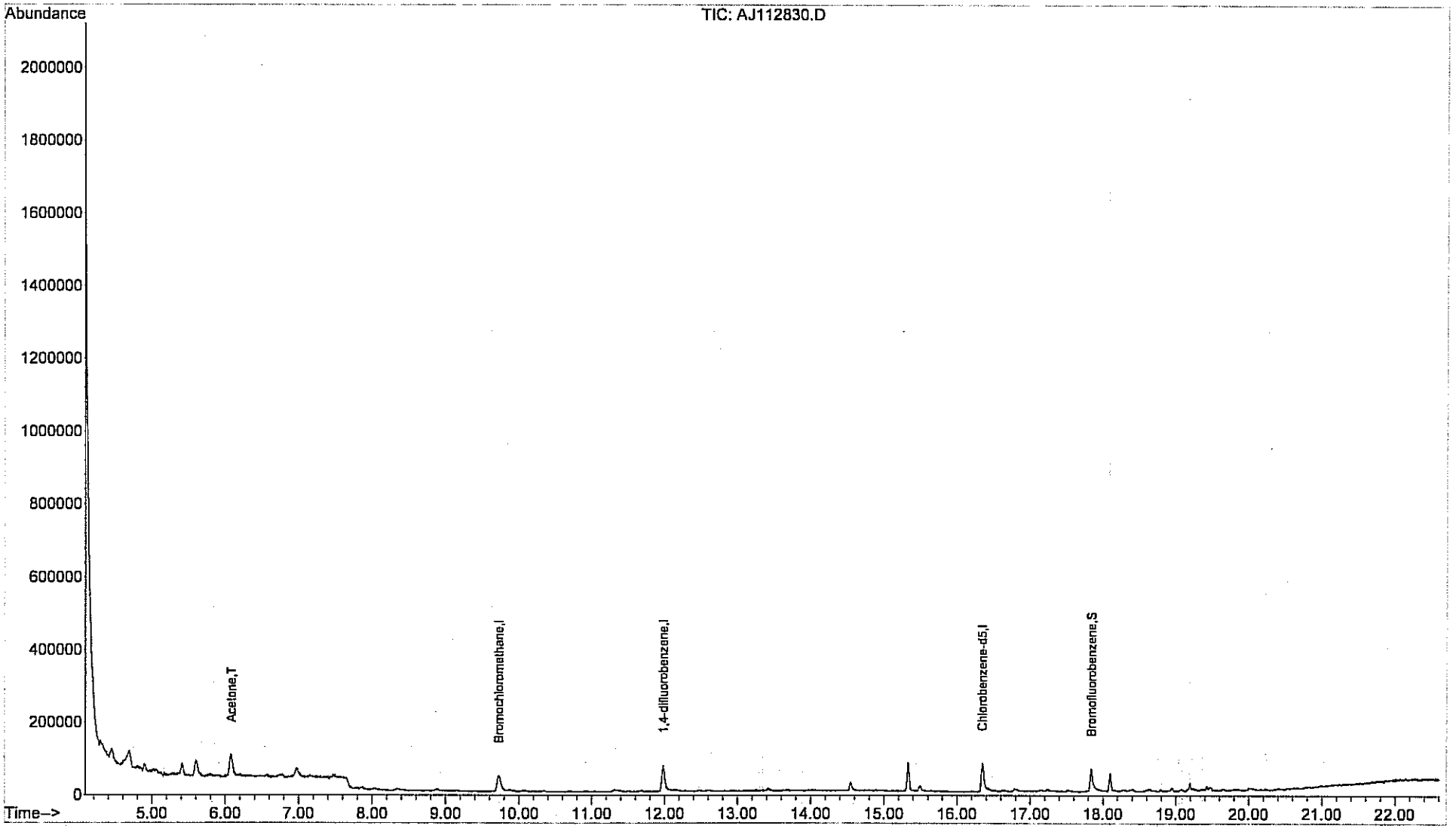
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.73	128	21393	1.00	ppb	0.00
33) 1,4-difluorobenzene	11.98	114	77764	1.00	ppb	0.00
48) Chlorobenzene-d5	16.35	117	62413	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.83	95	30447m	0.83	ppb	-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 83.00%			
Target Compounds						Qvalue
14) Acetone	6.08	58	22796	1.18	ppb	# 59

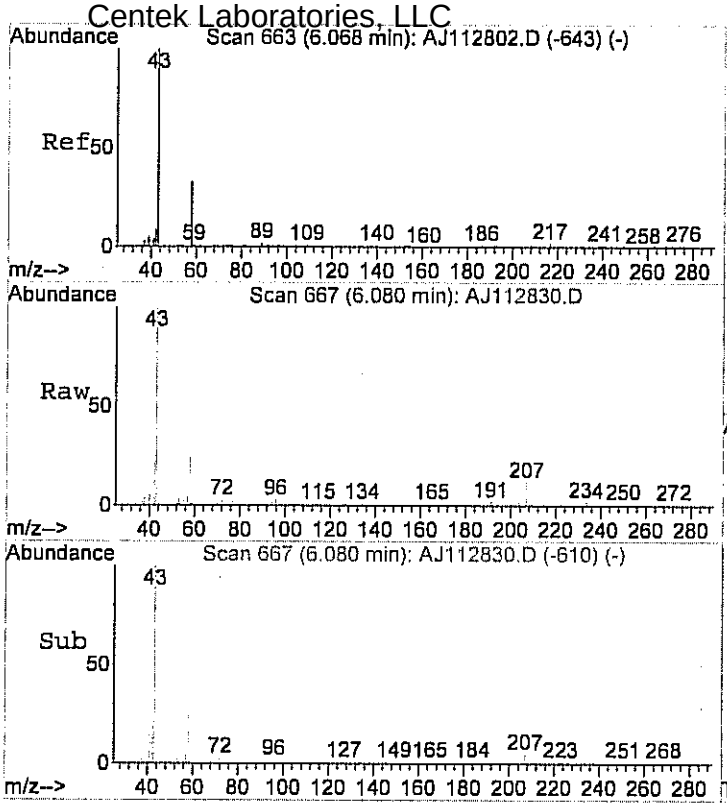
(#) = qualifier out of range (m) = manual integration (+) = signals summed
AJ112830.D AN23_1UG.M Fri Dec 14 12:50:42 2012 MSD1 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112830.D Vial: 51
Acq On : 29 Nov 2012 2:35 am Operator: RJP
Sample : C1211047-002A 10X Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 30 8:45 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration

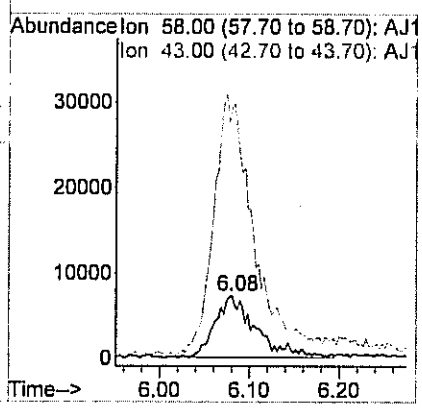




#14
Acetone
Concen: 1.18 ppb
RT: 6.08 min Scan# 667
Delta R.T. 0.02 min
Lab File: AJ112830.D
Acq: 29 Nov 2012 2:35 am

Tgt Ion: 58 Resp: 22796

Ion	Ratio	Lower	Upper
58	100		
43	440.7	320.8	380.8#



Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS		FLD				Analyst:
Lab Vacuum In	-7			"Hg		11/21/2012
Lab Vacuum Out	-30			"Hg		11/21/2012
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,1,2,2-Tetrachloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,1,2-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,1-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,1-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2,4-Trichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2,4-Trimethylbenzene	0.45	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2-Dibromoethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,2-Dichloropropane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,3,5-Trimethylbenzene	0.10	0.15	J	ppbV	1	11/28/2012 8:09:00 PM
1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,3-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,4-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
1,4-Dioxane	< 0.30	0.30		ppbV	1	11/28/2012 8:09:00 PM
2,2,4-trimethylpentane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
4-ethyltoluene	0.12	0.15	J	ppbV	1	11/28/2012 8:09:00 PM
Acetone	9.4	3.0		ppbV	10	11/29/2012 3:45:00 AM
Allyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Benzene	0.20	0.15		ppbV	1	11/28/2012 8:09:00 PM
Benzyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Bromodichloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Bromoform	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Bromomethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Carbon disulfide	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Carbon tetrachloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Chlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Chloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Chloroform	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Chloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
cis-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
cis-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Cyclohexane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Dibromochloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Ethyl acetate	< 0.25	0.25		ppbV	1	11/28/2012 8:09:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
Ethylbenzene	0.24	0.15		ppbV	1	11/28/2012 8:09:00 PM
Freon 11	0.16	0.15		ppbV	1	11/28/2012 8:09:00 PM
Freon 113	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Freon 114	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Freon 12	21	1.5		ppbV	10	11/29/2012 3:45:00 AM
Heptane	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Hexachloro-1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Hexane	0.61	0.15		ppbV	1	11/28/2012 8:09:00 PM
Isopropyl alcohol	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
m&p-Xylene	0.97	0.30		ppbV	1	11/28/2012 8:09:00 PM
Methyl Butyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:09:00 PM
Methyl Ethyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:09:00 PM
Methyl Isobutyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:09:00 PM
Methyl tert-butyl ether	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Methylene chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
o-Xylene	0.29	0.15		ppbV	1	11/28/2012 8:09:00 PM
Propylene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Styrene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Tetrachloroethylene	2.2	1.5		ppbV	10	11/29/2012 3:45:00 AM
Tetrahydrofuran	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Toluene	1.7	0.15		ppbV	1	11/28/2012 8:09:00 PM
trans-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
trans-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Trichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Vinyl acetate	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Vinyl Bromide	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Vinyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:09:00 PM
Surr: Bromofluorobenzene	90.0	70-130		%REC	1	11/28/2012 8:09:00 PM

NOTES:
Sample has large interfering compound in begging of run. Used 10x dilution for Freon 12.

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: RJP
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:09:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:09:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:09:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:09:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:09:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 8:09:00 PM
1,2,4-Trimethylbenzene	2.2	0.75		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 8:09:00 PM
1,3,5-Trimethylbenzene	0.50	0.75	J	ug/m3	1	11/28/2012 8:09:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 8:09:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 8:09:00 PM
2,2,4-trimethylpentane	< 0.71	0.71		ug/m3	1	11/28/2012 8:09:00 PM
4-ethyltoluene	0.60	0.75	J	ug/m3	1	11/28/2012 8:09:00 PM
Acetone	23	7.2		ug/m3	10	11/29/2012 3:45:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 8:09:00 PM
Benzene	0.65	0.49		ug/m3	1	11/28/2012 8:09:00 PM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 8:09:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:09:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 8:09:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 8:09:00 PM
Carbon disulfide	< 0.47	0.47		ug/m3	1	11/28/2012 8:09:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 8:09:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 8:09:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 8:09:00 PM
Chloroform	< 0.74	0.74		ug/m3	1	11/28/2012 8:09:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 8:09:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:09:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:09:00 PM
Cyclohexane	< 0.52	0.52		ug/m3	1	11/28/2012 8:09:00 PM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 8:09:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
Ethylbenzene	1.1	0.66		ug/m3	1	11/28/2012 8:09:00 PM
Freon 11	0.91	0.86		ug/m3	1	11/28/2012 8:09:00 PM
Freon 113	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 8:09:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: **RJP**
Freon 12	110	7.5		ug/m3	10	11/29/2012 3:45:00 AM
Heptane	< 0.62	0.62		ug/m3	1	11/28/2012 8:09:00 PM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 8:09:00 PM
Hexane	2.2	0.54		ug/m3	1	11/28/2012 8:09:00 PM
Isopropyl alcohol	< 0.37	0.37		ug/m3	1	11/28/2012 8:09:00 PM
m&p-Xylene	4.3	1.3		ug/m3	1	11/28/2012 8:09:00 PM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 8:09:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 8:09:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 8:09:00 PM
o-Xylene	1.3	0.66		ug/m3	1	11/28/2012 8:09:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 8:09:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 8:09:00 PM
Tetrachloroethylene	15	10		ug/m3	10	11/29/2012 3:45:00 AM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 8:09:00 PM
Toluene	6.7	0.57		ug/m3	1	11/28/2012 8:09:00 PM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:09:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:09:00 PM
Trichloroethene	< 0.82	0.82		ug/m3	1	11/28/2012 8:09:00 PM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 8:09:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 8:09:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 8:09:00 PM

NOTES:
Sample has large interfering compound in begging of run. Used 10x dilution for Freon 12.

Qualifiers:	**	Reporting Limit	.	Results reported are not blank corrected
	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
	JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
	S	Spike Recovery outside accepted recovery limits		

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112819.D Vial: 12
Acq On : 28 Nov 2012 8:09 pm Operator: RJP
Sample : C1211047-003A Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:14 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.30	128	30800m	1.00	ppb	-0.42
33) 1,4-difluorobenzene	11.79	114	99719m	1.00	ppb	-0.19
48) Chlorobenzene-d5	16.33	117	75084m	1.00	ppb	-0.02
System Monitoring Compounds						
61) Bromofluorobenzene	17.85	95	39966m	0.90	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 90.00%			
Target Compounds						Qvalue
13) Freon 11	5.13	101	57269m	0.16	ppb	
14) Acetone	5.72	58	89932m	3.22	ppb	
28) Hexane	8.44	57	25740m	0.61	ppb	
37) Benzene	11.05	78	18412m	0.20	ppb	
49) Toluene	14.47	92	94304m	1.74	ppb	
54) Tetrachloroethylene	15.46	164	110596m	2.19	ppb	
56) Ethylbenzene	16.62	91	28418m	0.24	ppb	
57) m&p-xylene	16.78	91	98000m	0.97	ppb	
60) o-xylene	17.22	91	40344m	0.29	ppb	
64) 4-ethyltoluene	18.36	105	12623m	0.12	ppb	
65) 1,3,5-trimethylbenzene	18.42	105	14863m	0.10	ppb	
66) 1,2,4-trimethylbenzene	18.80	105	48643m	0.45	ppb	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

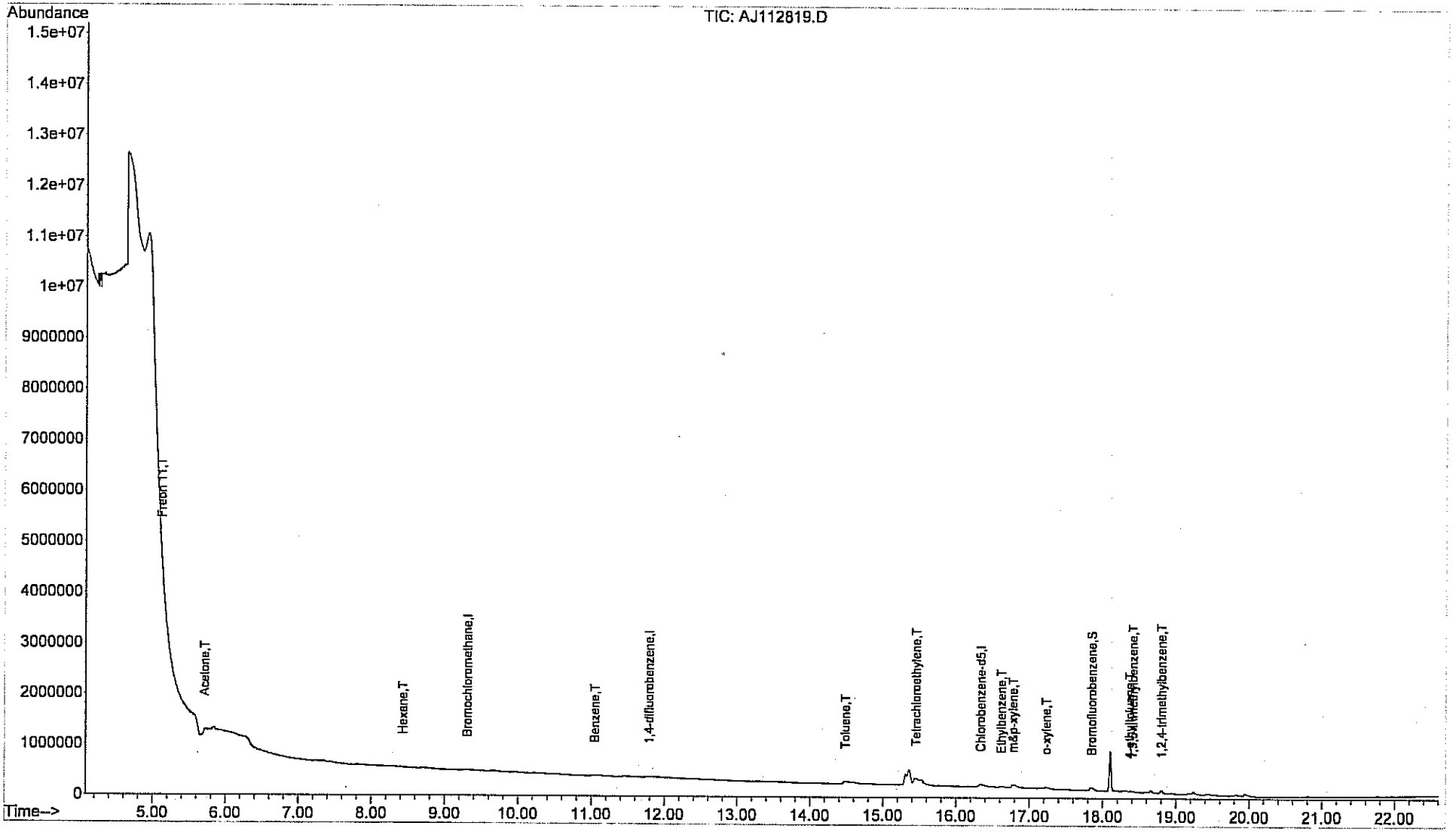
Quantitation Report (QT Reviewed)

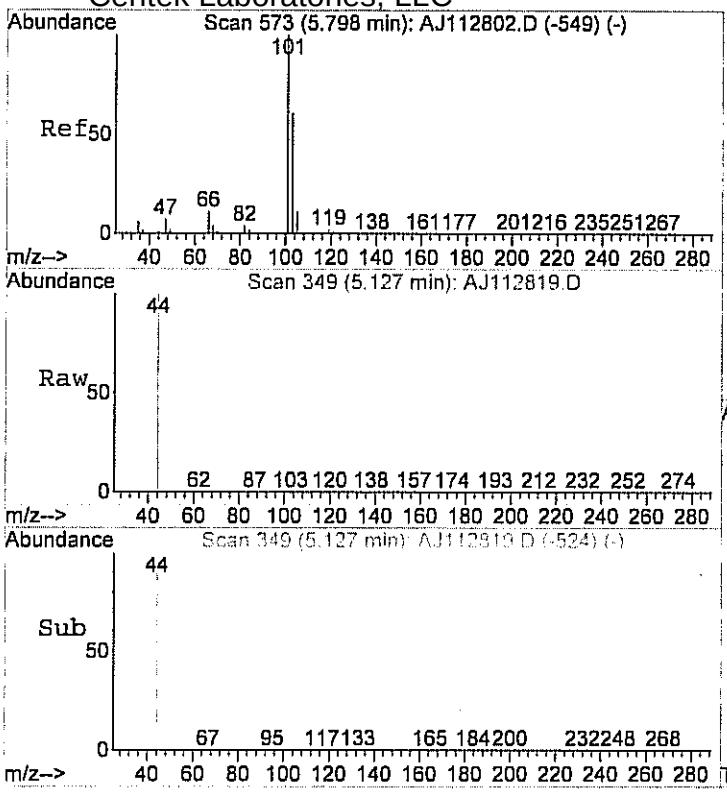
Data File : C:\HPCHEM\1\DATA\AJ112819.D
Acq On : 28 Nov 2012 8:09 pm
Sample : C1211047-003A
Misc : AN23_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 29 14:28 2012

Vial: 12
Operator: RJP
Inst : MSD #1
Multiplr: 1.00

Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration

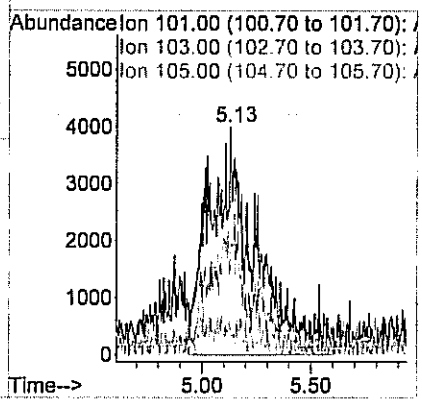


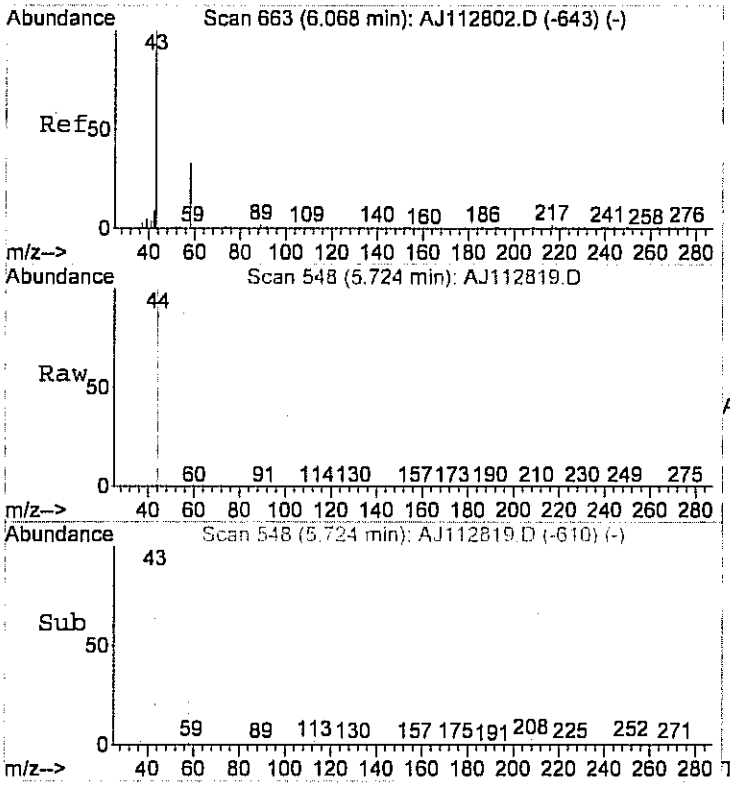


#13
Freon 11
Concen: 0.16 ppb m
RT: 5.13 min Scan# 349
Delta R.T. -0.67 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion:101 Resp: 57269

Ion	Ratio	Lower	Upper
101	100		
103	0.1	49.9	89.9#
105	0.0	0.0	31.4

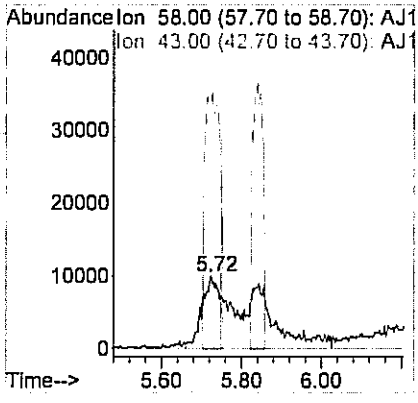


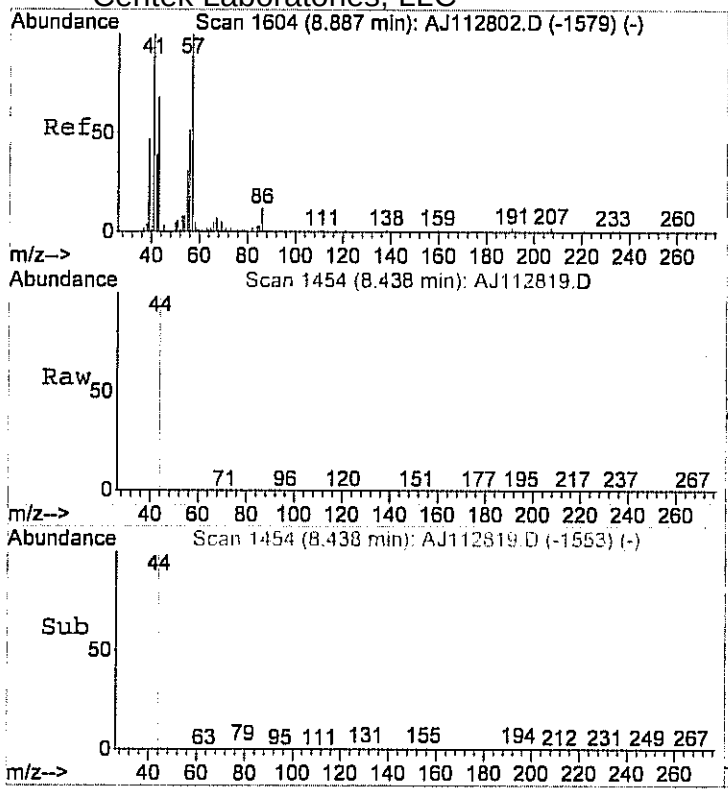


#14
Acetone
Concen: 3.22 ppb m
RT: 5.72 min Scan# 548
Delta R.T. -0.34 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion: 58 Resp: 89932

Ion	Ratio	Lower	Upper
58	100		
43	0.0	320.8	380.8#

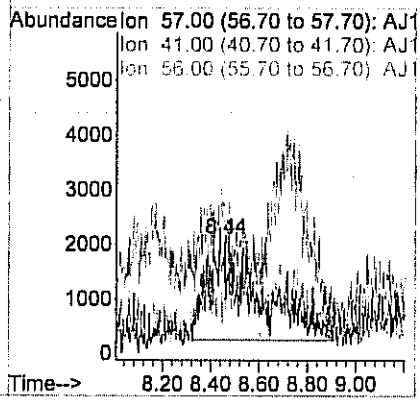


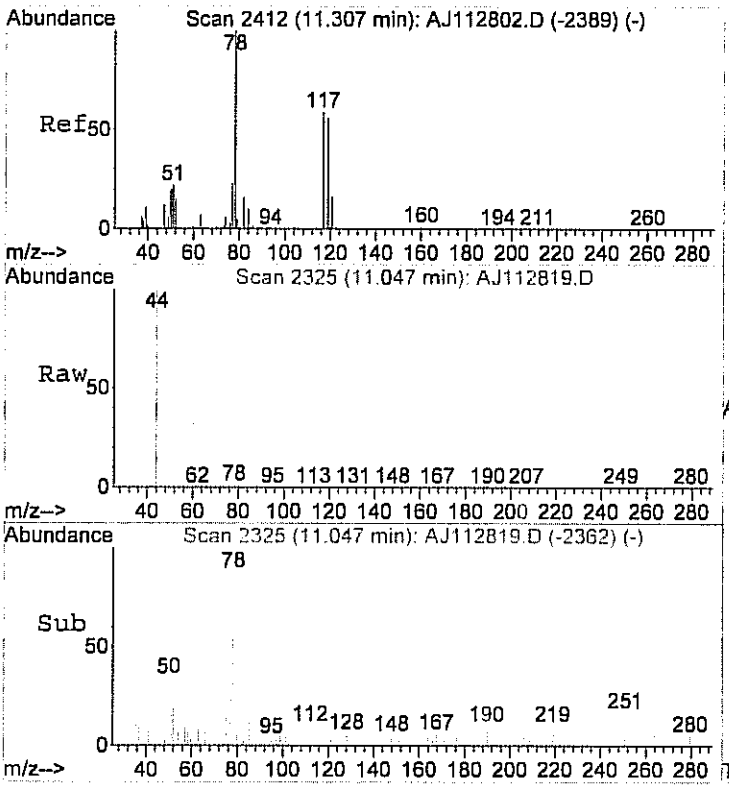


#28
Hexane
Concen: 0.61 ppb m
RT: 8.44 min Scan# 1454
Delta R.T. -0.45 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion: 57 Resp: 25740

Ion	Ratio	Lower	Upper
57	100		
41	1.6	62.3	102.3#
56	1.9	34.8	74.8#

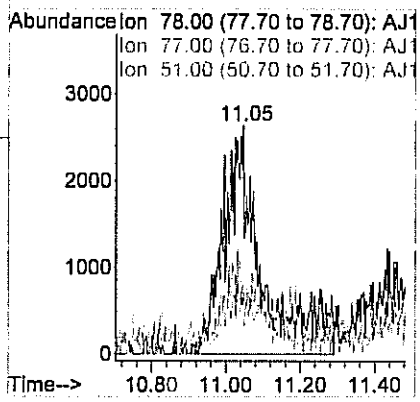


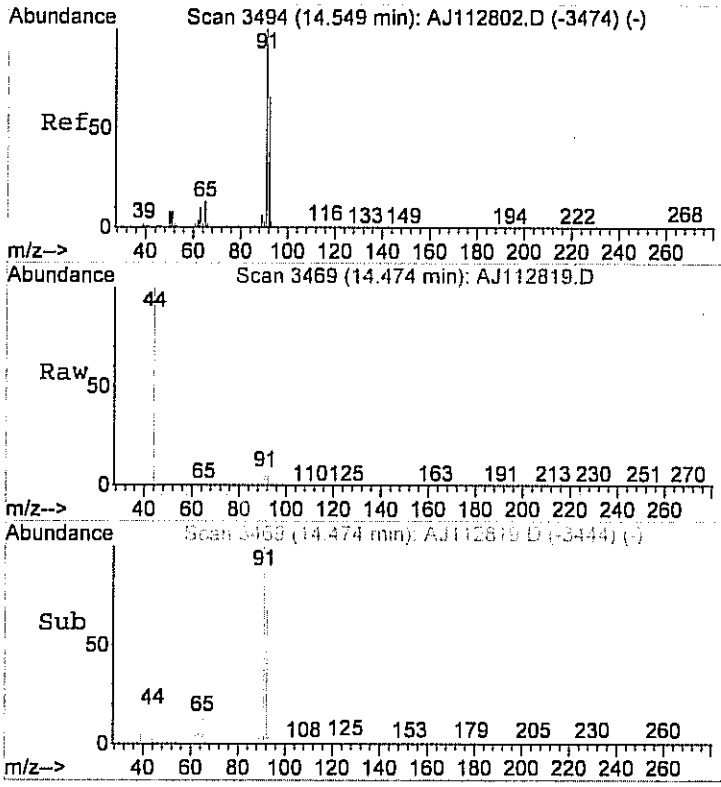


#37
Benzene
Concen: 0.20 ppb m
RT: 11.05 min Scan# 2325
Delta R.T. -0.26 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion: 78 Resp: 18412

Ion	Ratio	Lower	Upper
78	100		
77	1.4	2.9	42.9#
51	1.3	0.0	40.0

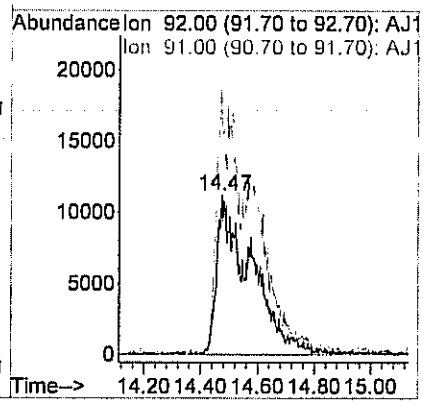


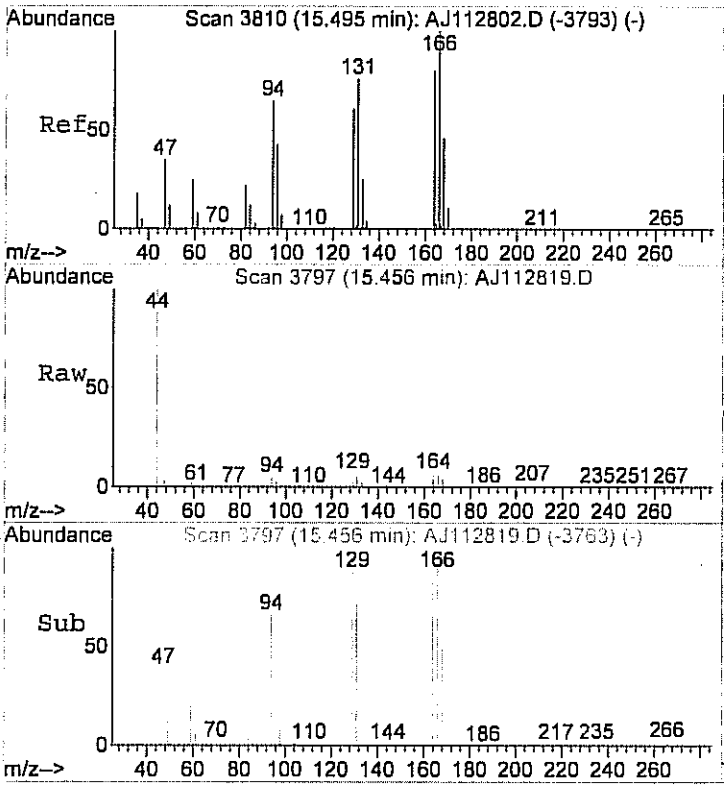


#49
Toluene
Concen: 1.74 ppb m
RT: 14.47 min Scan# 3469
Delta R.T. -0.07 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion: 92 Resp: 94304

Ion	Ratio	Lower	Upper
92	100		
91	0.0	160.2	200.2#

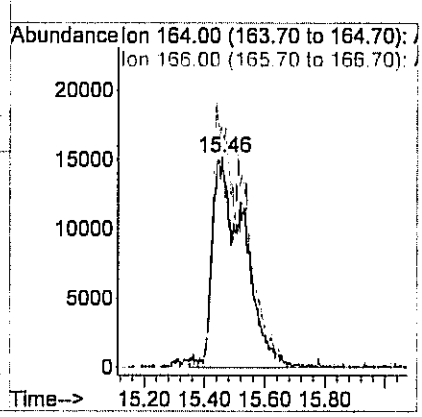


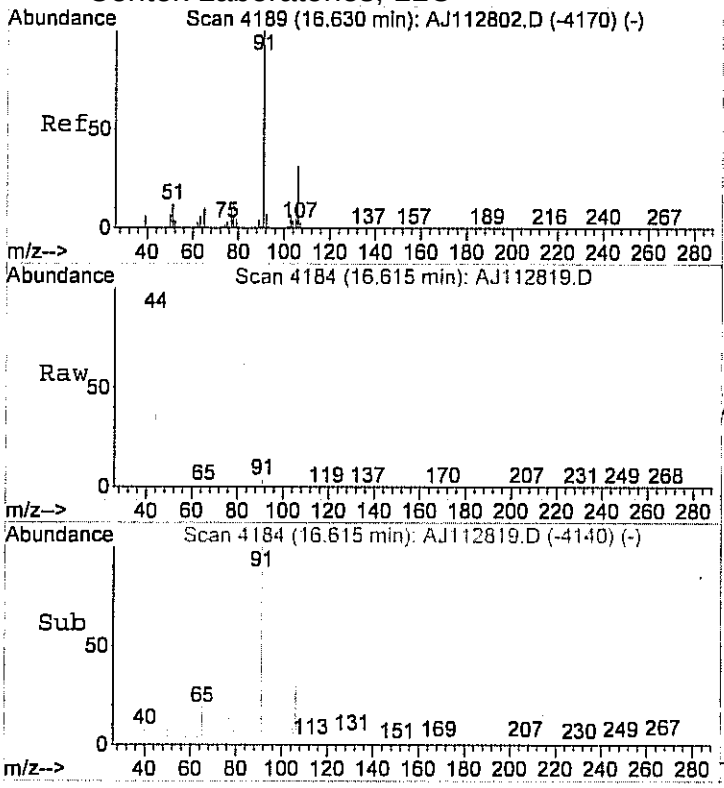


#54
Tetrachloroethylene
Concen: 2.19 ppb m
RT: 15.46 min Scan# 3797
Delta R.T. -0.05 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion:164 Resp: 110596

Ion	Ratio	Lower	Upper
164	100		
166	0.0	110.0	150.0#

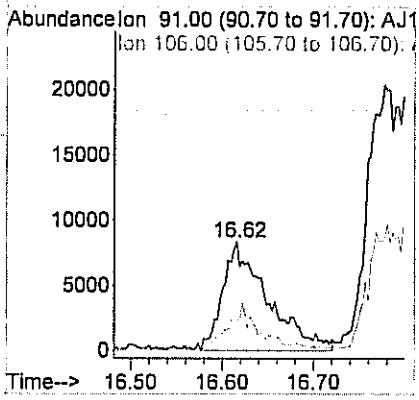


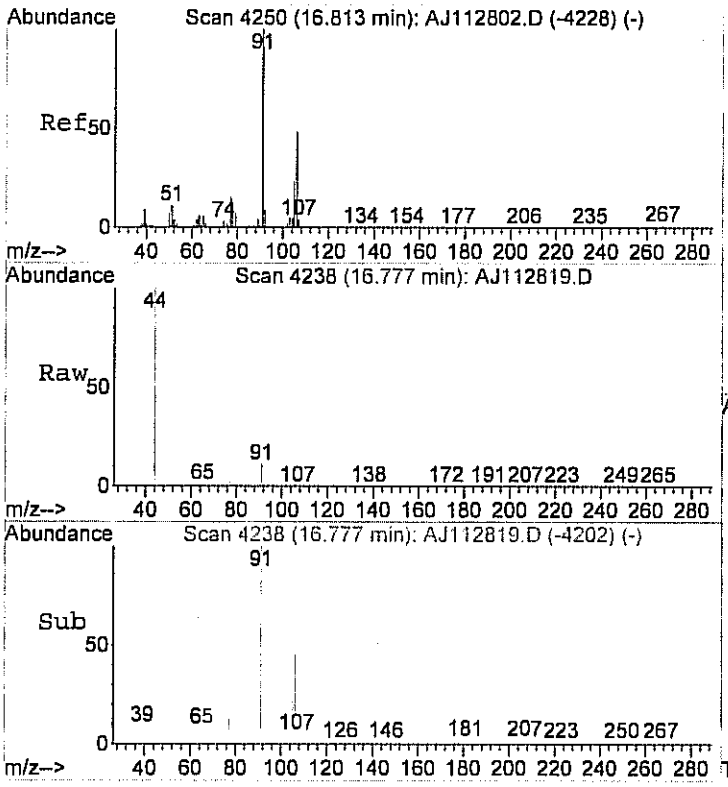


#56
Ethylbenzene
Concen: 0.24 ppb m
RT: 16.62 min Scan# 4184
Delta R.T. -0.02 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion: 91 Resp: 28418

Ion	Ratio	Lower	Upper
91	100		
106	154.1	11.1	51.1#

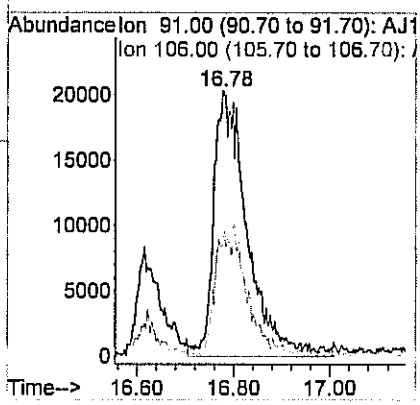


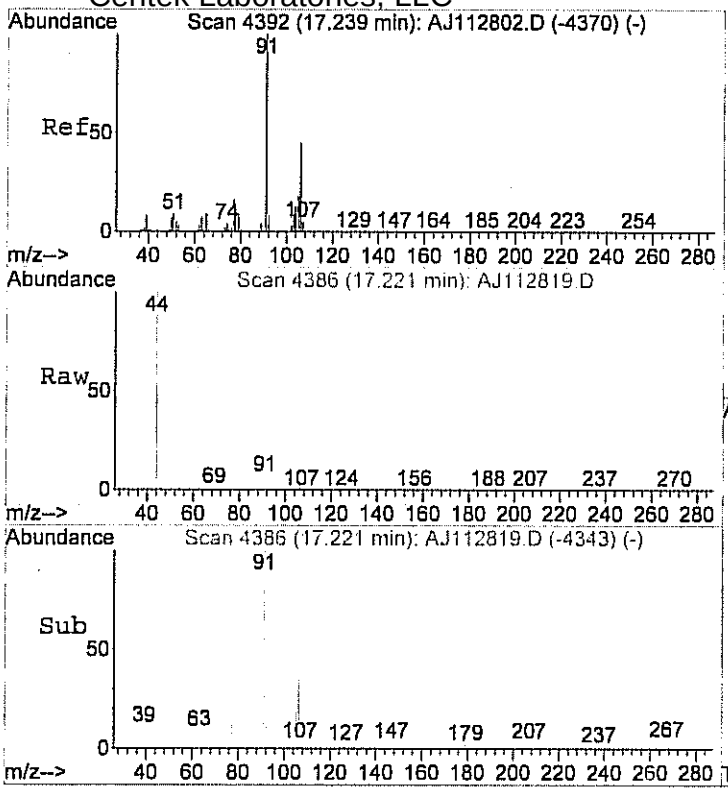


#57
m&p-xylene
Concen: 0.97 ppb m
RT: 16.78 min Scan# 4238
Delta R.T. -0.04 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion: 91 Resp: 98000

Ion	Ratio	Lower	Upper
91	100		
106	0.2	23.1	63.1#

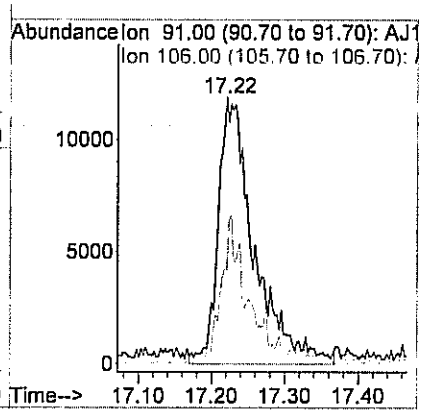


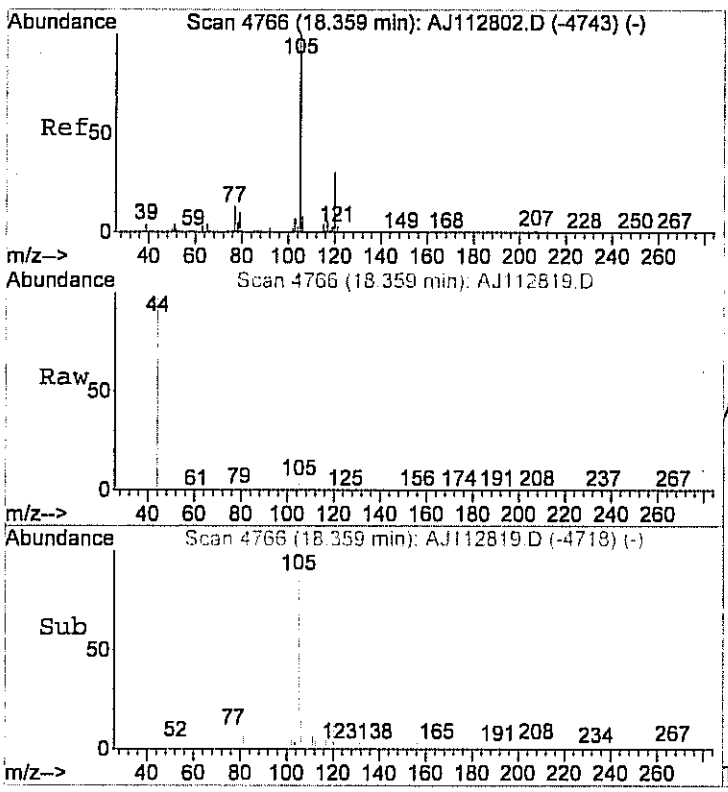


#60
o-xylene
Concen: 0.29 ppb m
RT: 17.22 min Scan# 4386
Delta R.T. -0.02 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion: 91 Resp: 40344

Ion	Ratio	Lower	Upper
91	100		
106	0.5	16.6	56.6#

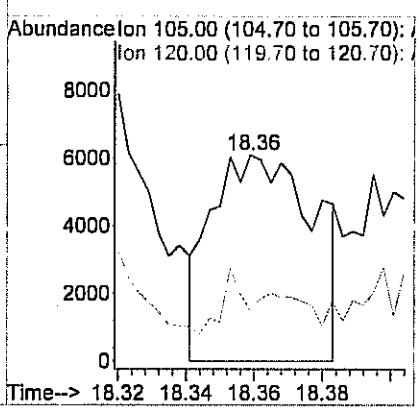


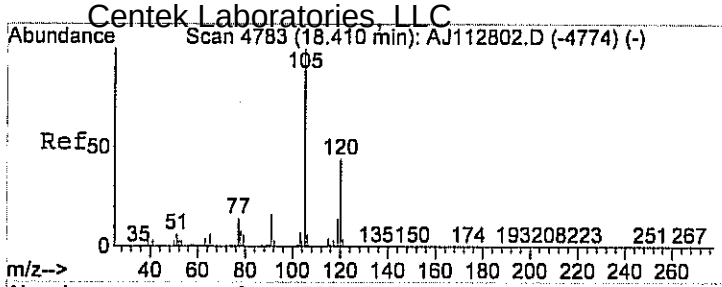


#64
4-ethyltoluene
Concen: 0.12 ppb m
RT: 18.36 min Scan# 4766
Delta R.T. -0.01 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion:105 Resp: 12623

Ion	Ratio	Lower	Upper
105	100		
120	29.1	28.4	68.4

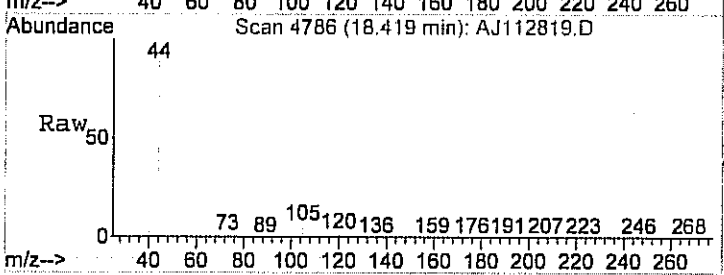


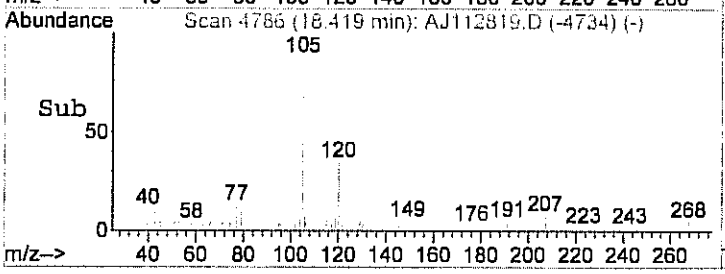


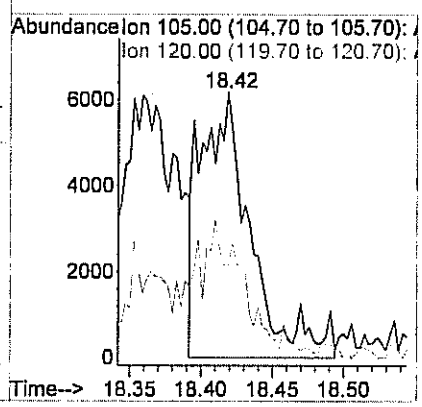
#65
1,3,5-trimethylbenzene
Concen: 0.10 ppb m
RT: 18.42 min Scan# 4786
Delta R.T. 0.01 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

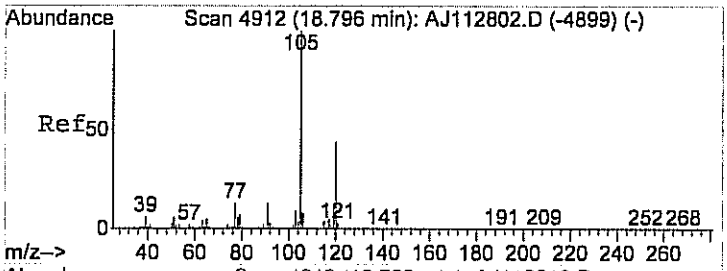
Tgt Ion:105 Resp: 14863

Ion	Ratio	Lower	Upper
105	100		
120	24.8	18.9	58.9





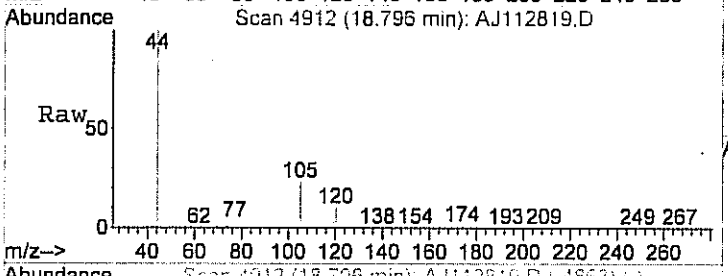


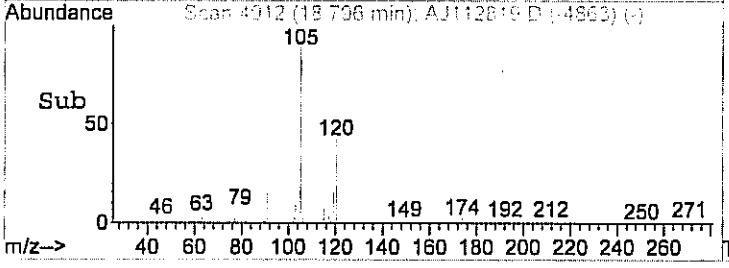


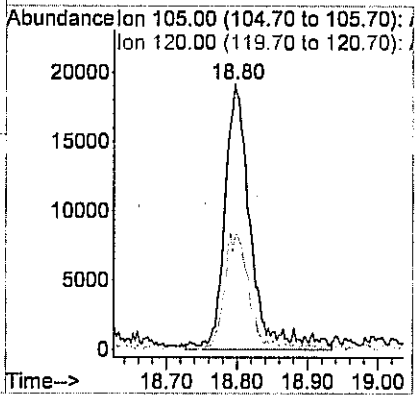
#66
1,2,4-trimethylbenzene
Concen: 0.45 ppb m
RT: 18.80 min Scan# 4912
Delta R.T. -0.00 min
Lab File: AJ112819.D
Acq: 28 Nov 2012 8:09 pm

Tgt Ion:105 Resp: 48643

Ion	Ratio	Lower	Upper
105	100		
120	1.4	22.0	62.0#







Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112832.D Vial: 53
Acq On : 29 Nov 2012 3:45 am Operator: RJP
Sample : C1211047-003A 10X Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:27 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

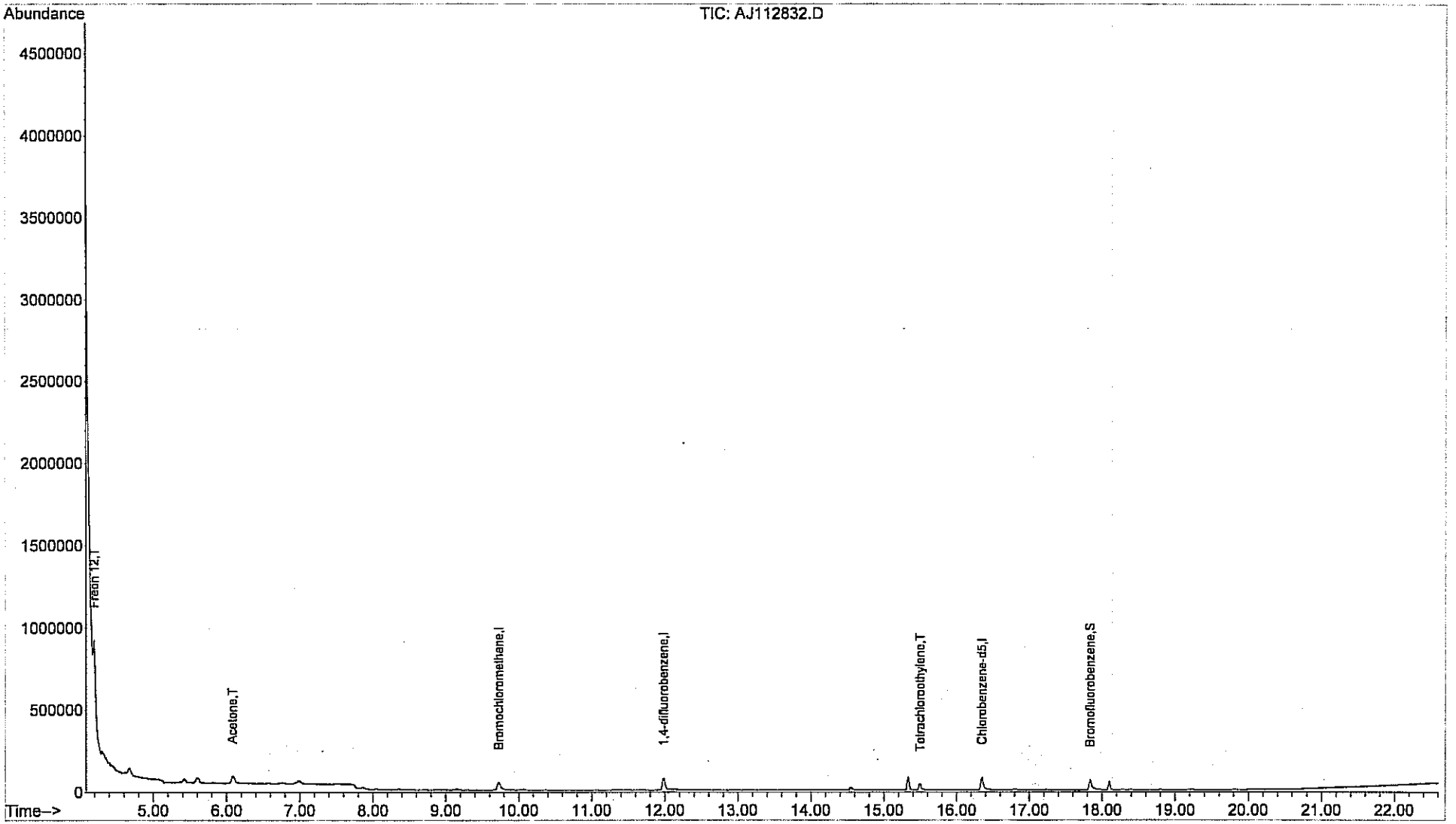
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.74	128	21713	1.00	ppb		0.01
33) 1,4-difluorobenzene	11.98	114	80707	1.00	ppb		0.00
48) Chlorobenzene-d5	16.35	117	63880	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	35053m	0.93	ppb		-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 93.00%				
Target Compounds							Qvalue
3) Freon 12	4.20	85	402699	2.11	ppb		99
14) Acetone	6.08	58	18561	0.94	ppb	#	47
54) Tetrachloroethylene	15.49	164	9524	0.22	ppb		97

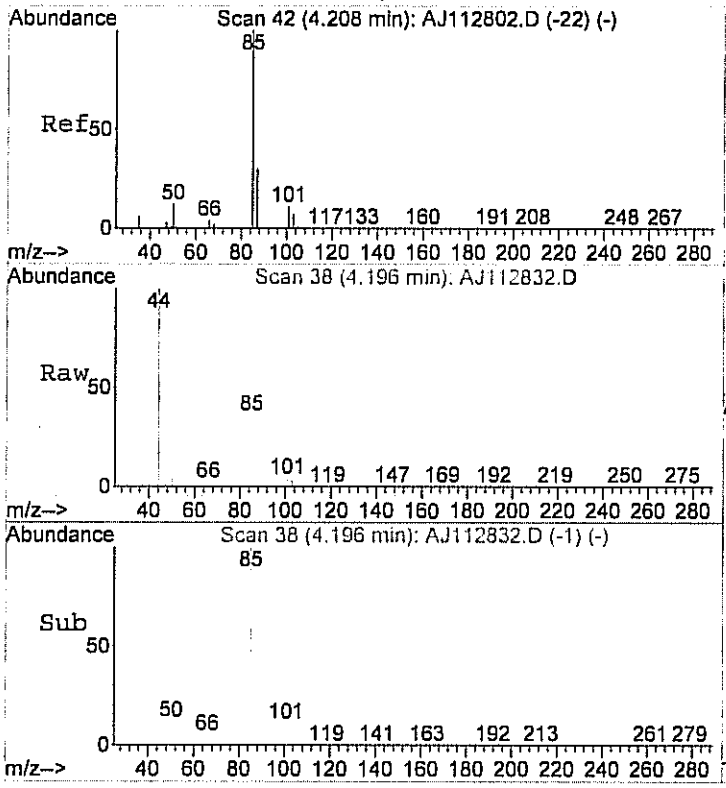
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112832.D Vial: 53
Acq On : 29 Nov 2012 3:45 am Operator: RJP
Sample : C1211047-003A 10X Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 30 8:51 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration

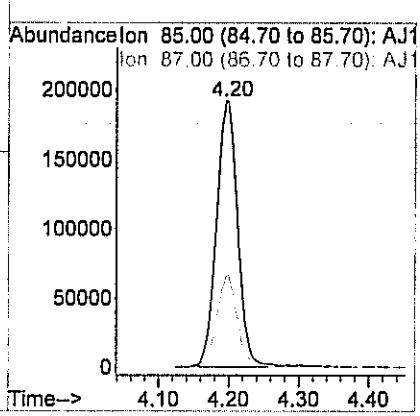


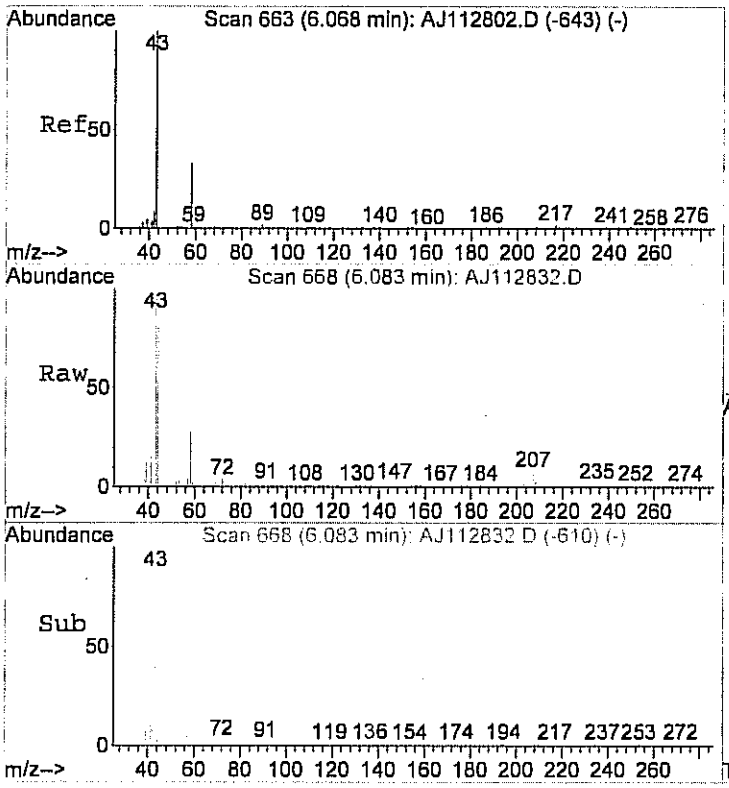


#3
Freon 12
Concen: 2.11 ppb
RT: 4.20 min Scan# 38
Delta R.T. -0.01 min
Lab File: AJ112832.D
Acq: 29 Nov 2012 3:45 am

Tgt Ion: 85 Resp: 402699

Ion	Ratio	Lower	Upper
85	100		
87	33.1	12.4	52.4

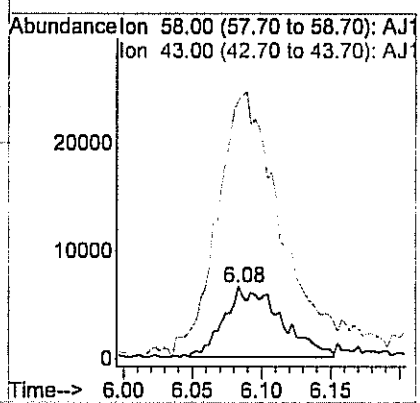


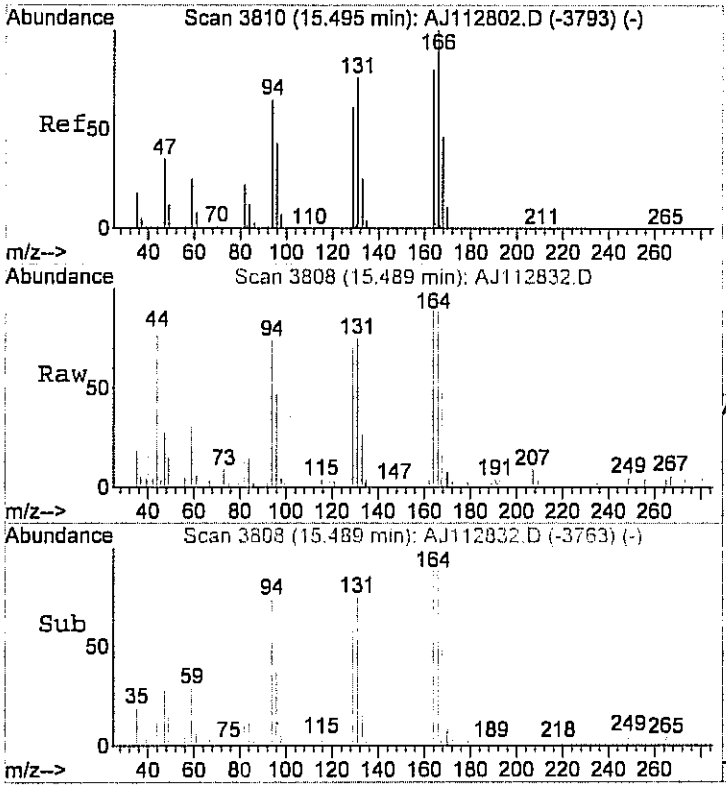


#14
Acetone
Concen: 0.94 ppb
RT: 6.08 min Scan# 668
Delta R.T. 0.02 min
Lab File: AJ112832.D
Acq: 29 Nov 2012 3:45 am

Tgt Ion: 58 Resp: 18561

Ion	Ratio	Lower	Upper
58	100		
43	466.0	320.8	380.8#

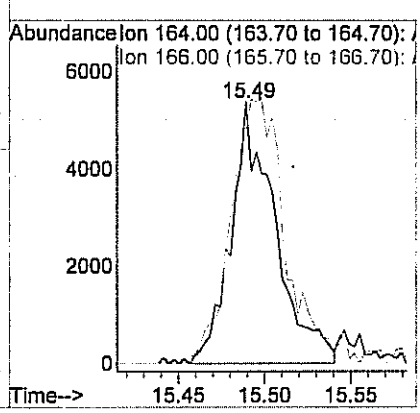




#54
Tetrachloroethylene
Concen: 0.22 ppb
RT: 15.49 min Scan# 3808
Delta R.T. -0.01 min
Lab File: AJ112832.D
Acq: 29 Nov 2012 3:45 am

Tgt Ion:164 Resp: 9524

Ion	Ratio	Lower	Upper
164	100		
166	126.1	110.0	150.0



Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
FIELD PARAMETERS		FLD				Analyst:
Lab Vacuum In	-18			"Hg		11/21/2012
Lab Vacuum Out	-30			"Hg		11/21/2012
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,1,2,2-Tetrachloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,1,2-Trichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,1-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,1-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2,4-Trichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2,4-Trimethylbenzene	1.5	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2-Dibromoethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2-Dichloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,2-Dichloropropane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,3,5-Trimethylbenzene	0.52	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,3-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,4-Dichlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
1,4-Dioxane	< 0.30	0.30		ppbV	1	11/28/2012 8:46:00 PM
2,2,4-trimethylpentane	1.7	1.5		ppbV	10	11/29/2012 4:55:00 AM
4-ethyltoluene	0.55	0.15		ppbV	1	11/28/2012 8:46:00 PM
Acetone	7.7	3.0		ppbV	10	11/29/2012 4:55:00 AM
Allyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Benzene	2.8	1.5		ppbV	10	11/29/2012 4:55:00 AM
Benzyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Bromodichloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Bromoform	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Bromomethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Carbon disulfide	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Carbon tetrachloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Chlorobenzene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Chloroethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Chloroform	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Chloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
cis-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
cis-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Cyclohexane	8.6	1.5		ppbV	10	11/29/2012 4:55:00 AM
Dibromochloromethane	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Ethyl acetate	< 0.25	0.25		ppbV	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: **RJP**
Ethylbenzene	1.2	0.15		ppbV	1	11/28/2012 8:46:00 PM
Freon 11	0.25	0.15		ppbV	1	11/28/2012 8:46:00 PM
Freon 113	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Freon 114	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Freon 12	0.52	0.15		ppbV	1	11/28/2012 8:46:00 PM
Heptane	2.3	1.5		ppbV	10	11/29/2012 4:55:00 AM
Hexachloro-1,3-butadiene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Hexane	8.5	1.5		ppbV	10	11/29/2012 4:55:00 AM
Isopropyl alcohol	11	1.5		ppbV	10	11/29/2012 4:55:00 AM
m&p-Xylene	3.4	3.0		ppbV	10	11/29/2012 4:55:00 AM
Methyl Butyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:46:00 PM
Methyl Ethyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:46:00 PM
Methyl Isobutyl Ketone	< 0.30	0.30		ppbV	1	11/28/2012 8:46:00 PM
Methyl tert-butyl ether	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Methylene chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
o-Xylene	1.5	0.15		ppbV	1	11/28/2012 8:46:00 PM
Propylene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Styrene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Tetrachloroethylene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Tetrahydrofuran	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Toluene	6.9	1.5		ppbV	10	11/29/2012 4:55:00 AM
trans-1,2-Dichloroethene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
trans-1,3-Dichloropropene	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Trichloroethene	2.5	1.5		ppbV	10	11/29/2012 4:55:00 AM
Vinyl acetate	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Vinyl Bromide	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Vinyl chloride	< 0.15	0.15		ppbV	1	11/28/2012 8:46:00 PM
Surr: Bromofluorobenzene	100	70-130		%REC	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: **RJP**
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:46:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:46:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:46:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:46:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:46:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 8:46:00 PM
1,2,4-Trimethylbenzene	7.5	0.75		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 8:46:00 PM
1,3,5-Trimethylbenzene	2.6	0.75		ug/m3	1	11/28/2012 8:46:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 8:46:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 8:46:00 PM
2,2,4-trimethylpentane	8.1	7.1		ug/m3	10	11/29/2012 4:55:00 AM
4-ethyltoluene	2.7	0.75		ug/m3	1	11/28/2012 8:46:00 PM
Acetone	19	7.2		ug/m3	10	11/29/2012 4:55:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 8:46:00 PM
Benzene	9.1	4.9		ug/m3	10	11/29/2012 4:55:00 AM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 8:46:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:46:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 8:46:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 8:46:00 PM
Carbon disulfide	< 0.47	0.47		ug/m3	1	11/28/2012 8:46:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 8:46:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 8:46:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 8:46:00 PM
Chloroform	< 0.74	0.74		ug/m3	1	11/28/2012 8:46:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 8:46:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:46:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:46:00 PM
Cyclohexane	30	5.2		ug/m3	10	11/29/2012 4:55:00 AM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 8:46:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
Ethylbenzene	5.2	0.66		ug/m3	1	11/28/2012 8:46:00 PM
Freon 11	1.4	0.86		ug/m3	1	11/28/2012 8:46:00 PM
Freon 113	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
Freon 12	2.6	0.75		ug/m3	1	11/28/2012 8:46:00 PM
Heptane	9.6	6.2		ug/m3	10	11/29/2012 4:55:00 AM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 8:46:00 PM
Hexane	30	5.4		ug/m3	10	11/29/2012 4:55:00 AM
Isopropyl alcohol	28	3.7		ug/m3	10	11/29/2012 4:55:00 AM
m&p-Xylene	15	13		ug/m3	10	11/29/2012 4:55:00 AM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 8:46:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 8:46:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 8:46:00 PM
o-Xylene	6.6	0.66		ug/m3	1	11/28/2012 8:46:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 8:46:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 8:46:00 PM
Tetrachloroethylene	< 1.0	1.0		ug/m3	1	11/28/2012 8:46:00 PM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 8:46:00 PM
Toluene	26	5.7		ug/m3	10	11/29/2012 4:55:00 AM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:46:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:46:00 PM
Trichloroethene	14	8.2		ug/m3	10	11/29/2012 4:55:00 AM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 8:46:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 8:46:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112820.D Vial: 41
Acq On : 28 Nov 2012 8:46 pm Operator: RJP
Sample : C1211047-004A Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:15 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.73	128	25027	1.00	ppb		0.00
33) 1,4-difluorobenzene	11.97	114	106641	1.00	ppb		-0.01
48) Chlorobenzene-d5	16.34	117	98628	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	58295	1.00	ppb		-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 100.00%				
Target Compounds							Qvalue
3) Freon 12	4.20	85	114677	0.52	ppb		98
13) Freon 11	5.80	101	71210	0.25	ppb		97
14) Acetone	6.05	58	218229	9.62	ppb	#	1
15) Isopropyl alcohol	6.16	45	1107823	18.57	ppb	#	32
28) Hexane	8.88	57	443870	12.95	ppb	#	77
35) Cyclohexane	8.88	56	277976	12.16	ppb	#	88
37) Benzene	11.30	78	304815	3.16	ppb		86
40) 2,2,4-trimethylpentane	12.14	57	272256m	2.20	ppb		
41) Heptane	12.47	43	130793	3.55	ppb		96
42) Trichloroethene	12.59	130	174835	3.05	ppb		98
49) Toluene	14.54	92	655748	9.21	ppb		95
56) Ethylbenzene	16.62	91	178459	1.17	ppb		100
57) m&p-xylene	16.78	91	622117	4.70	ppb		95
60) o-xylene	17.23	91	273676	1.50	ppb		86
64) 4-ethyltoluene	18.35	105	79436m	0.55	ppb		
65) 1,3,5-trimethylbenzene	18.40	105	101108m	0.52	ppb		
66) 1,2,4-trimethylbenzene	18.79	105	211237	1.50	ppb		96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

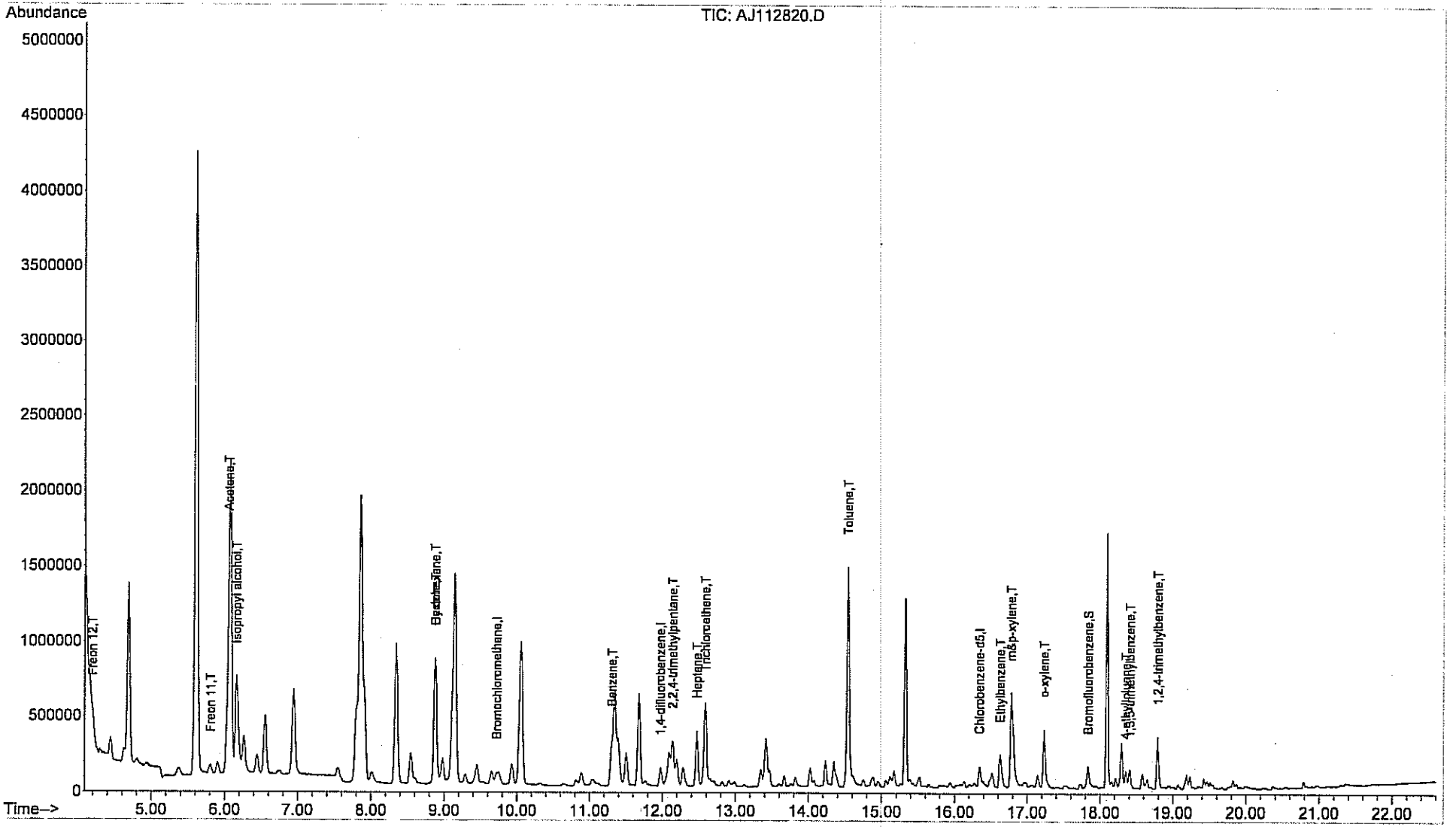
Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112820.D
Acq On : 28 Nov 2012 8:46 pm
Sample : C1211047-004A
Misc : AN23_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 29 14:30 2012

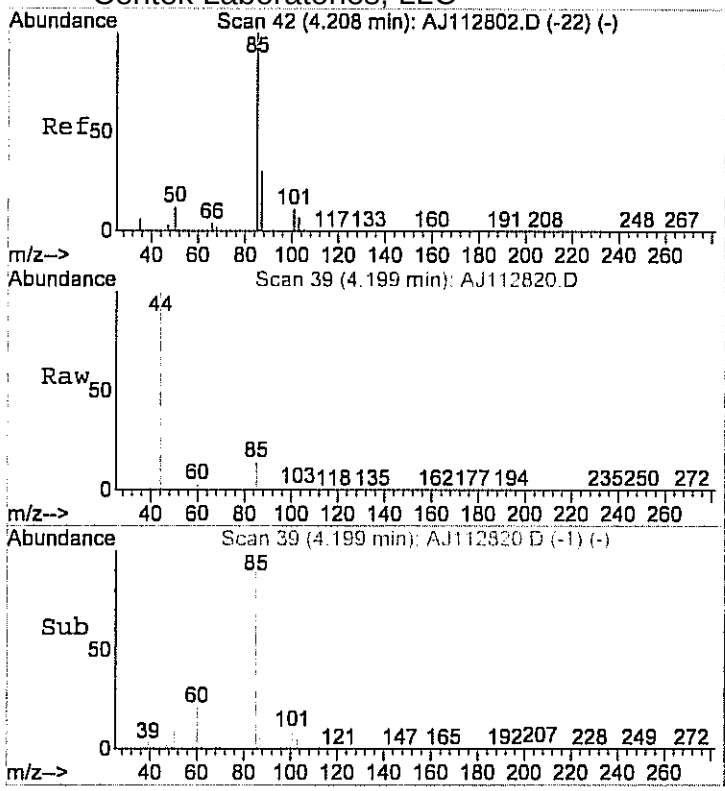
Vial: 41
Operator: RJP
Inst : MSD #1
Multiplr: 1.00

Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration



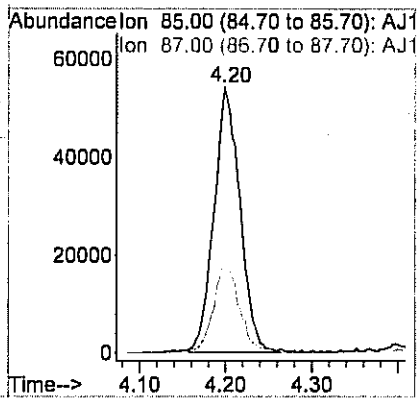
AJ112820.D AN23_1UG.M Fri Dec 14 12:50:24 2012 MSD1

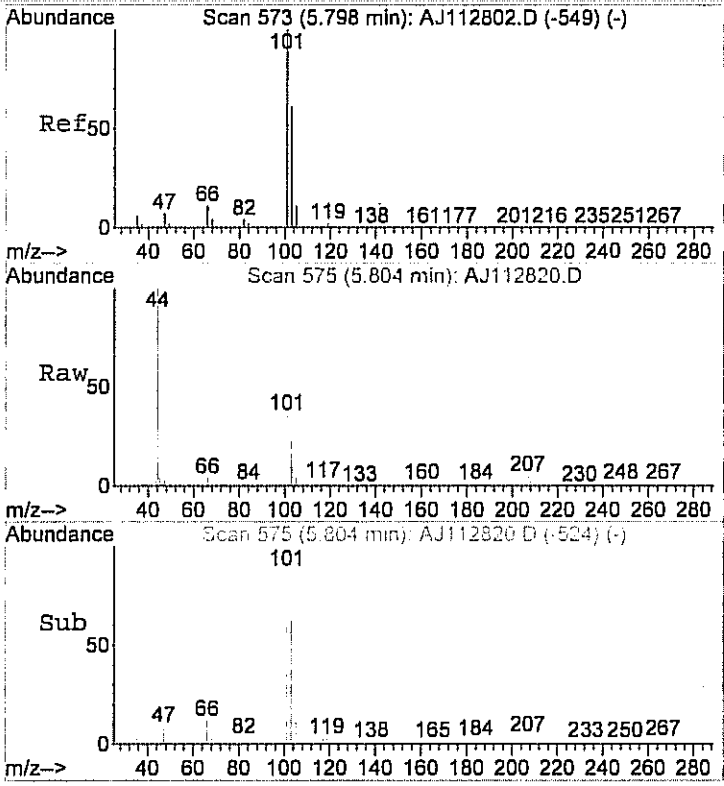


#3
Freon 12
Concen: 0.52 ppb
RT: 4.20 min Scan# 39
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 85 Resp: 114677

Ion	Ratio	Lower	Upper
85	100		
87	33.3	12.4	52.4

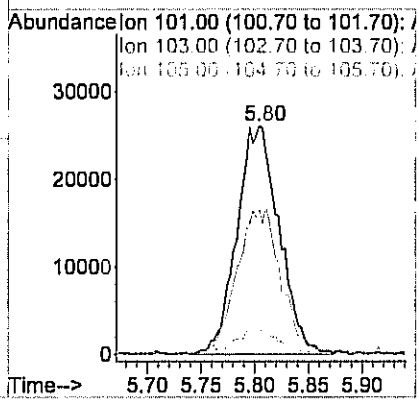


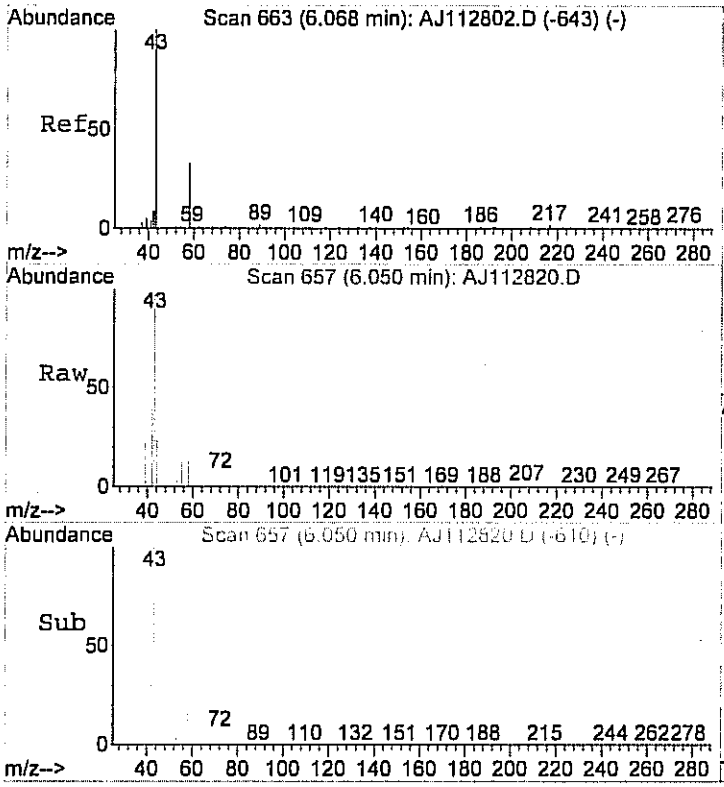


#13
Freon 11
Concen: 0.25 ppb
RT: 5.80 min Scan# 575
Delta R.T. 0.00 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion:101 Resp: 71210

Ion	Ratio	Lower	Upper
101	100		
103	66.9	49.9	89.9
105	11.0	0.0	31.4

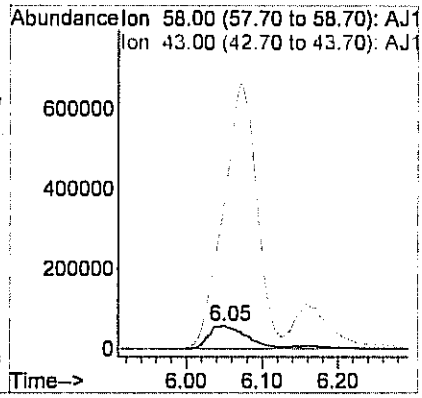


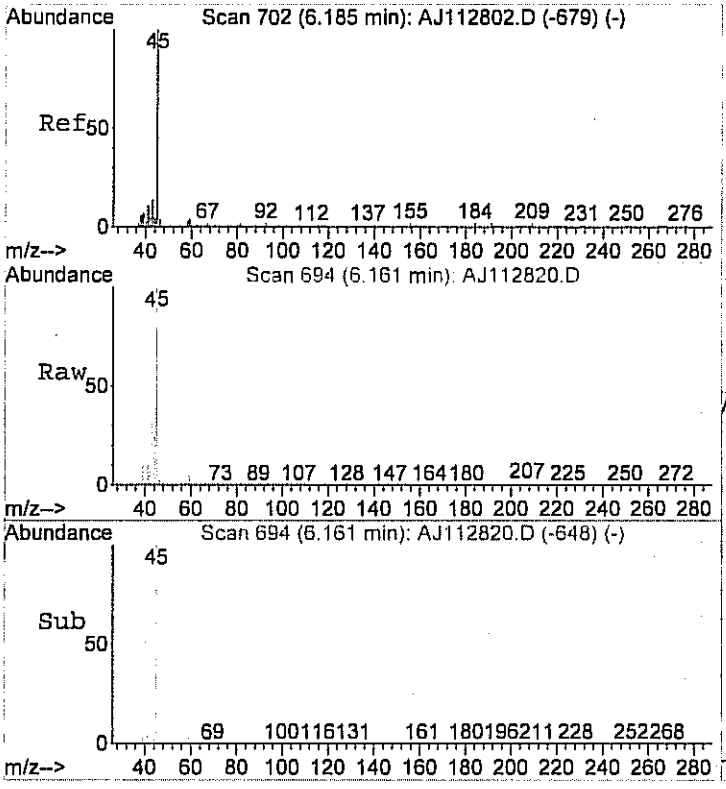


#14
Acetone
Concen: 9.62 ppb
RT: 6.05 min Scan# 657
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 58 Resp: 218229

Ion	Ratio	Lower	Upper
58	100		
43	1077.3	320.8	380.8#

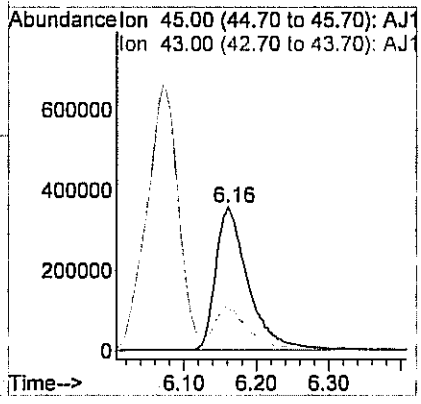


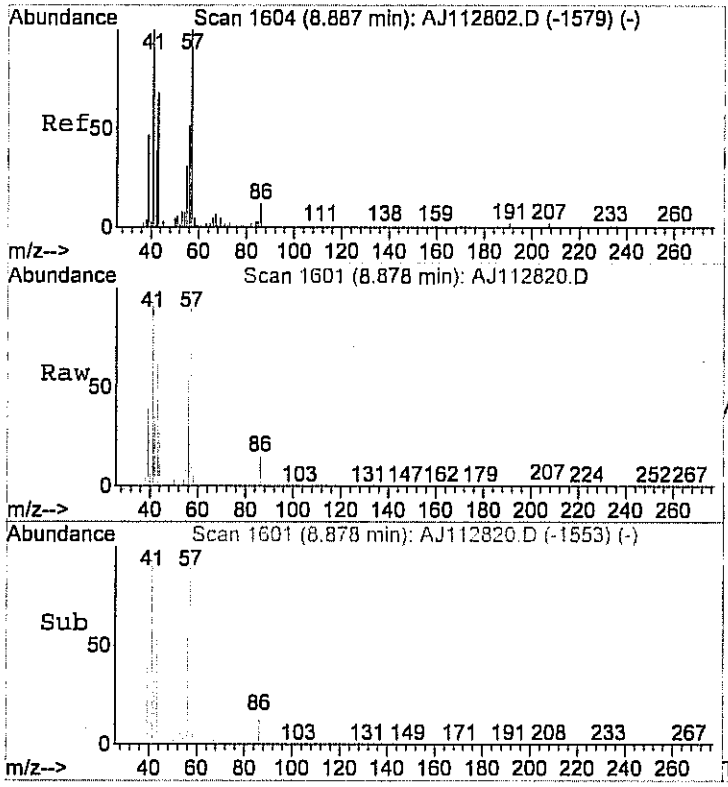


#15
Isopropyl alcohol
Concen: 18.57 ppb
RT: 6.16 min Scan# 694
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 45 Resp: 1107823

Ion	Ratio	Lower	Upper
45	100		
43	0.0	24.1	64.1#

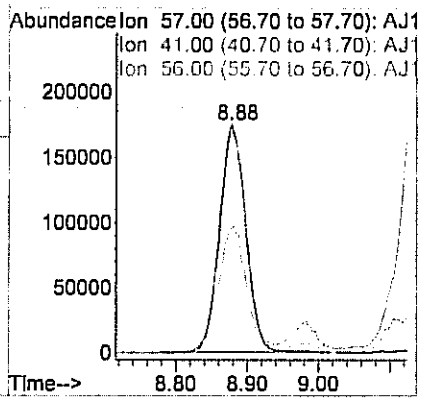


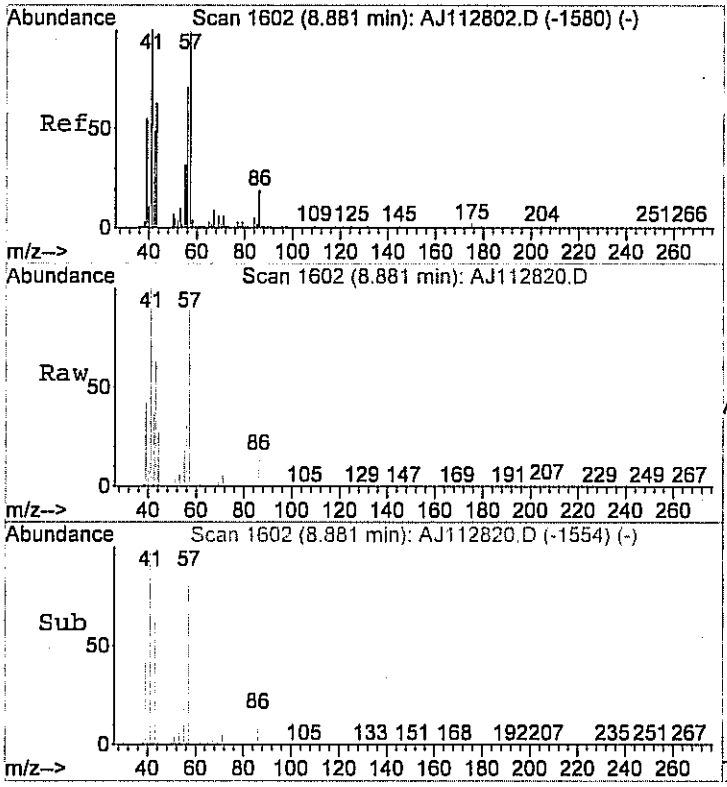


#28
Hexane
Concen: 12.95 ppb
RT: 8.88 min Scan# 1601
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 57 Resp: 443870

Ion	Ratio	Lower	Upper
57	100		
41	110.6	62.3	102.3#
56	62.7	34.8	74.8

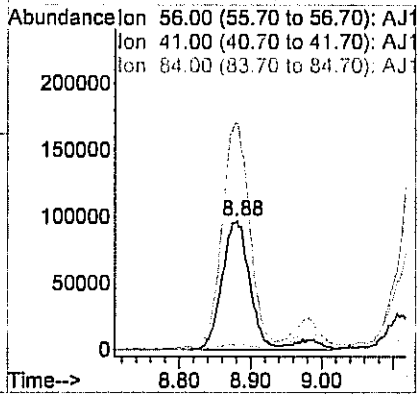


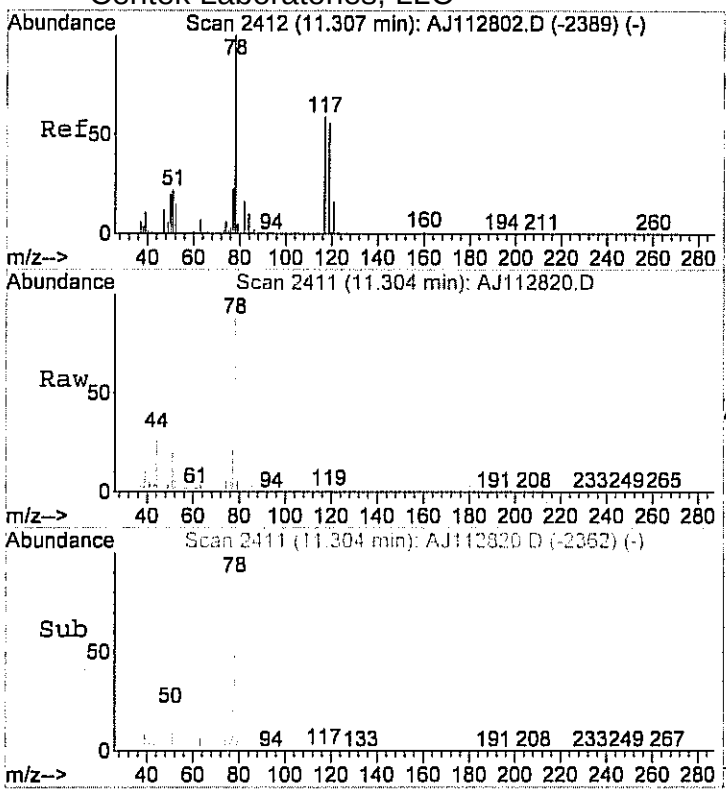


#35
Cyclohexane
Concen: 12.16 ppb
RT: 8.88 min Scan# 1602
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 56 Resp: 277976

Ion	Ratio	Lower	Upper
56	100		
41	176.6	141.3	181.3
84	0.0	0.0	27.7

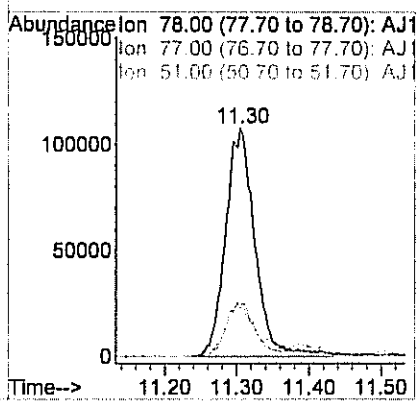


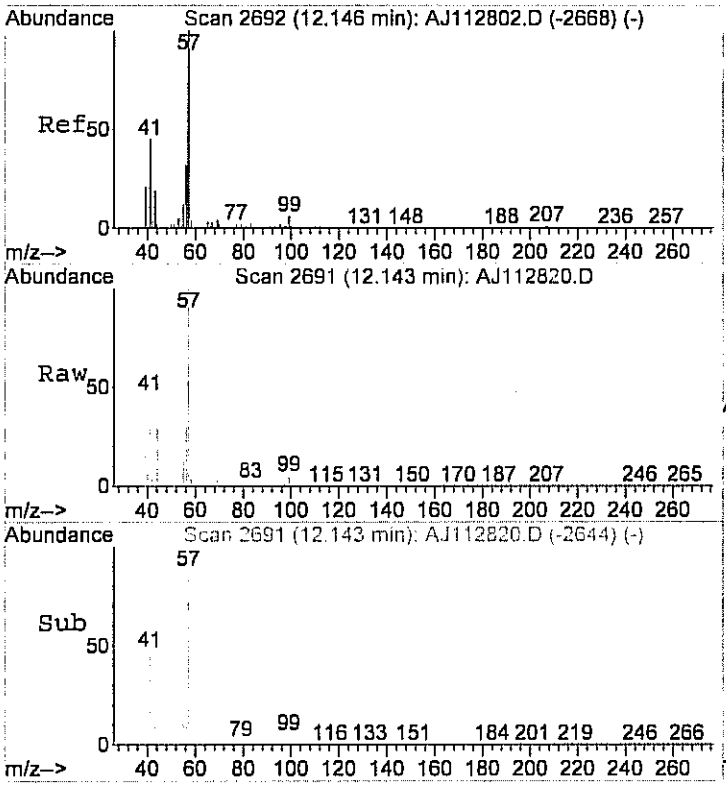


#37
Benzene
Concen: 3.16 ppb
RT: 11.30 min Scan# 2411
Delta R.T. -0.00 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 78 Resp: 304815

Ion	Ratio	Lower	Upper
78	100		
77	26.1	2.9	42.9
51	30.1	0.0	40.0

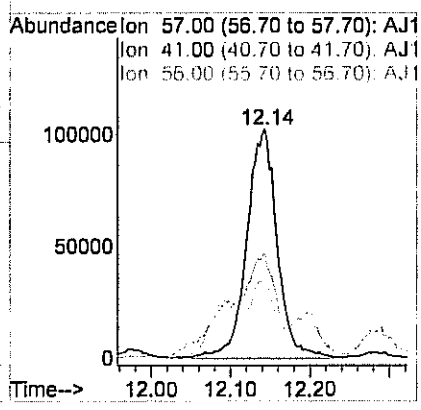


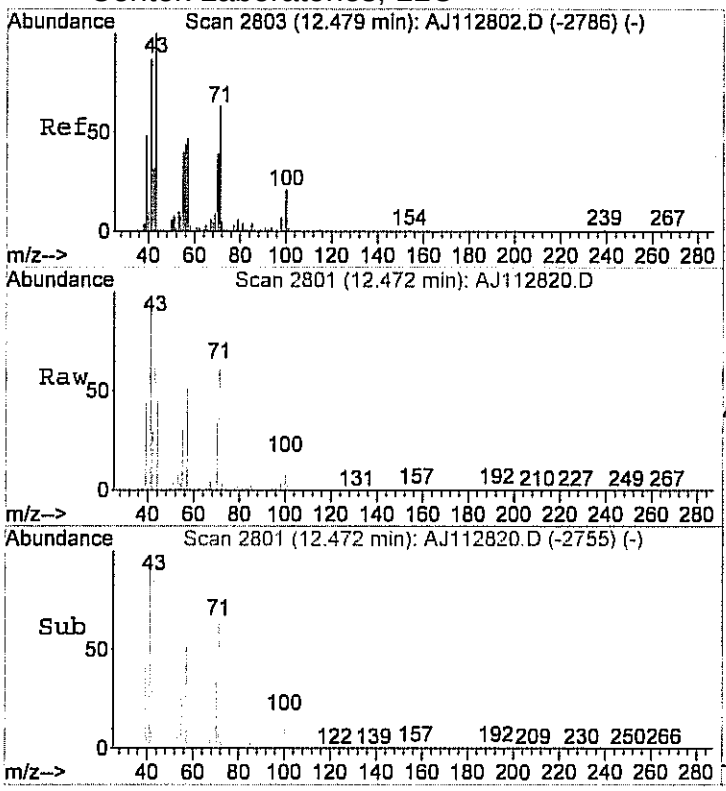


#40
2,2,4-trimethylpentane
Concen: 2.20 ppb m
RT: 12.14 min Scan# 2691
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 57 Resp: 272256

Ion	Ratio	Lower	Upper
57	100		
41	85.6	26.2	66.2#
56	68.1	10.2	50.2#

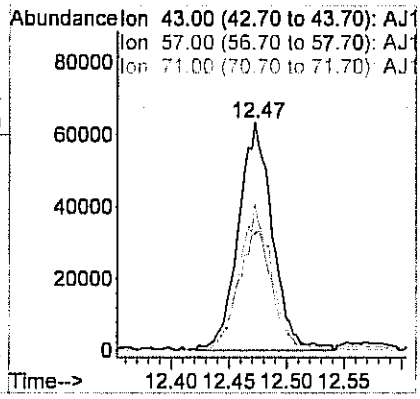


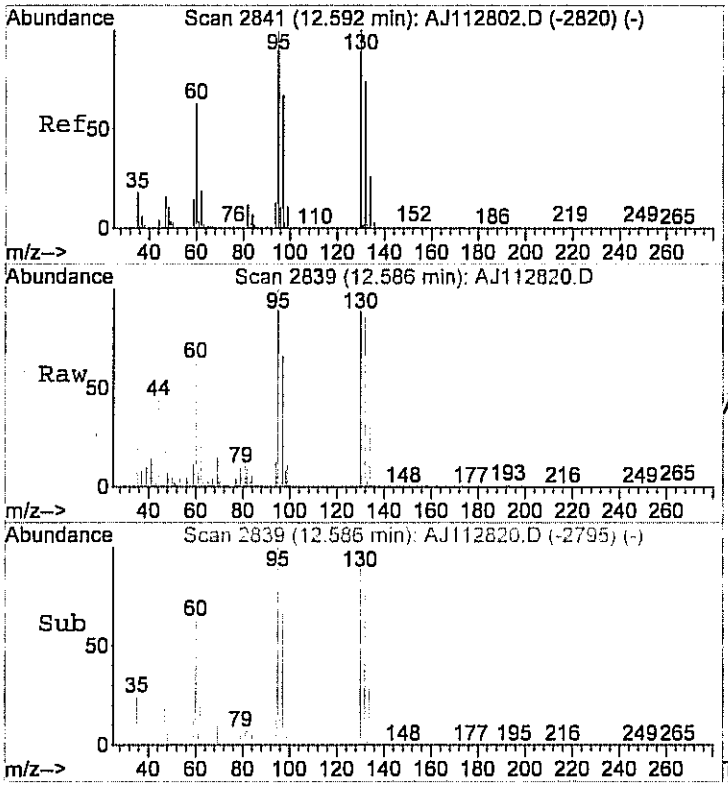


#41
Heptane
Concen: 3.55 ppb
RT: 12.47 min Scan# 2801
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 43 Resp: 130793

Ion	Ratio	Lower	Upper
43	100		
57	54.8	35.2	75.2
71	61.1	47.1	87.1

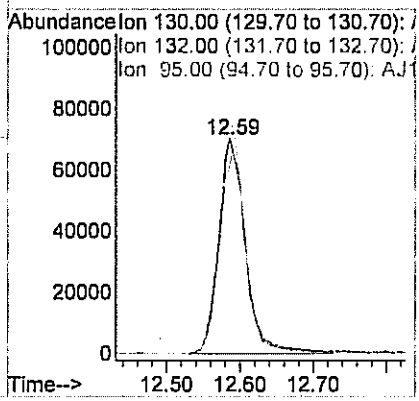


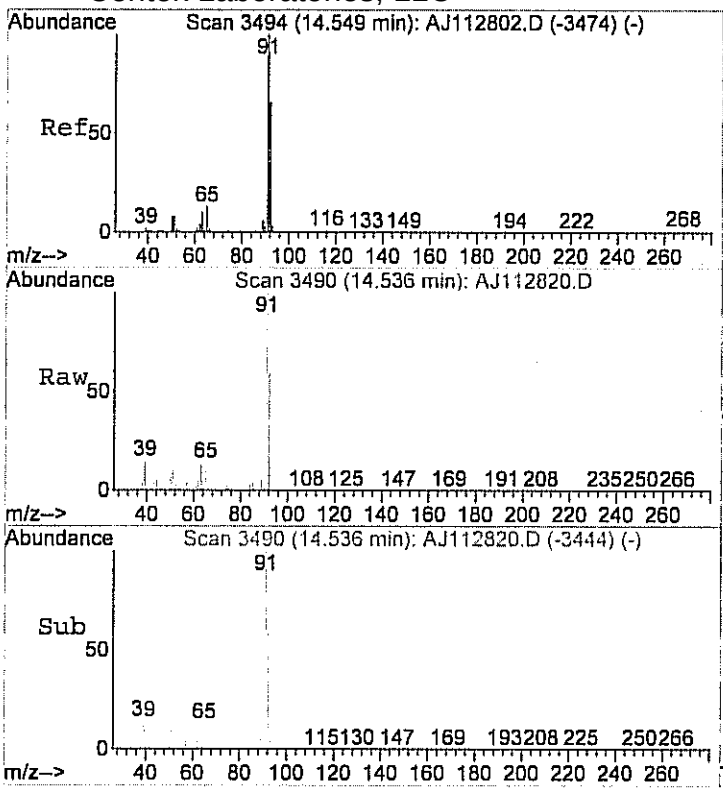


#42
Trichloroethene
Concen: 3.05 ppb
RT: 12.59 min Scan# 2839
Delta R.T. -0.02 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion:130 Resp: 174835

Ion	Ratio	Lower	Upper
130	100		
132	96.2	75.5	115.5
95	106.4	83.5	123.5

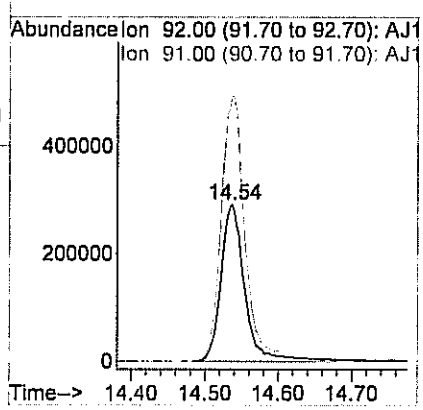


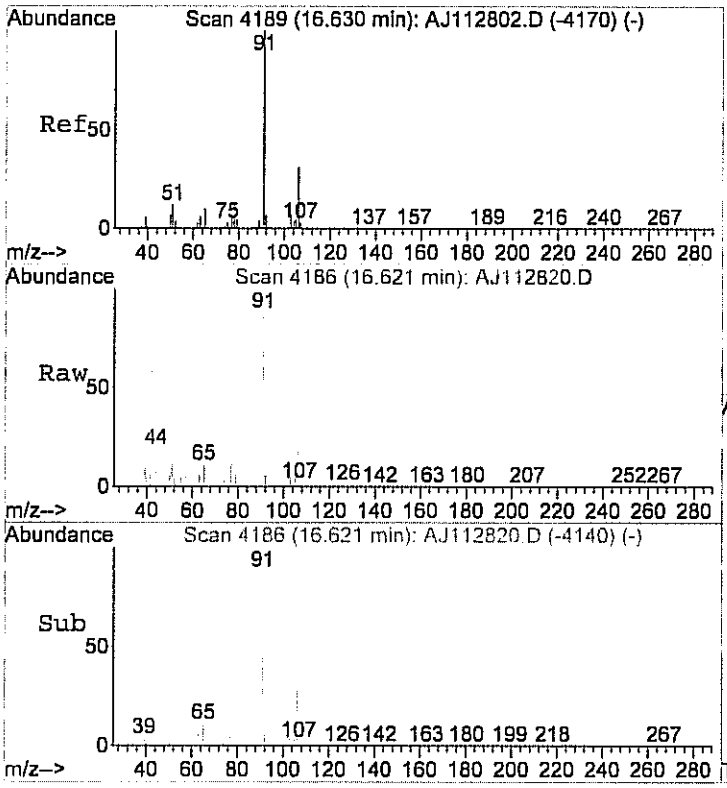


#49
Toluene
Concen: 9.21 ppb
RT: 14.54 min Scan# 3490
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 92 Resp: 655748

Ion	Ratio	Lower	Upper
92	100		
91	173.1	160.2	200.2

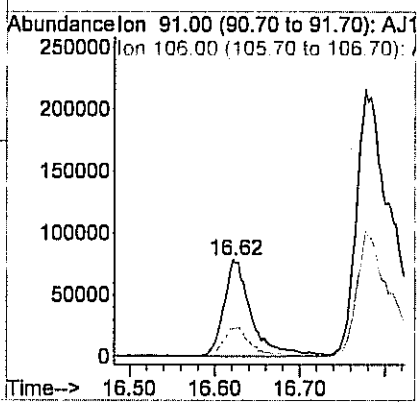


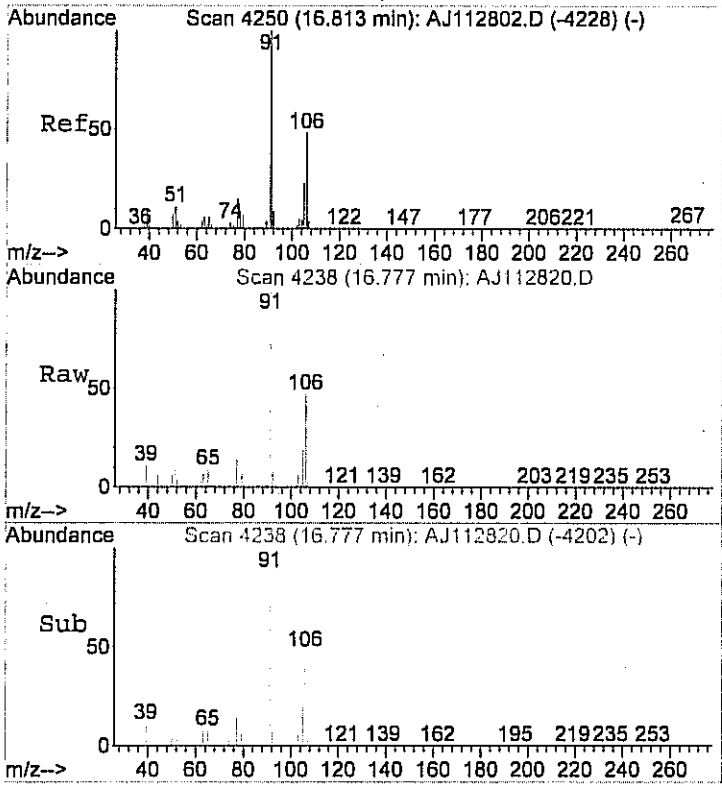


#56
Ethylbenzene
Concen: 1.17 ppb
RT: 16.62 min Scan# 4186
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 91 Resp: 178459

Ion	Ratio	Lower	Upper
91	100		
106	31.0	11.1	51.1

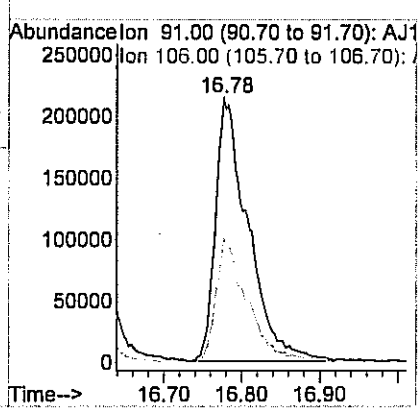


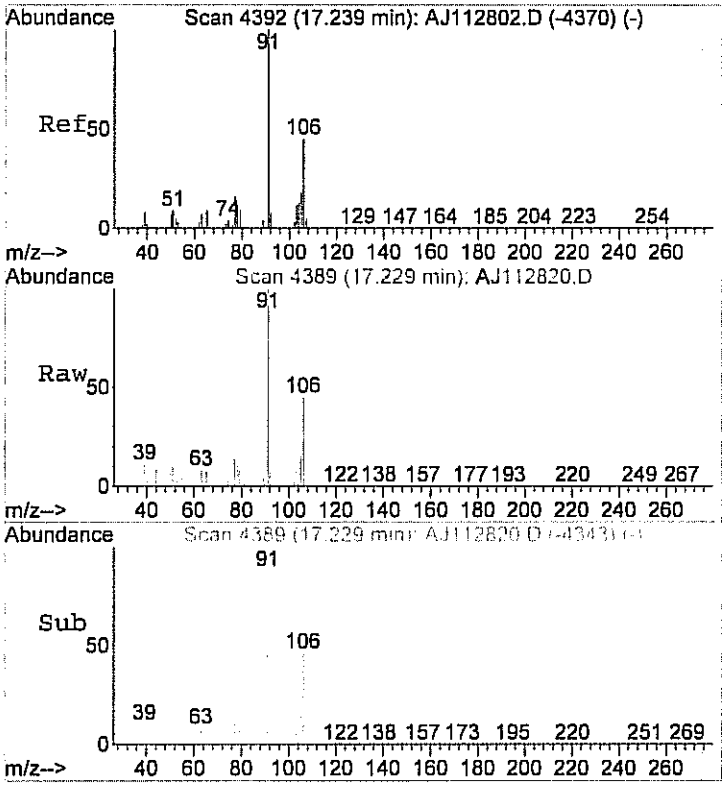


#57
m&p-xylene
Concen: 4.70 ppb
RT: 16.78 min Scan# 4238
Delta R.T. -0.04 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 91 Resp: 622117

Ion	Ratio	Lower	Upper
91	100		
106	46.3	23.1	63.1

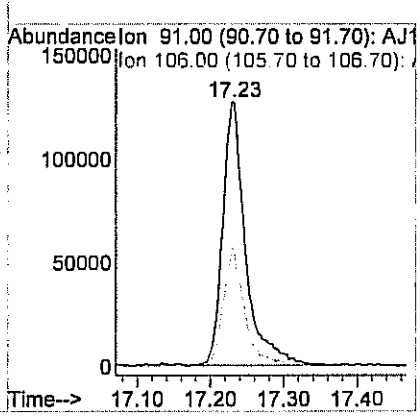


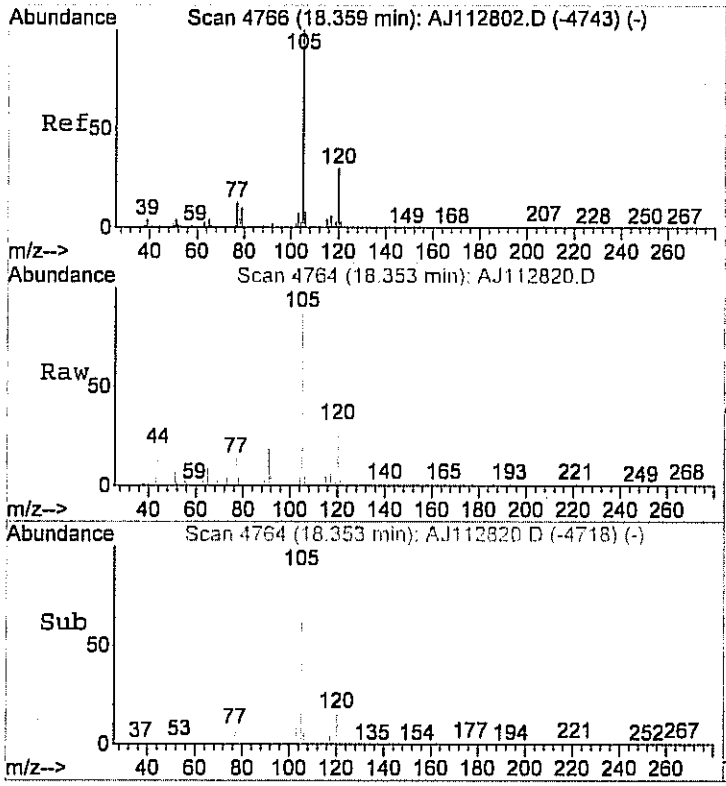


#60
o-xylene
Concen: 1.50 ppb
RT: 17.23 min Scan# 4389
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion: 91 Resp: 273676

Ion	Ratio	Lower	Upper
91	100		
106	44.7	16.6	56.6

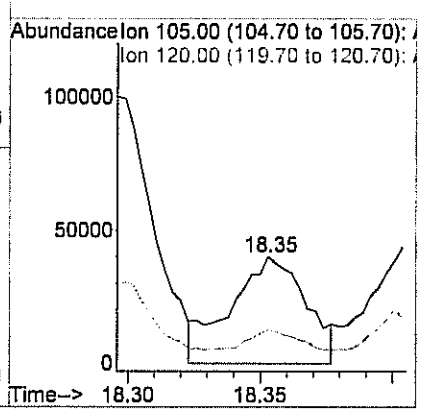


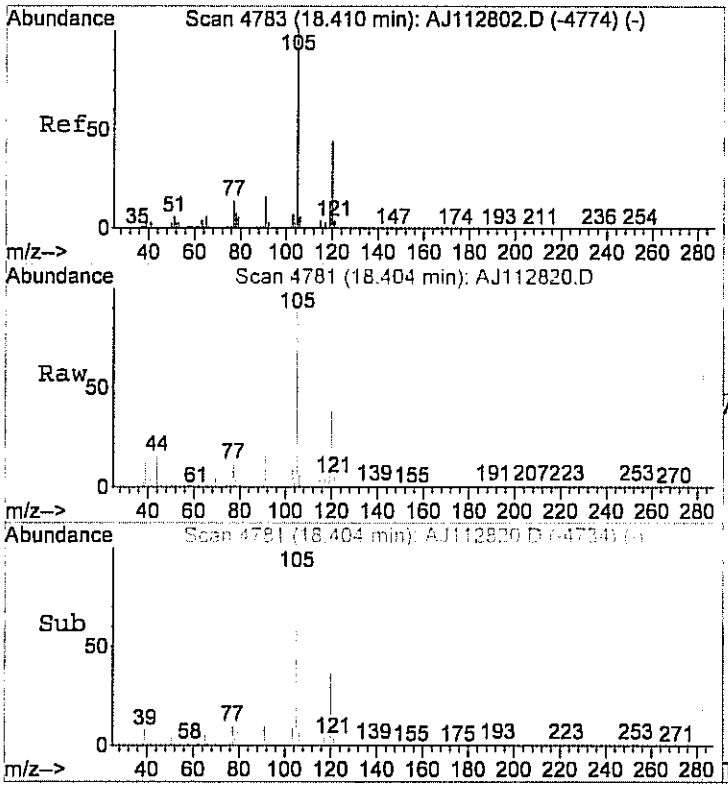


#64
4-ethyltoluene
Concen: 0.55 ppb m
RT: 18.35 min Scan# 4764
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion:105 Resp: 79436

Ion	Ratio	Lower	Upper
105	100		
120	150.8	28.4	68.4#

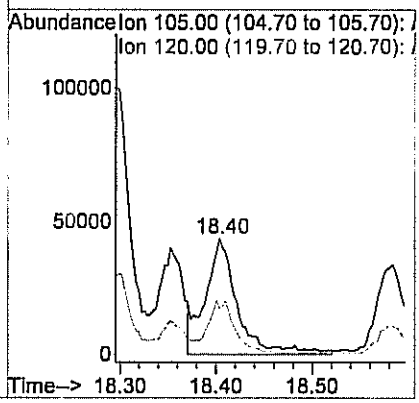


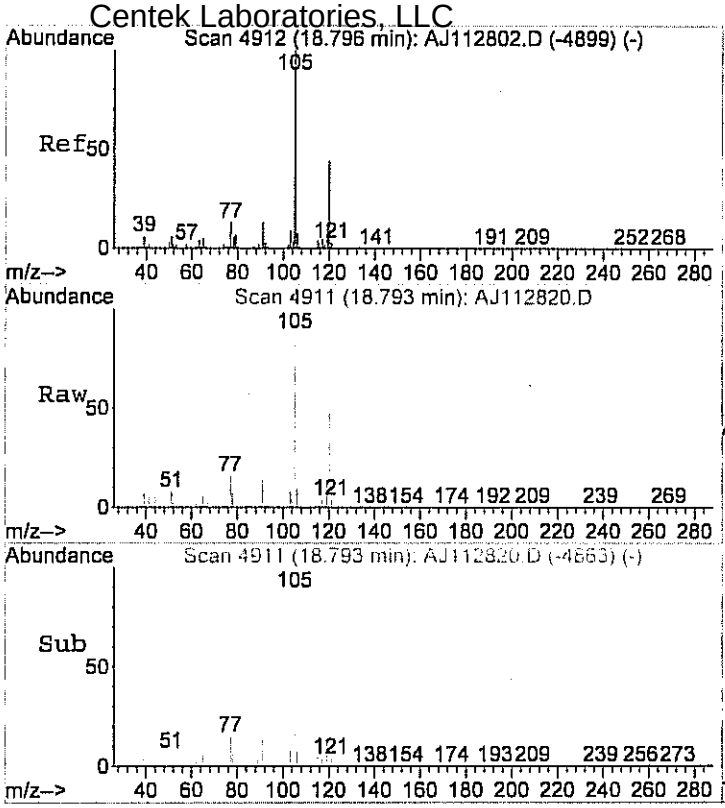


#65
1,3,5-trimethylbenzene
Concen: 0.52 ppb m
RT: 18.40 min Scan# 4781
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion:105 Resp: 101108

Ion	Ratio	Lower	Upper
105	100		
120	118.5	18.9	58.9#

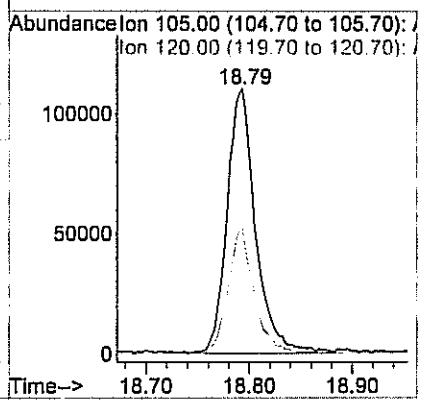




#66
1,2,4-trimethylbenzene
Concen: 1.50 ppb
RT: 18.79 min Scan# 4911
Delta R.T. -0.01 min
Lab File: AJ112820.D
Acq: 28 Nov 2012 8:46 pm

Tgt Ion:105 Resp: 211237

Ion	Ratio	Lower	Upper
105	100		
120	44.3	22.0	62.0



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112834.D
Acq On : 29 Nov 2012 4:55 am
Sample : C1211047-004A 10X
Misc : AN23_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:29 2012

Vial: 55
Operator: RJP
Inst : MSD #1
Multiplr: 1.00
Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.72	128	21355	1.00	ppb	0.00
33) 1,4-difluorobenzene	11.98	114	83187	1.00	ppb	0.00
48) Chlorobenzene-d5	16.35	117	67510	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.84	95	32922	0.83	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 83.00%			
Target Compounds						Qvalue
14) Acetone	6.09	58	14907	0.77	ppb	# 1
15) Isopropyl alcohol	6.19	45	56782	1.12	ppb	# 32
28) Hexane	8.88	57	24814	0.85	ppb	# 68
35) Cyclohexane	8.88	56	15425	0.86	ppb	# 71
37) Benzene	11.31	78	21193	0.28	ppb	97
40) 2,2,4-trimethylpentane	12.14	57	16487m	0.17	ppb	
41) Heptane	12.47	43	6724	0.23	ppb	98
42) Trichloroethene	12.60	130	11184	0.25	ppb	93
49) Toluene	14.55	92	33402	0.69	ppb	93
57) m&p-xylene	16.79	91	30725m	0.34	ppb	

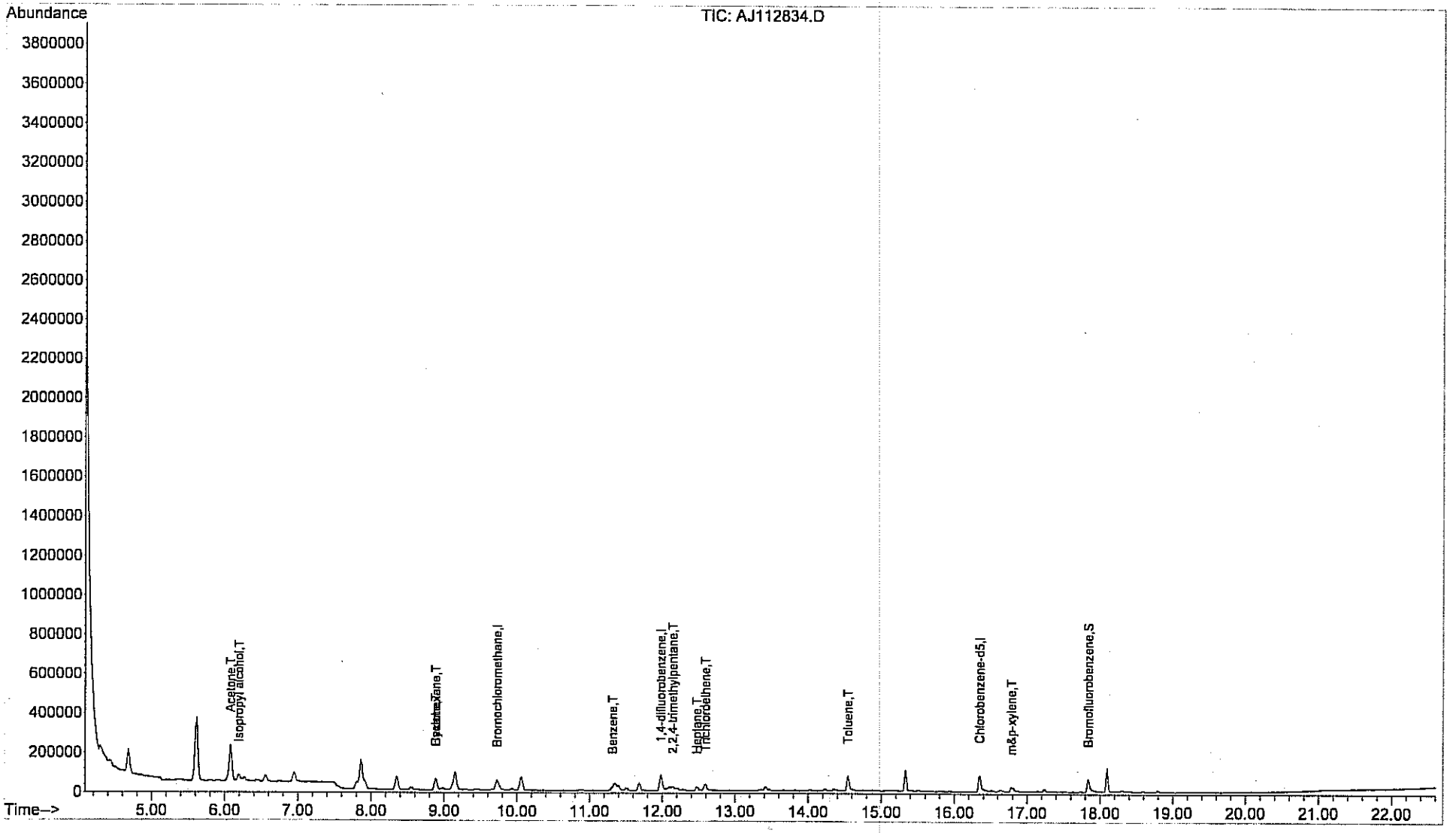
(#) = qualifier out of range (m) = manual integration (+) = signals summed

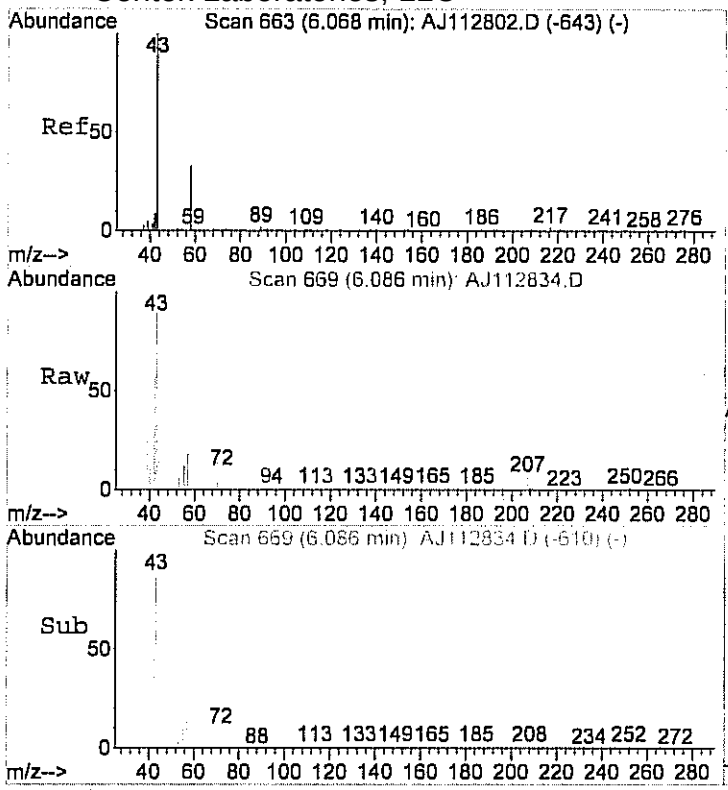
Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112834.D
Acq On : 29 Nov 2012 4:55 am
Sample : C1211047-004A 10X
Misc : AN23_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 30 8:53 2012

Vial: 55
Operator: RJP
Inst : MSD #1
Multiplr: 1.00
Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration

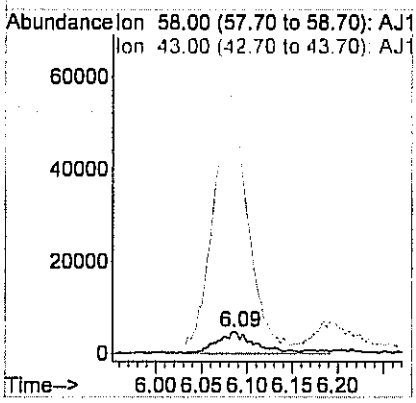


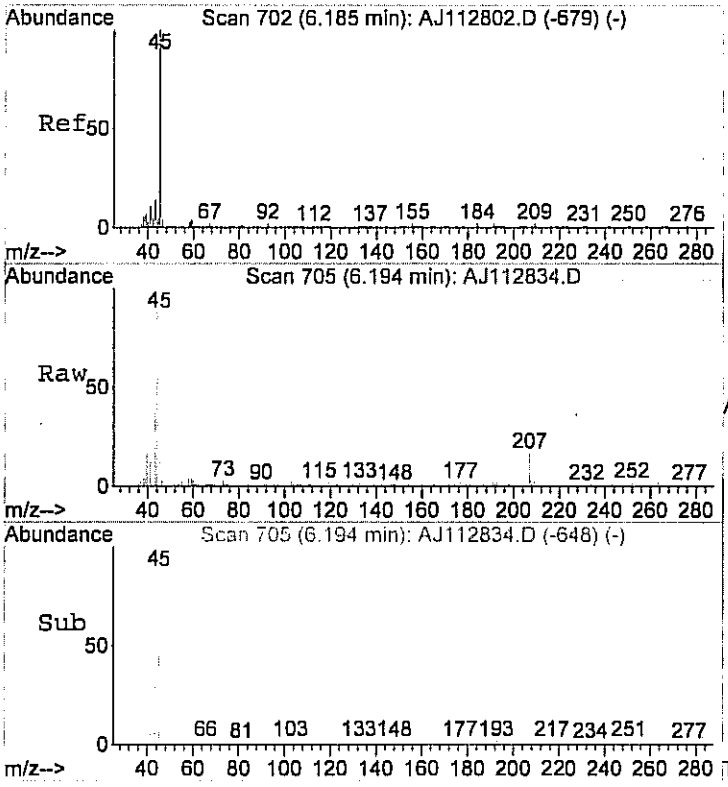


#14
Acetone
Concen: 0.77 ppb
RT: 6.09 min Scan# 669
Delta R.T. 0.03 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

Tgt Ion: 58 Resp: 14907

Ion	Ratio	Lower	Upper
58	100		
43	1048.9	320.8	380.8#

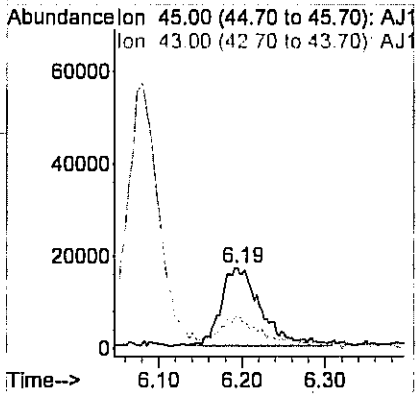


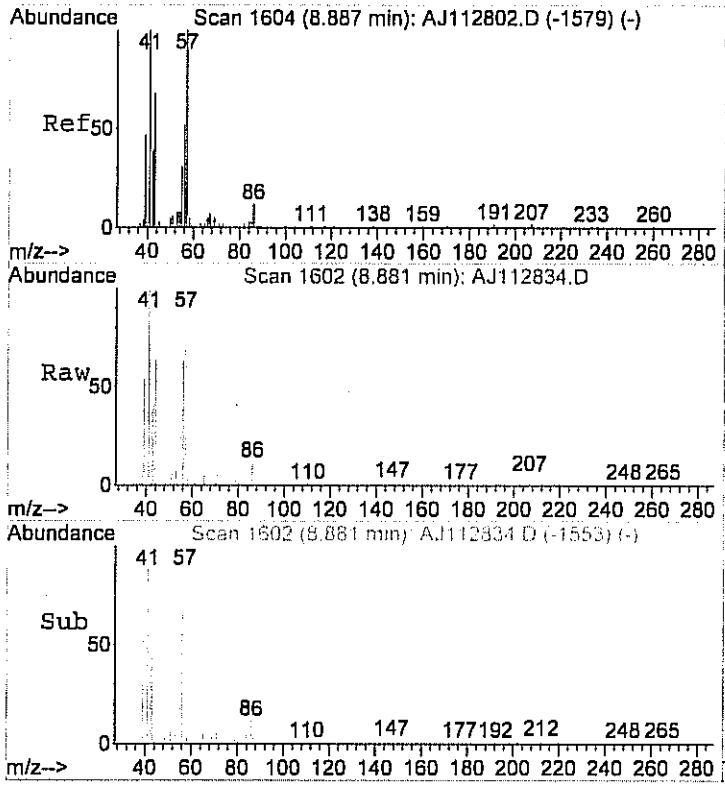


#15
Isopropyl alcohol
Concen: 1.12 ppb
RT: 6.19 min Scan# 705
Delta R.T. 0.02 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

Tgt Ion: 45 Resp: 56782

Ion	Ratio	Lower	Upper
45	100		
43	0.0	24.1	64.1#

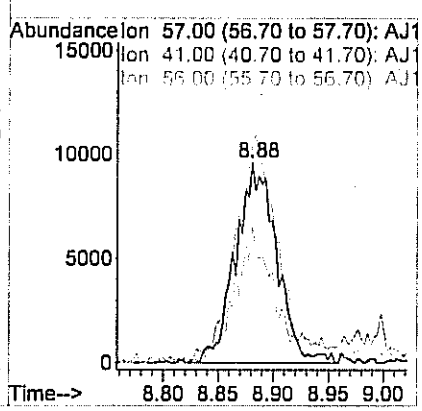


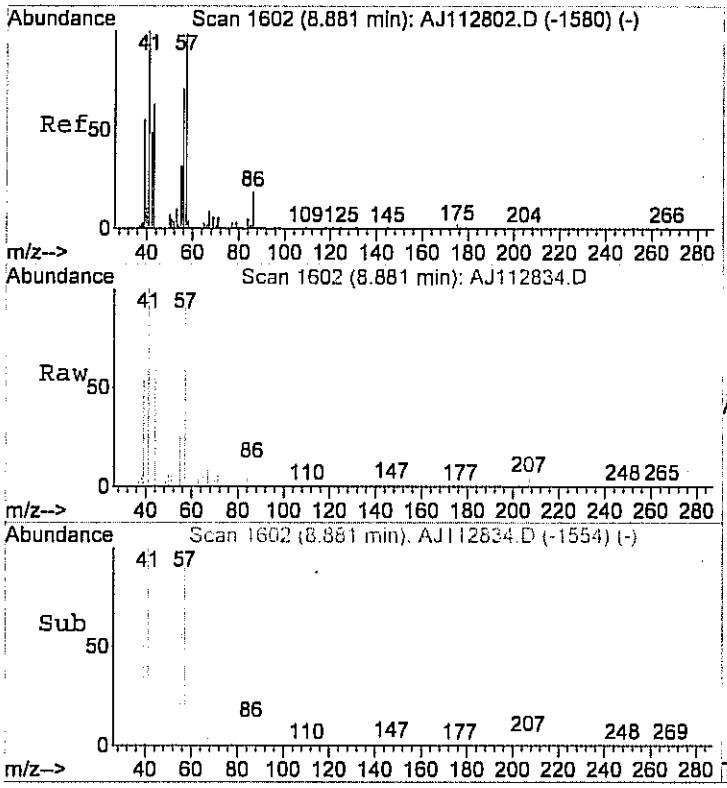


#28
Hexane
Concen: 0.85 ppb
RT: 8.88 min Scan# 1602
Delta R.T. -0.00 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

Tgt Ion: 57 Resp: 24814

Ion	Ratio	Lower	Upper
57	100		
41	123.8	62.3	102.3#
56	62.2	34.8	74.8

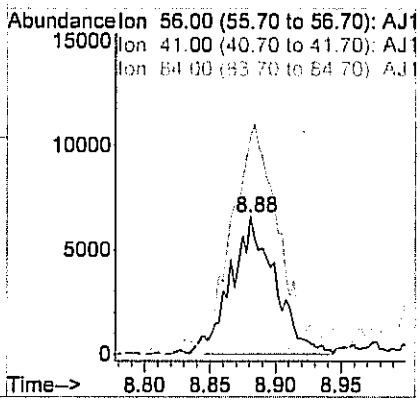


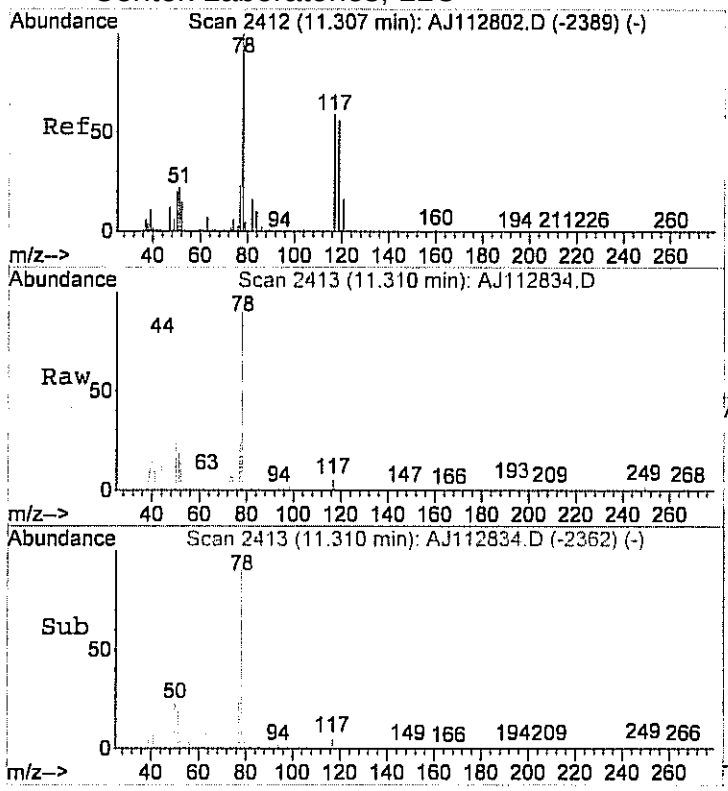


#35
Cyclohexane
Concen: 0.86 ppb
RT: 8.88 min Scan# 1602
Delta R.T. -0.01 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

Tgt Ion: 56 Resp: 15425

Ion	Ratio	Lower	Upper
56	100		
41	201.1	141.3	181.3#
84	9.7	0.0	27.7

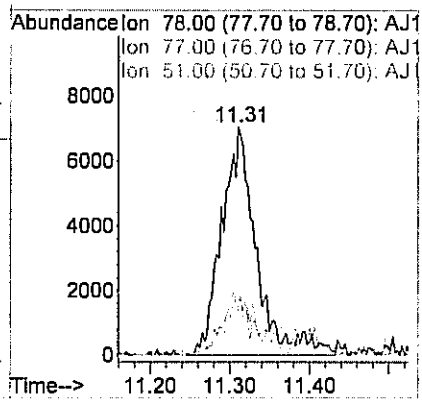


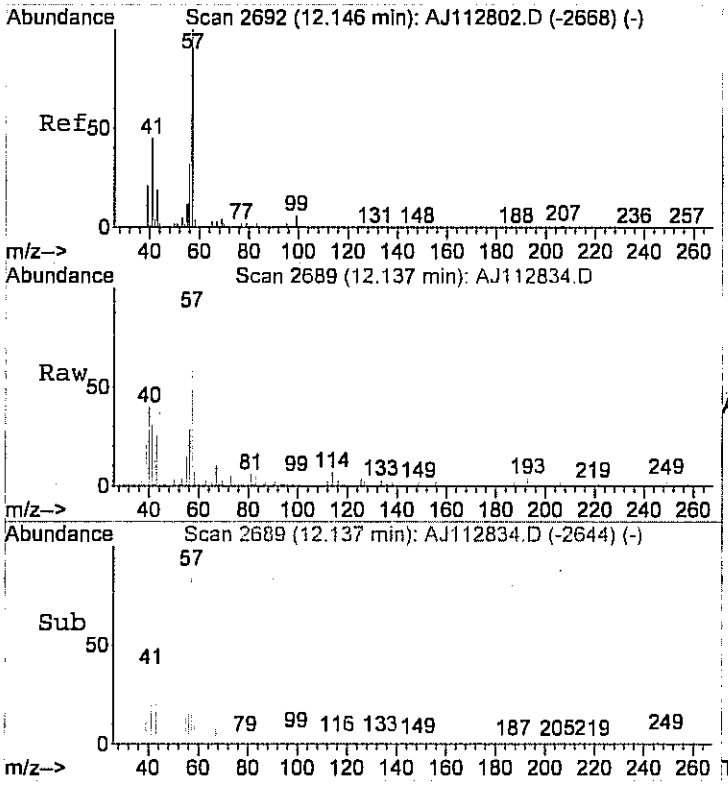


#37
Benzene
Concen: 0.28 ppb
RT: 11.31 min Scan# 2413
Delta R.T. 0.00 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

Tgt Ion: 78 Resp: 21193

Ion	Ratio	Lower	Upper
78	100		
77	24.0	2.9	42.9
51	18.6	0.0	40.0

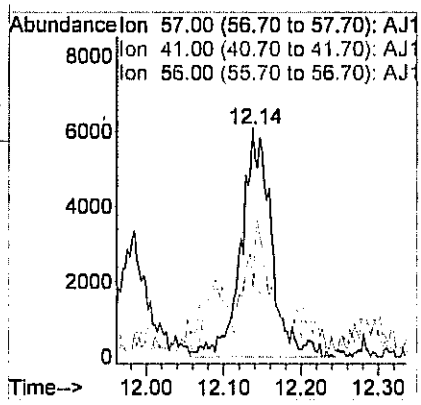


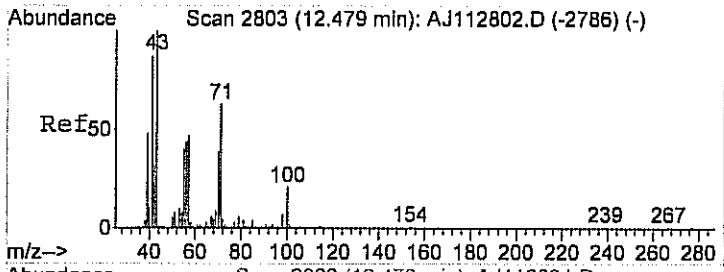


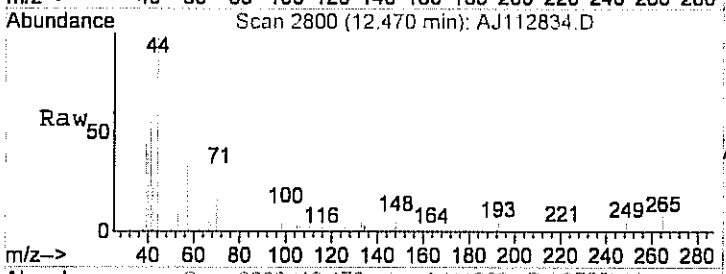
#40
2,2,4-trimethylpentane
Concen: 0.17 ppb m
RT: 12.14 min Scan# 2689
Delta R.T. -0.02 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

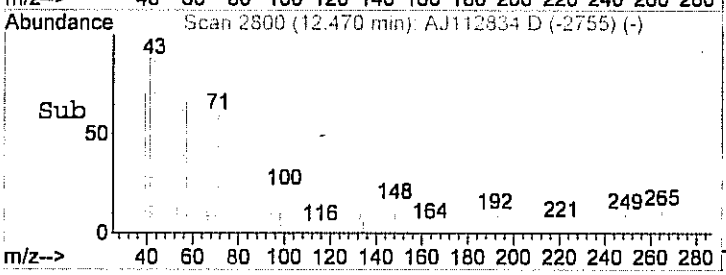
Tgt Ion: 57 Resp: 16487

Ion	Ratio	Lower	Upper
57	100		
41	81.0	26.2	66.2#
56	46.9	10.2	50.2





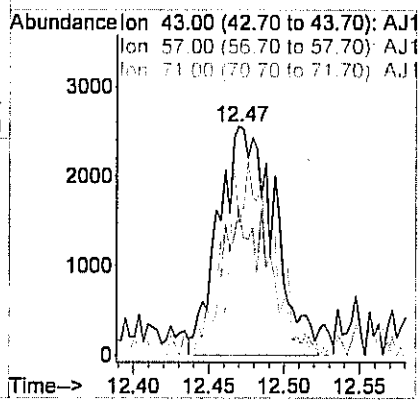


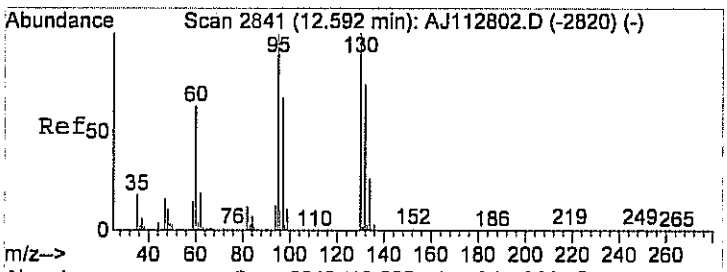


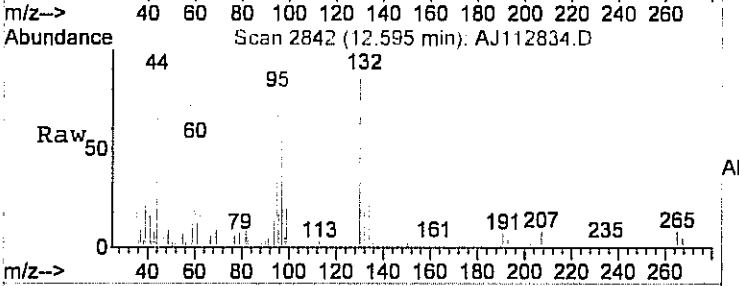
#41
Heptane
Concen: 0.23 ppb
RT: 12.47 min Scan# 2800
Delta R.T. -0.02 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

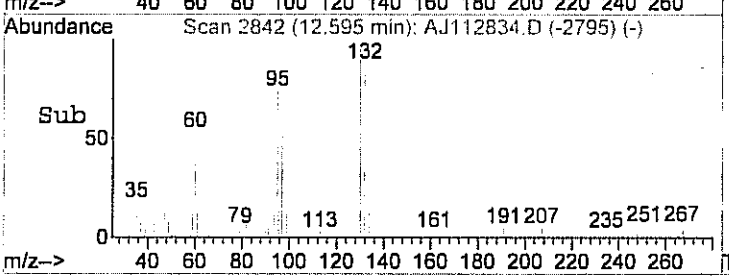
Tgt Ion: 43 Resp: 6724

Ion	Ratio	Lower	Upper
43	100		
57	57.8	35.2	75.2
71	66.8	47.1	87.1





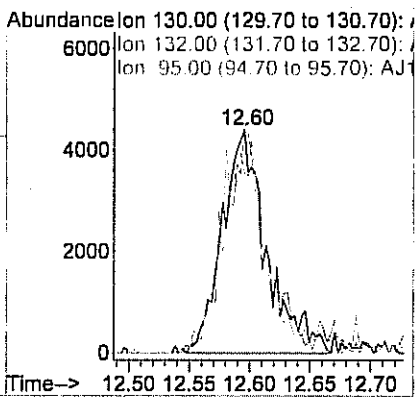


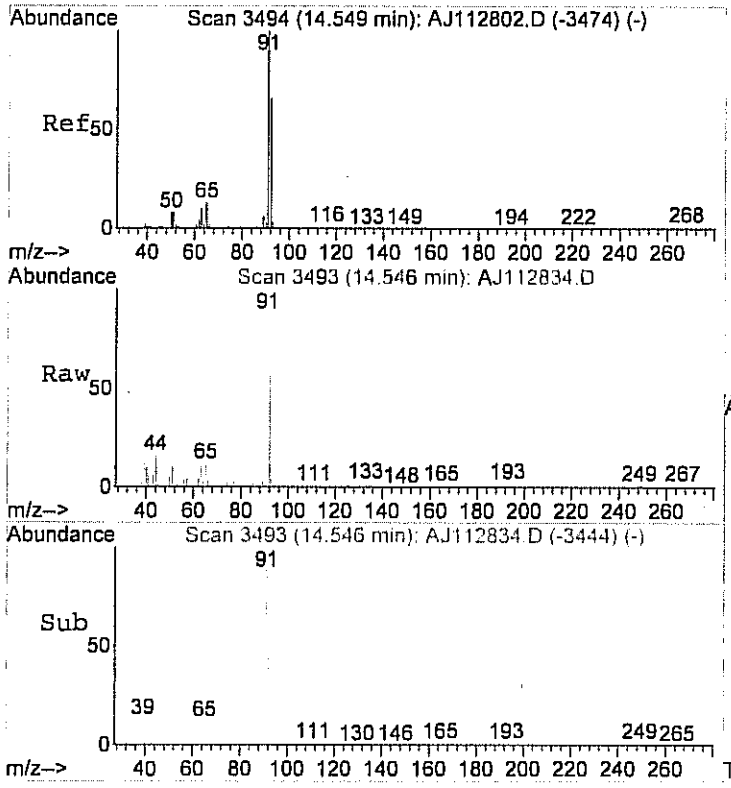


#42
Trichloroethene
Concen: 0.25 ppb
RT: 12.60 min Scan# 2842
Delta R.T. -0.01 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

Tgt Ion:130 Resp: 11184

Ion	Ratio	Lower	Upper
130	100		
132	101.1	75.5	115.5
95	94.5	83.5	123.5

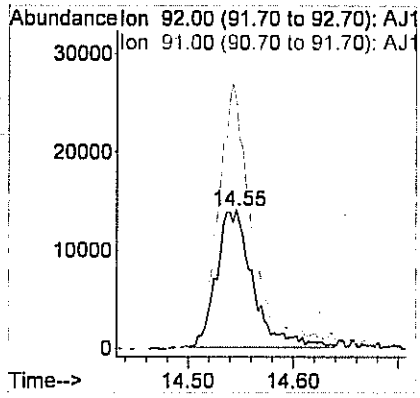


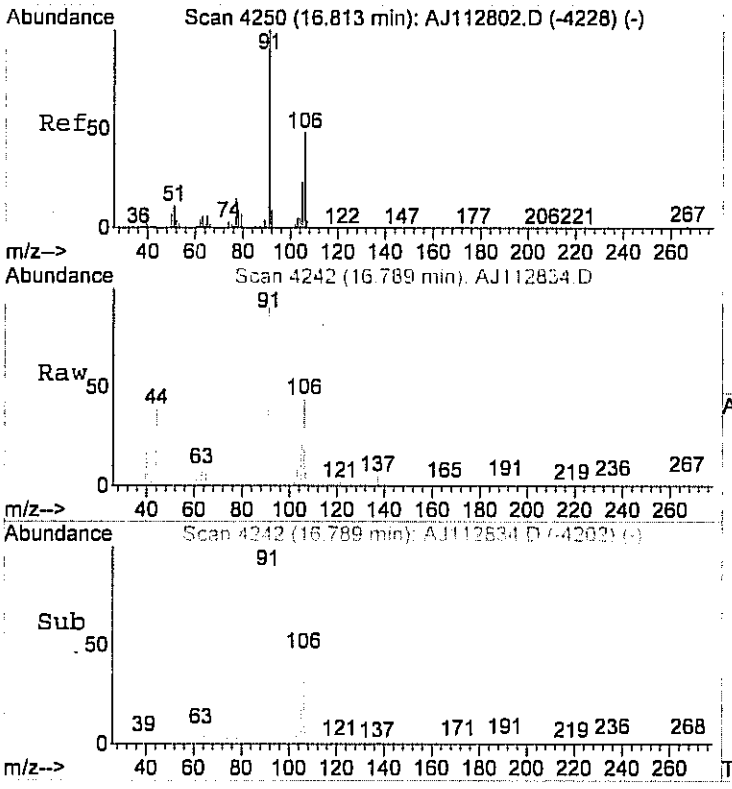


#49
Toluene
Concen: 0.69 ppb
RT: 14.55 min Scan# 3493
Delta R.T. -0.00 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

Tgt Ion: 92 Resp: 33402

Ion	Ratio	Lower	Upper
92	100		
91	190.2	160.2	200.2

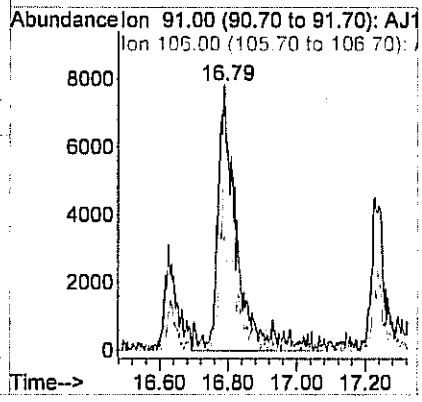




#57
m&p-xylene
Concen: 0.34 ppb m
RT: 16.79 min Scan# 4242
Delta R.T. -0.03 min
Lab File: AJ112834.D
Acq: 29 Nov 2012 4:55 am

Tgt Ion: 91 Resp: 30725

Ion	Ratio	Lower	Upper
91	100		
106	41.6	23.1	63.1



GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

STANDARDS DATA

GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

INITIAL CALIBRATION

Response Factor Report MSD #1

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Initial Calibration

Calibration Files
0.04 =AJ112315.D 0.10 =AJ112314.D 0.15 =AJ112311.D
0.30 =AJ112310.D 0.50 =AJ112309.D 0.75 =AJ112308.D

		Compound	0.04	0.10	0.15	0.30	0.50	0.75	Avg	%RSD
1)	I	Bromochloromethane	----------ISTD----------							
2)	T	Propylene			1.546	1.395	1.330	1.122	1.244	14.63
3)	T	Freon 12			1.113	0.939	0.862	0.836	0.880 E1	12.23
4)	T	Chloromethane			3.259	2.577	2.596	2.429	2.478	14.85
5)	T	Freon 114			9.740	8.225	7.852	7.723	7.725	12.61
6)	T	Vinyl Chloride	3.146	2.839	2.947	2.258	2.074	2.037	2.297	21.46
7)	T	1,3-butadiene			1.780	1.420	1.650	1.476	1.473	11.13
8)	T	Bromomethane			3.031	3.101	2.635	2.678	2.639	11.59
9)	T	Ethanol			0.754	0.696	0.762	0.461	0.620	17.45
10)	T	Acrolein			0.515	0.557	0.434	0.519	0.506	6.79
11)	T	Chloroethane			1.143	1.022	0.997	0.961	0.971	9.47
12)	T	Vinyl Bromide			3.133	2.832	2.662	2.707	2.653	10.22
13)	T	Freon 11			1.564	1.256	1.160	1.133	1.157 E1	16.13
14)	T	Acetone			1.244	0.869	0.733	0.735	0.906	18.78
15)	T	Isopropyl alcoh			3.296	2.432	2.147	2.379	2.384	16.60
16)	T	1,1-dichloroeth			2.715	2.537	2.352	2.299	2.265	11.83
17)	T	Freon 113			7.791	6.331	5.853	5.507	5.820	15.48
18)	t	t-Butyl alcohol			6.383	4.125	3.588	3.653	3.930	26.33
19)	T	Methylene chlor			2.510	2.172	1.858	1.887	1.936	14.47
20)	T	Allyl chloride			1.983	2.337	2.407	1.770	2.030	19.20
21)	T	Carbon disulfid			9.025	7.293	6.789	6.205	6.557	17.80
22)	T	trans-1,2-dichl			2.351	2.174	2.191	2.308	2.128	9.48
23)	T	methyl tert-but			3.956	3.298	3.049	3.301	3.437	7.70
24)	T	1,1-dichloroeth			3.289	2.827	2.765	2.563	2.685	10.61
25)	T	Vinyl acetate			2.118	1.801	1.855	1.476	1.807	9.90
26)	T	Methyl Ethyl Ke			0.599	0.458	0.422	0.397	0.477	13.34
27)	T	cis-1,2-dichlor			1.661	1.515	1.490	1.459	1.518	4.48
28)	T	Hexane			1.329	1.459	1.227	1.364	1.369	6.92
29)	T	Ethyl acetate			2.212	2.090	1.684	1.857	2.001	9.16
30)	T	Chloroform			5.161	4.226	4.069	3.863	4.087	11.51
31)	T	Tetrahydrofuran			1.019	0.971	0.857	0.811	0.846	11.81
32)	T	1,2-dichloroeth			3.319	2.968	2.705	2.746	2.842	7.67
33)	I	1,4-difluorobenzene	----------ISTD----------							
34)	T	1,1,1-trichloro			1.822	1.458	1.369	1.335	1.388	13.50
35)	T	Cyclohexane			0.250	0.215	0.203	0.204	0.214	7.10
36)	T	Carbon tetrachl	2.958	2.248	2.174	1.768	1.529	1.591	1.825	26.87
37)	T	Benzene			1.059	0.912	0.871	0.913	0.905	7.43
38)	T	Methyl methacry			0.336	0.291	0.266	0.210	0.271	13.97
39)	T	1,4-dioxane			0.173	0.175	0.135	0.139	0.147	12.04
40)	T	2,2,4-trimethyl			1.318	1.134	1.056	1.103	1.159	6.76
41)	T	Heptane			0.265	0.345	0.319	0.347	0.346	11.34
42)	T	Trichloroethene	0.805	0.585	0.631	0.489	0.480	0.478	0.538	20.24
43)	T	1,2-dichloropro			0.386	0.363	0.332	0.334	0.337	7.26
44)	T	Bromodichlorome			1.524	1.237	1.149	1.151	1.221	10.33
45)	T	cis-1,3-dichlor			0.544	0.418	0.432	0.430	0.479	10.10
46)	T	trans-1,3-dichl			0.507	0.499	0.431	0.498	0.477	6.67
47)	T	1,1,2-trichloro			0.598	0.505	0.468	0.469	0.490	9.26
48)	I	Chlorobenzene-d5	----------ISTD----------							
49)	T	Toluene			0.884	0.706	0.653	0.686	0.722	9.77
50)	T	Methyl Isobutyl			0.728	0.698	0.558	0.586	0.594	14.28
51)	T	Dibromochlorome			1.610	1.273	1.151	1.181	1.217	13.72

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report MSD #1

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Initial Calibration

Calibration Files
0.04 =AJ112315.D 0.10 =AJ112314.D 0.15 =AJ112311.D
0.30 =AJ112310.D 0.50 =AJ112309.D 0.75 =AJ112308.D

		Compound	0.04	0.10	0.15	0.30	0.50	0.75	Avg	%RSD
52)	T	Methyl Butyl Ke			0.466	0.631	0.476	0.439	0.467	18.74
53)	T	1,2-dibromoetha			0.930	0.754	0.701	0.709	0.755	9.77
54)	T	Tetrachloroethy			0.931	0.727	0.631	0.624	0.672	16.64
55)	T	Chlorobenzene			1.374	1.138	1.036	1.031	1.099	10.66
56)	T	Ethylbenzene			1.754	1.486	1.370	1.466	1.551	7.59
57)	T	m&p-xylene			1.289	1.179	1.144	1.274	1.342	10.43
58)	T	Styrene			0.661	0.764	0.708	0.742	0.793	10.99
59)	T	Bromoform			1.415	1.216	1.120	1.132	1.194	7.93
60)	T	o-xylene			1.905	1.676	1.482	1.684	1.845	11.40
61)	S	Bromofluorobenz	0.516	0.547	0.550	0.527	0.579	0.609	0.589	8.84
62)	T	1,1,2,2-tetrach			1.345	1.021	0.947	1.002	1.061	11.40
63)	T	2-Chlorotoluene			1.595	1.141	1.060	1.132	1.267	13.18
64)	T	4-ethyltoluene			1.391	1.268	1.125	1.323	1.455	15.33
65)	T	1,3,5-trimethyl			2.091	1.640	1.586	1.740	1.972	13.98
66)	T	1,2,4-trimethyl			1.554	1.168	1.080	1.280	1.426	16.33
67)	T	1,3-dichloroben			1.037	0.872	0.910	0.959	1.040	11.07
68)	T	benzyl chloride			0.969	0.897	0.730	0.893	0.999	15.89
69)	T	1,4-dichloroben			1.019	0.963	0.777	0.912	1.015	12.99
70)	T	1,2-dichloroben			1.183	0.883	0.928	0.971	1.047	10.38
71)	T	1,2,4-trichloro			0.685	0.593	0.489	0.536	0.582	11.06
72)	T	Naphthalene			1.290	0.959	0.935	0.944	1.099	14.95
73)	T	Hexachloro-1,3-			1.194	0.893	0.904	0.913	0.998	10.04

(#) = Out of Range ### Number of calibration levels exceeded format ###

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112304.D Vial: 1
Acq On : 23 Nov 2012 11:44 am Operator: RJP
Sample : A1UG_2.0 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 19:59:29 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.71	128	29278	1.00	ppb		-0.02
33) 1,4-difluorobenzene	11.97	114	110712	1.00	ppb		-0.01
48) Chlorobenzene-d5	16.34	117	106964	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	69216	1.01	ppb		-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 101.00%				
Target Compounds							Qvalue
2) Propylene	4.15	41	55723	1.69	ppb		92
3) Freon 12	4.20	85	444645	1.89	ppb		99
4) Chloromethane	4.40	50	117325	1.81	ppb		98
5) Freon 114	4.40	85	380117	1.84	ppb		92
6) Vinyl Chloride	4.58	62	100800	1.73	ppb		99
7) 1,3-butadiene	4.68	39	79977m	1.85	ppb		
8) Bromomethane	5.02	94	129901	1.80	ppb		98
9) Ethanol	5.36	45	35392m	2.10	ppb		
10) Acrolein	5.91	56	30094m	2.11	ppb		
11) Chloroethane	5.19	64	48573	1.88	ppb		99
12) Vinyl Bromide	5.52	106	131022	1.72	ppb		97
13) Freon 11	5.79	101	569646	1.84	ppb		95
14) Acetone	6.03	58	48334m	1.51	ppb		
15) Isopropyl alcohol	6.15	45	115886	1.80	ppb	#	32
16) 1,1-dichloroethene	6.53	96	114359	1.90	ppb		100
17) Freon 113	6.73	101	289956	1.83	ppb	#	83
18) t-Butyl alcohol	6.88	59	177830m	1.54	ppb		
19) Methylene chloride	6.99	84	93855	1.74	ppb		95
20) Allyl chloride	6.97	41	86243	1.66	ppb		98
21) Carbon disulfide	7.14	76	315525	1.77	ppb		95
22) trans-1,2-dichloroethene	7.92	61	106697	1.84	ppb	#	73
23) methyl tert-butyl ether	8.01	73	195115	1.90	ppb		89
24) 1,1-dichloroethane	8.34	63	138705	1.81	ppb		98
25) Vinyl acetate	8.37	43	103421	1.99	ppb		97
26) Methyl Ethyl Ketone	8.91	72	29514	2.03	ppb	#	100
27) cis-1,2-dichloroethene	9.27	61	84990	1.86	ppb		98
28) Hexane	8.87	57	81170	1.96	ppb		89
29) Ethyl acetate	9.50	43	115780	1.83	ppb		100
30) Chloroform	9.86	83	215240	1.81	ppb		97
31) Tetrahydrofuran	10.14	42	44266	1.86	ppb		94
32) 1,2-dichloroethane	10.98	62	154000	1.84	ppb		98
34) 1,1,1-trichloroethane	10.68	97	275719	1.99	ppb		100
35) Cyclohexane	8.87	56	45616	2.05	ppb		91
36) Carbon tetrachloride	11.33	117	327718	1.98	ppb		92
37) Benzene	11.30	78	193694	2.04	ppb		91
38) Methyl methacrylate	12.85	41	63154	2.25	ppb		98
39) 1,4-dioxane	12.97	88	31666	2.19	ppb		77
40) 2,2,4-trimethylpentane	12.13	57	263858	2.14	ppb		97
41) Heptane	12.47	43	84829	2.17	ppb		98
42) Trichloroethene	12.58	130	103420	1.99	ppb		98
43) 1,2-dichloropropane	12.69	63	72441	2.13	ppb		96
44) Bromodichloromethane	13.00	83	259258	2.02	ppb		99
45) cis-1,3-dichloropropene	13.76	75	114982	2.21	ppb		94

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112304.D Vial: 1
Acq On : 23 Nov 2012 11:44 am Operator: RJP
Sample : A1UG_2.0 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 19:59:29 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

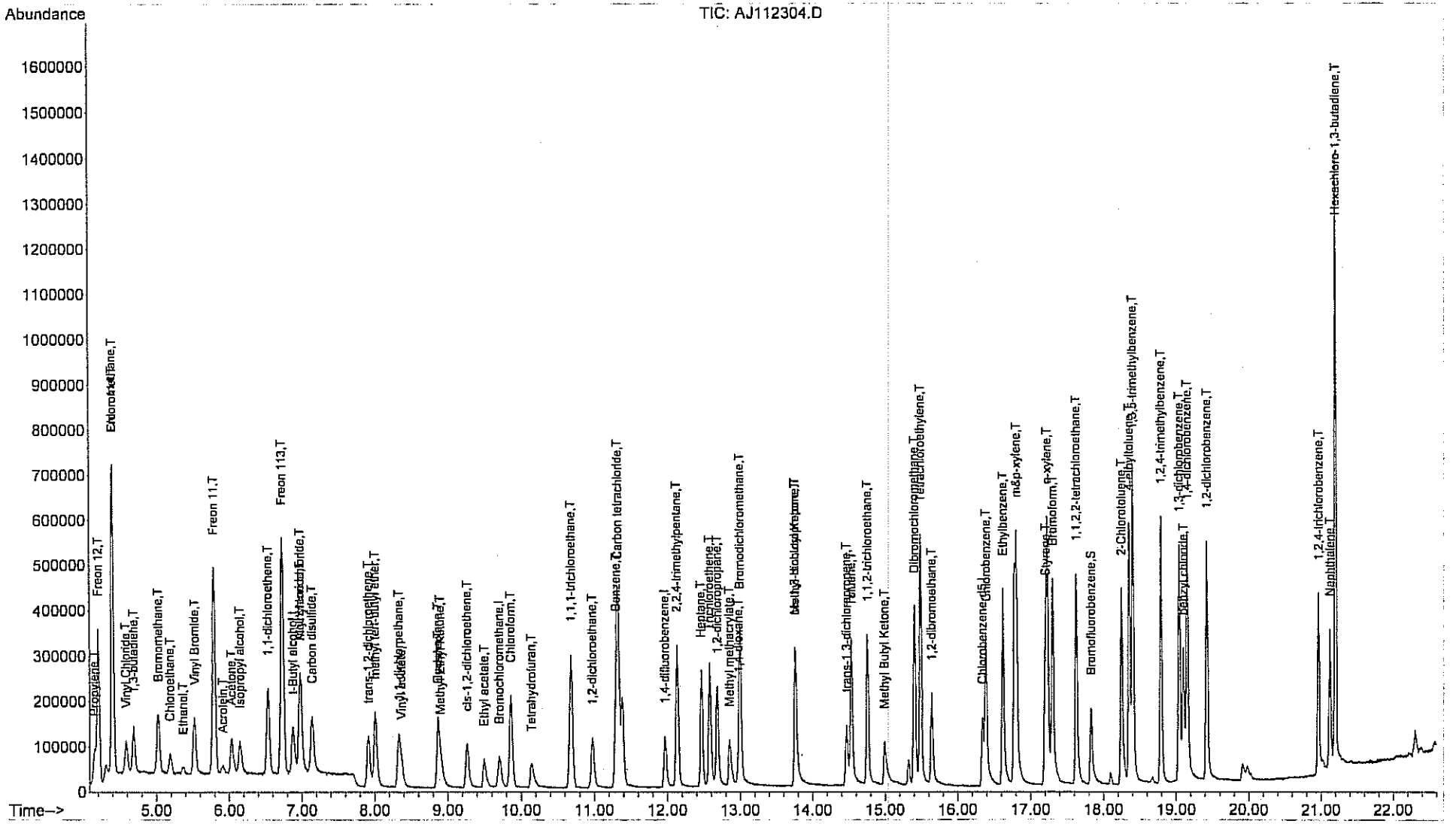
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.47	75	109384	2.23	ppb		94
47)	1,1,2-trichloroethane	14.76	97	104582	2.16	ppb		95
49)	Toluene	14.54	92	152771	2.03	ppb		94
50)	Methyl Isobutyl Ketone	13.76	43	125197	1.98	ppb		67
51)	Dibromochloromethane	15.41	129	234927	1.91	ppb		96
52)	Methyl Butyl Ketone	14.99	43	102993	1.83	ppb	#	37
53)	1,2-dibromoethane	15.65	107	152855	1.96	ppb		97
54)	Tetrachloroethylene	15.49	164	127239	1.95	ppb		99
55)	Chlorobenzene	16.39	112	217562	1.97	ppb		97
56)	Ethylbenzene	16.62	91	345359	2.15	ppb		99
57)	m&p-xylene	16.81	91	637344	4.35	ppb		94
58)	Styrene	17.20	104	189413	2.16	ppb		93
59)	Bromoform	17.30	173	245069	2.01	ppb		97
60)	o-xylene	17.23	91	445096	2.25	ppb		100
62)	1,1,2,2-tetrachloroethane	17.63	83	217957	1.96	ppb		96
63)	2-Chlorotoluene	18.25	91	284331	1.98	ppb		98
64)	4-ethyltoluene	18.36	105	365975m	2.08	ppb		
65)	1,3,5-trimethylbenzene	18.40	105	473080m	2.16	ppb		
66)	1,2,4-trimethylbenzene	18.79	105	365143	2.32	ppb		99
67)	1,3-dichlorobenzene	19.05	146	250503	2.20	ppb		98
68)	benzyl chloride	19.10	91	260055	2.30	ppb		95
69)	1,4-dichlorobenzene	19.16	146	250596	2.27	ppb		97
70)	1,2-dichlorobenzene	19.42	146	244788	2.17	ppb		96
71)	1,2,4-trichlorobenzene	20.96	180	138312	2.11	ppb	#	1
72)	Naphthalene	21.12	128	278434	2.18	ppb		95
73)	Hexachloro-1,3-butadiene	21.20	225	222831	2.05	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112304.D Vial: 1
Acq On : 23 Nov 2012 11:44 am Operator: RJP
Sample : A1UG_2.0 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 27 15:50 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112305.D Vial: 2
Acq On : 23 Nov 2012 12:22 pm Operator: RJP
Sample : A1UG_1.5 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 19:59:53 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.70	128	28669	1.00	ppb		-0.02
33) 1,4-difluorobenzene	11.97	114	110020	1.00	ppb		-0.01
48) Chlorobenzene-d5	16.35	117	103521	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.84	95	67541	1.02	ppb		0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 102.00%				
Target Compounds							Qvalue
2) Propylene	4.15	41	52807	1.64	ppb		84
3) Freon 12	4.20	85	365265	1.59	ppb		99
4) Chloromethane	4.39	50	97048	1.53	ppb		99
5) Freon 114	4.39	85	303014	1.50	ppb		93
6) Vinyl Chloride	4.58	62	85556	1.50	ppb		98
7) 1,3-butadiene	4.68	39	62626m	1.48	ppb		
8) Bromomethane	5.02	94	103890	1.47	ppb		99
9) Ethanol	5.36	45	24674m	1.49	ppb		
10) Acrolein	5.91	56	21355	1.53	ppb		80
11) Chloroethane	5.19	64	39112	1.55	ppb		95
12) Vinyl Bromide	5.52	106	108738	1.46	ppb		95
13) Freon 11	5.79	101	443659	1.46	ppb		94
14) Acetone	6.03	58	41075m	1.31	ppb		
15) Isopropyl alcohol	6.15	45	97277	1.54	ppb		85
16) 1,1-dichloroethene	6.54	96	91754	1.55	ppb		99
17) Freon 113	6.73	101	229261	1.48	ppb	#	83
18) t-Butyl alcohol	6.87	59	156593	1.39	ppb	#	77
19) Methylene chloride	6.98	84	78174	1.48	ppb		97
20) Allyl chloride	6.97	41	76000	1.49	ppb		94
21) Carbon disulfide	7.15	76	251133	1.44	ppb		96
22) trans-1,2-dichloroethene	7.91	61	79857	1.40	ppb	#	76
23) methyl tert-butyl ether	8.01	73	151120	1.51	ppb		86
24) 1,1-dichloroethane	8.33	63	108608	1.45	ppb		97
25) Vinyl acetate	8.37	43	81784	1.61	ppb		96
26) Methyl Ethyl Ketone	8.91	72	21766	1.53	ppb	#	100
27) cis-1,2-dichloroethene	9.26	61	65548	1.47	ppb		98
28) Hexane	8.87	57	62927	1.55	ppb		87
29) Ethyl acetate	9.50	43	92420	1.49	ppb		98
30) Chloroform	9.86	83	170304	1.47	ppb		100
31) Tetrahydrofuran	10.15	42	35252	1.51	ppb		97
32) 1,2-dichloroethane	10.98	62	119477	1.46	ppb		99
34) 1,1,1-trichloroethane	10.69	97	213206	1.55	ppb		99
35) Cyclohexane	8.88	56	35664	1.61	ppb		89
36) Carbon tetrachloride	11.33	117	246890	1.50	ppb		93
37) Benzene	11.30	78	143931	1.53	ppb		89
38) Methyl methacrylate	12.86	41	47186	1.69	ppb		95
39) 1,4-dioxane	12.98	88	24223	1.69	ppb		84
40) 2,2,4-trimethylpentane	12.14	57	195745	1.60	ppb		97
41) Heptane	12.47	43	63573	1.64	ppb		98
42) Trichloroethene	12.59	130	81283	1.58	ppb		99
43) 1,2-dichloropropane	12.68	63	52025	1.54	ppb		94
44) Bromodichloromethane	13.00	83	196213	1.54	ppb		99
45) cis-1,3-dichloropropene	13.77	75	85964	1.66	ppb		95

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112305.D Vial: 2
Acq On : 23 Nov 2012 12:22 pm Operator: RJP
Sample : A1UG_1.5 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 19:59:53 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.47	75	80957	1.66	ppb		96
47)	1,1,2-trichloroethane	14.76	97	77401	1.61	ppb		96
49)	Toluene	14.54	92	110543	1.52	ppb		97
50)	Methyl Isobutyl Ketone	13.76	43	93355	1.53	ppb		67
51)	Dibromochloromethane	15.41	129	176267	1.48	ppb		95
52)	Methyl Butyl Ketone	15.00	43	77794	1.43	ppb	#	39
53)	1,2-dibromoethane	15.65	107	114276	1.51	ppb		96
54)	Tetrachloroethylene	15.49	164	96033	1.52	ppb		100
55)	Chlorobenzene	16.39	112	162603	1.52	ppb		99
56)	Ethylbenzene	16.63	91	249421	1.60	ppb		98
57)	m&p-xylene	16.81	91	457811	3.23	ppb		94
58)	Styrene	17.20	104	138393	1.63	ppb		92
59)	Bromoform	17.31	173	183204	1.55	ppb		95
60)	o-xylene	17.23	91	315123	1.65	ppb		100
62)	1,1,2,2-tetrachloroethane	17.63	83	164879	1.53	ppb		98
63)	2-Chlorotoluene	18.25	91	204114	1.47	ppb		99
64)	4-ethyltoluene	18.36	105	267797m	1.58	ppb		
65)	1,3,5-trimethylbenzene	18.40	105	349828m	1.65	ppb		
66)	1,2,4-trimethylbenzene	18.79	105	257008	1.69	ppb		98
67)	1,3-dichlorobenzene	19.05	146	178255	1.62	ppb		99
68)	benzyl chloride	19.10	91	177273	1.62	ppb		97
69)	1,4-dichlorobenzene	19.16	146	175373	1.64	ppb		99
70)	1,2-dichlorobenzene	19.43	146	172196	1.57	ppb		96
71)	1,2,4-trichlorobenzene	20.97	180	94230	1.48	ppb	#	1
72)	Naphthalene	21.13	128	186705	1.51	ppb		96
73)	Hexachloro-1,3-butadiene	21.20	225	162300	1.54	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

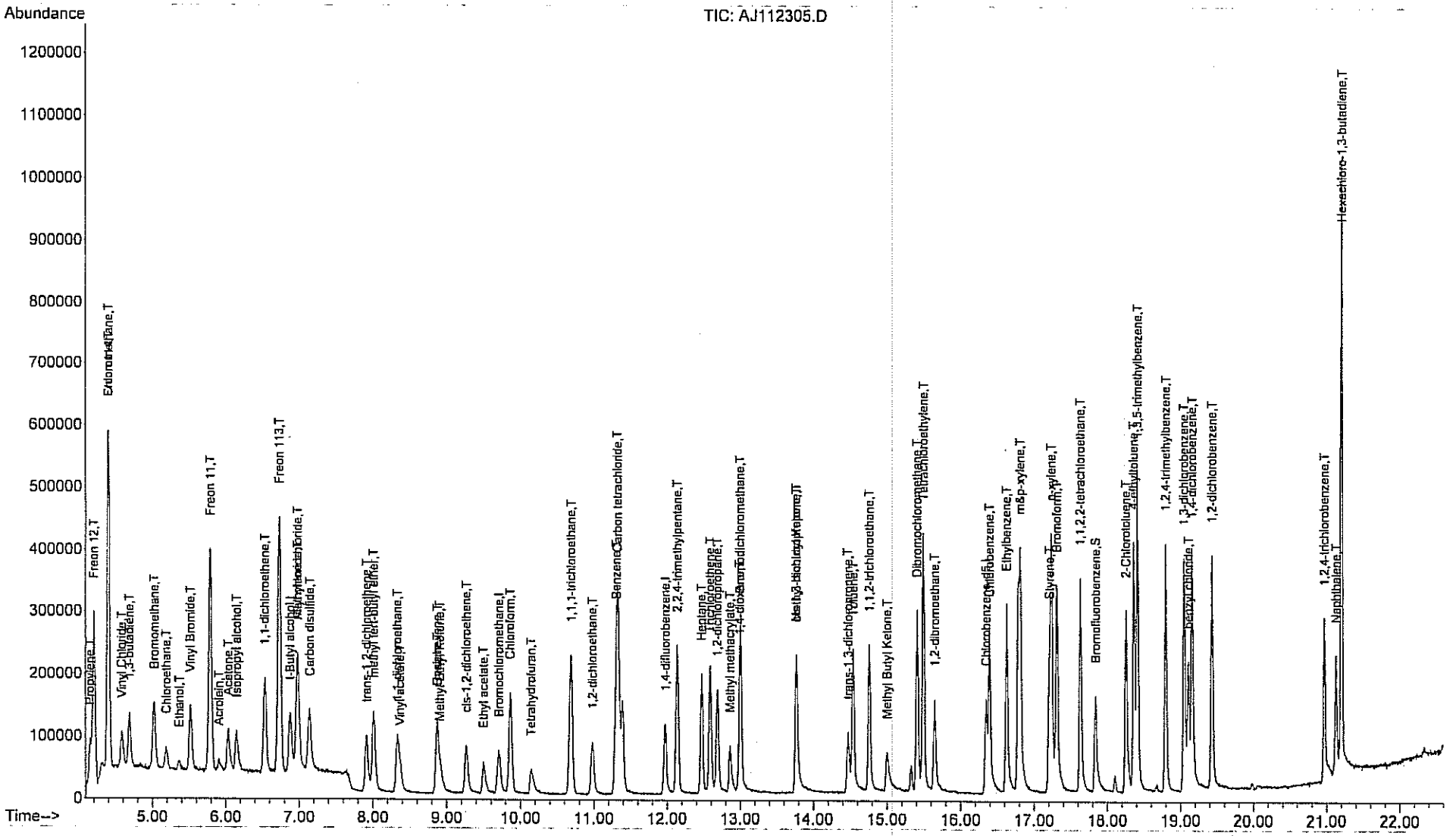
Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112305.D
Acq On : 23 Nov 2012 12:22 pm
Sample : A1UG_1.5
Misc : AN06_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 27 15:51 2012

Vial: 2
Operator: RJP
Inst : MSD #1
Multiplr: 1.00

Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



AJ112305.D AN23_1UG.M Fri Dec 14 12:45:22 2012 MSD1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112306.D Vial: 3
Acq On : 23 Nov 2012 1:01 pm Operator: RJP
Sample : A1UG_1.25 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:00:32 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.70	128	27803	1.00	ppb		-0.02
33) 1,4-difluorobenzene	11.97	114	108604	1.00	ppb		-0.01
48) Chlorobenzene-d5	16.35	117	98781	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	64146	1.01	ppb		-0.02
Spiked Amount 1.000	Range 70 - 130		Recovery = 101.00%				
Target Compounds							Qvalue
2) Propylene	4.14	41	43070	1.38	ppb		86
3) Freon 12	4.20	85	305475	1.37	ppb		100
4) Chloromethane	4.39	50	83591	1.36	ppb		100
5) Freon 114	4.39	85	262341	1.34	ppb		92
6) Vinyl Chloride	4.59	62	70607	1.28	ppb		95
7) 1,3-butadiene	4.68	39	46383	1.13	ppb		97
8) Bromomethane	5.02	94	91592	1.33	ppb		98
9) Ethanol	5.36	45	20457m	1.28	ppb		
10) Acrolein	5.92	56	17383	1.28	ppb		86
11) Chloroethane	5.19	64	34024	1.39	ppb		95
12) Vinyl Bromide	5.52	106	94192	1.30	ppb		99
13) Freon 11	5.79	101	382521	1.30	ppb		95
14) Acetone	6.03	58	35942m	1.18	ppb		
15) Isopropyl alcohol	6.15	45	81891	1.34	ppb	#	32
16) 1,1-dichloroethene	6.53	96	75513	1.32	ppb		100
17) Freon 113	6.73	101	194826	1.30	ppb	#	83
18) t-Butyl alcohol	6.88	59	124639	1.14	ppb	#	78
19) Methylene chloride	6.98	84	64416	1.26	ppb		95
20) Allyl chloride	6.97	41	91294	1.85	ppb		78
21) Carbon disulfide	7.15	76	215795	1.28	ppb		98
22) trans-1,2-dichloroethene	7.91	61	70984	1.29	ppb	#	74
23) methyl tert-butyl ether	8.02	73	123095	1.27	ppb		87
24) 1,1-dichloroethane	8.33	63	91821	1.26	ppb		95
25) Vinyl acetate	8.37	43	60582	1.23	ppb		93
26) Methyl Ethyl Ketone	8.91	72	17155	1.24	ppb	#	100
27) cis-1,2-dichloroethene	9.26	61	54294	1.25	ppb		96
28) Hexane	8.87	57	51095	1.30	ppb		89
29) Ethyl acetate	9.50	43	74956	1.25	ppb		96
30) Chloroform	9.86	83	139989	1.24	ppb		100
31) Tetrahydrofuran	10.16	42	27624	1.22	ppb		97
32) 1,2-dichloroethane	10.98	62	99149	1.25	ppb		98
34) 1,1,1-trichloroethane	10.68	97	178634	1.31	ppb		99
35) Cyclohexane	8.87	56	28454	1.30	ppb		92
36) Carbon tetrachloride	11.33	117	207156	1.27	ppb		92
37) Benzene	11.30	78	121896	1.31	ppb		92
38) Methyl methacrylate	12.86	41	34091	1.24	ppb		94
39) 1,4-dioxane	12.98	88	17402m	1.23	ppb		
40) 2,2,4-trimethylpentane	12.14	57	158058	1.31	ppb		95
41) Heptane	12.48	43	50001	1.30	ppb		98
42) Trichloroethene	12.59	130	66840	1.31	ppb		99
43) 1,2-dichloropropane	12.68	63	43643	1.31	ppb		93
44) Bromodichloromethane	13.00	83	161652	1.28	ppb		96
45) cis-1,3-dichloropropene	13.76	75	67374	1.32	ppb		96

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112306.D Vial: 3
Acq On : 23 Nov 2012 1:01 pm Operator: RJP
Sample : A1UG_1.25 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:00:32 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

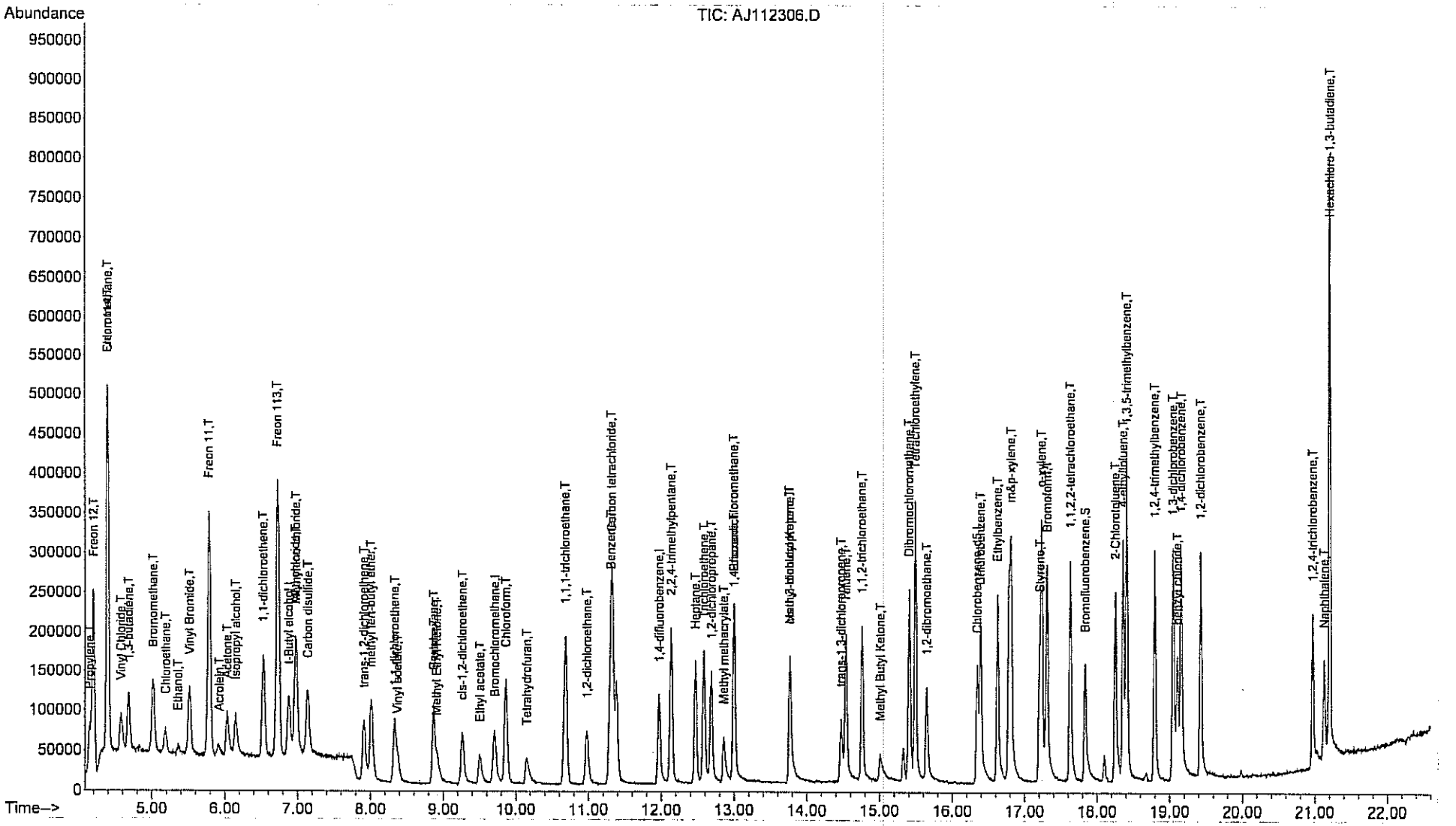
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.46	75	64506	1.34	ppb		95
47)	1,1,2-trichloroethane	14.76	97	64505	1.36	ppb		96
49)	Toluene	14.53	92	91653	1.32	ppb		93
50)	Methyl Isobutyl Ketone	13.76	43	64089	1.10	ppb		71
51)	Dibromochloromethane	15.41	129	138684m	1.22	ppb		
52)	Methyl Butyl Ketone	15.00	43	38902	0.75	ppb	#	50
53)	1,2-dibromoethane	15.64	107	93756	1.30	ppb		98
54)	Tetrachloroethylene	15.49	164	76230	1.27	ppb		99
55)	Chlorobenzene	16.39	112	132804	1.30	ppb		98
56)	Ethylbenzene	16.62	91	197673	1.33	ppb		98
57)	m&p-xylene	16.80	91	367627	2.72	ppb		94
58)	Styrene	17.20	104	107212	1.33	ppb		91
59)	Bromoform	17.31	173	146722	1.30	ppb		96
60)	o-xylene	17.23	91	248475	1.36	ppb		98
62)	1,1,2,2-tetrachloroethane	17.63	83	132462	1.29	ppb		96
63)	2-Chlorotoluene	18.25	91	163578	1.23	ppb		98
64)	4-ethyltoluene	18.36	105	205544m	1.27	ppb		
65)	1,3,5-trimethylbenzene	18.40	105	275160m	1.36	ppb		
66)	1,2,4-trimethylbenzene	18.80	105	194748	1.34	ppb		96
67)	1,3-dichlorobenzene	19.04	146	141033	1.34	ppb		99
68)	benzyl chloride	19.10	91	137706	1.32	ppb		96
69)	1,4-dichlorobenzene	19.15	146	139993	1.37	ppb		99
70)	1,2-dichlorobenzene	19.42	146	137116	1.31	ppb		99
71)	1,2,4-trichlorobenzene	20.97	180	70192	1.16	ppb	#	1
72)	Naphthalene	21.13	128	148024m	1.25	ppb		
73)	Hexachloro-1,3-butadiene	21.20	225	124919	1.24	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112306.D Vial: 3
Acq On : 23 Nov 2012 1:01 pm Operator: RJP
Sample : A1UG_1.25 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 27 15:53 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



AJ112306.D AN23_1UG.M Fri Dec 14 12:45:25 2012 MSD1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112307.D Vial: 4
Acq On : 23 Nov 2012 1:38 pm Operator: RJP
Sample : A1UG_1.0 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:01:00 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.70	128	28444	1.00	ppb		-0.03
33) 1,4-difluorobenzene	11.97	114	107016	1.00	ppb		-0.02
48) Chlorobenzene-d5	16.35	117	96989	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	59266	0.95	ppb		-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 95.00%				
Target Compounds							Qvalue
2) Propylene	4.15	41	32534	1.02	ppb		92
3) Freon 12	4.20	85	229237	1.00	ppb		100
4) Chloromethane	4.39	50	65324	1.04	ppb		99
5) Freon 114	4.39	85	204034	1.02	ppb		91
6) Vinyl Chloride	4.57	62	54899	0.97	ppb		97
7) 1,3-butadiene	4.68	39	37071m	0.88	ppb		
8) Bromomethane	5.01	94	68099	0.97	ppb		97
9) Ethanol	5.36	45	14839m	0.90	ppb		
10) Acrolein	5.92	56	14480	1.04	ppb	#	74
11) Chloroethane	5.18	64	26270	1.05	ppb		96
12) Vinyl Bromide	5.51	106	68588	0.93	ppb		96
13) Freon 11	5.79	101	294595	0.98	ppb		95
14) Acetone	6.03	58	24346	0.78	ppb	#	76
15) Isopropyl alcohol	6.14	45	63127	1.01	ppb	#	32
16) 1,1-dichloroethene	6.53	96	55682	0.95	ppb		92
17) Freon 113	6.72	101	147651	0.96	ppb	#	84
18) t-Butyl alcohol	6.88	59	97559	0.87	ppb	#	71
19) Methylene chloride	6.99	84	50717	0.97	ppb		96
20) Allyl chloride	6.96	41	53456m	1.06	ppb		
21) Carbon disulfide	7.14	76	162324	0.94	ppb		97
22) trans-1,2-dichloroethene	7.91	61	64813	1.15	ppb		86
23) methyl tert-butyl ether	8.02	73	99565	1.00	ppb		87
24) 1,1-dichloroethane	8.33	63	71076	0.95	ppb		97
25) Vinyl acetate	8.37	43	51046	1.01	ppb		95
26) Methyl Ethyl Ketone	8.91	72	12332	0.87	ppb	#	100
27) cis-1,2-dichloroethene	9.26	61	42148	0.95	ppb		98
28) Hexane	8.87	57	35646	0.89	ppb	#	76
29) Ethyl acetate	9.51	43	53465	0.87	ppb		97
30) Chloroform	9.85	83	105704	0.92	ppb		97
31) Tetrahydrofuran	10.15	42	21019	0.91	ppb		97
32) 1,2-dichloroethane	10.98	62	77834	0.96	ppb		100
34) 1,1,1-trichloroethane	10.69	97	135692	1.01	ppb		100
35) Cyclohexane	8.87	56	22636	1.05	ppb		90
36) Carbon tetrachloride	11.33	117	158588	0.99	ppb		93
37) Benzene	11.30	78	89499	0.98	ppb		96
38) Methyl methacrylate	12.86	41	25910	0.95	ppb		92
39) 1,4-dioxane	12.99	88	14460m	1.03	ppb		
40) 2,2,4-trimethylpentane	12.13	57	120015	1.01	ppb		97
41) Heptane	12.47	43	37670	1.00	ppb		99
42) Trichloroethene	12.58	130	49230	0.98	ppb		95
43) 1,2-dichloropropane	12.69	63	34309	1.04	ppb		95
44) Bromodichloromethane	13.00	83	123365	0.99	ppb		98
45) cis-1,3-dichloropropene	13.77	75	50805	1.01	ppb		94

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112307.D Vial: 4
Acq On : 23 Nov 2012 1:38 pm Operator: RJP
Sample : A1UG_1.0 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:01:00 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.46	75	45489	0.96	ppb		99
47)	1,1,2-trichloroethane	14.76	97	49930	1.07	ppb		99
49)	Toluene	14.54	92	65902	0.97	ppb		98
50)	Methyl Isobutyl Ketone	13.76	43	45961	0.80	ppb	#	62
51)	Dibromochloromethane	15.41	129	113136	1.01	ppb		97
52)	Methyl Butyl Ketone	15.01	43	41658m	0.82	ppb		
53)	1,2-dibromoethane	15.65	107	71641	1.01	ppb		97
54)	Tetrachloroethylene	15.49	164	61441	1.04	ppb		94
55)	Chlorobenzene	16.39	112	104399	1.04	ppb		99
56)	Ethylbenzene	16.62	91	146506	1.01	ppb		97
57)	m&p-xylene	16.81	91	271187	2.04	ppb		95
58)	Styrene	17.21	104	80335	1.01	ppb		88
59)	Bromoform	17.30	173	111973	1.01	ppb		97
60)	o-xylene	17.23	91	183404	1.02	ppb		99
62)	1,1,2,2-tetrachloroethane	17.63	83	98919	0.98	ppb		96
63)	2-Chlorotoluene	18.25	91	120319	0.92	ppb		98
64)	4-ethyltoluene	18.36	105	138857m	0.87	ppb		
65)	1,3,5-trimethylbenzene	18.41	105	196662m	0.99	ppb		
66)	1,2,4-trimethylbenzene	18.79	105	134252	0.94	ppb		92
67)	1,3-dichlorobenzene	19.04	146	104840	1.02	ppb		99
68)	benzyl chloride	19.10	91	100112	0.98	ppb		95
69)	1,4-dichlorobenzene	19.15	146	98101	0.98	ppb		94
70)	1,2-dichlorobenzene	19.43	146	101840	0.99	ppb		96
71)	1,2,4-trichlorobenzene	20.97	180	51620	0.87	ppb	#	1
72)	Naphthalene	21.13	128	92889	0.80	ppb		96
73)	Hexachloro-1,3-butadiene	21.20	225	94816	0.96	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

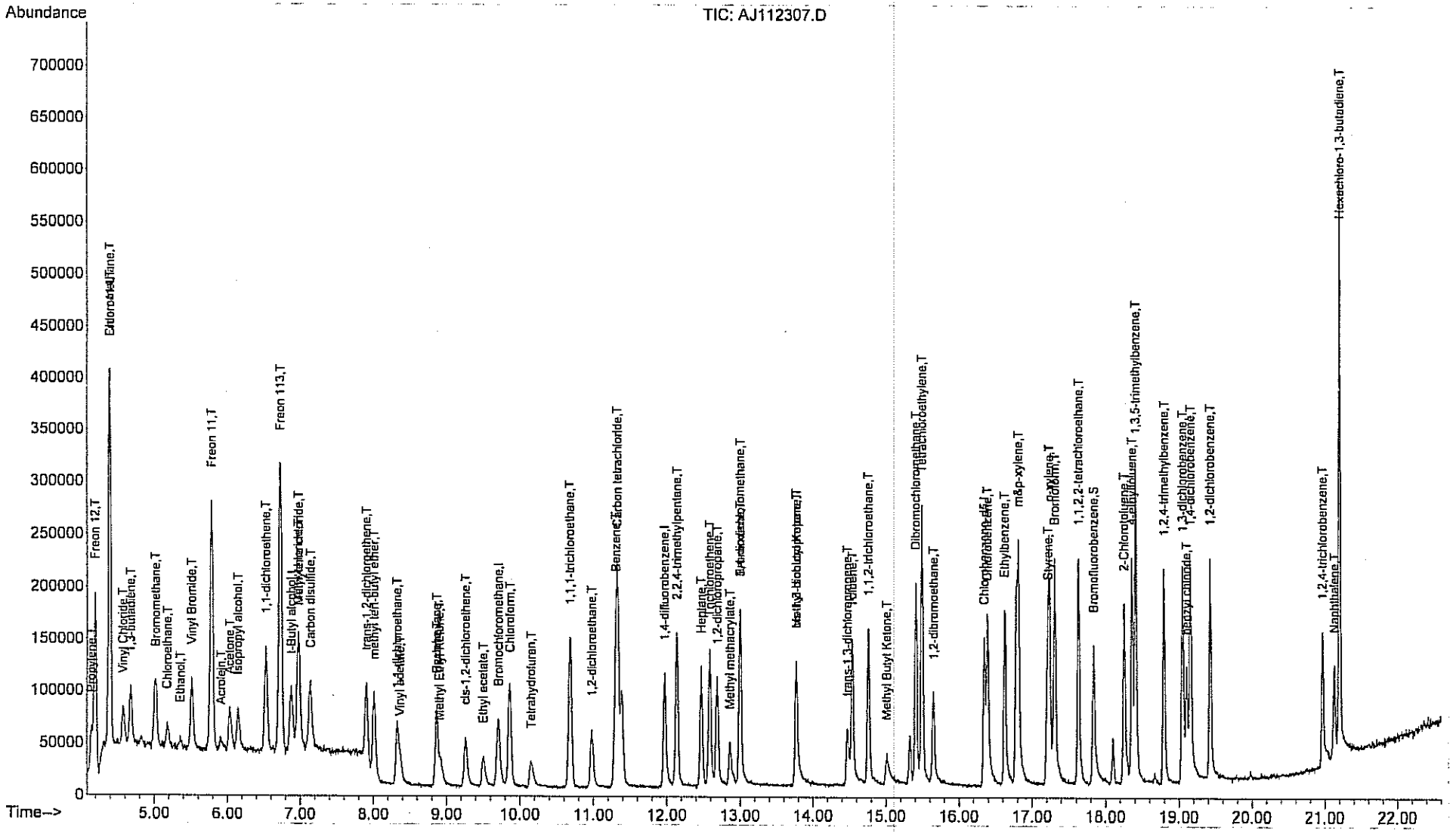
Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112307.D
Acq On : 23 Nov 2012 1:38 pm
Sample : A1UG_1.0
Misc : AN06_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 27 15:54 2012

Vial: 4
Operator: RJP
Inst : MSD #1
Multiplr: 1.00

Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112308.D Vial: 5
Acq On : 23 Nov 2012 2:15 pm Operator: RJP
Sample : A1UG_0.75 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:01:26 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.70	128	27448	1.00	ppb		-0.02
33) 1,4-difluorobenzene	11.97	114	101912	1.00	ppb		-0.01
48) Chlorobenzene-d5	16.35	117	92795	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.84	95	56525	0.95	ppb		0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 95.00%				
Target Compounds							Qvalue
2) Propylene	4.15	41	23105	0.75	ppb		83
3) Freon 12	4.20	85	172051	0.78	ppb		100
4) Chloromethane	4.39	50	50011	0.82	ppb		98
5) Freon 114	4.39	85	158989	0.82	ppb		91
6) Vinyl Chloride	4.58	62	41924	0.77	ppb		95
7) 1,3-butadiene	4.67	39	30377	0.75	ppb		100
8) Bromomethane	5.01	94	55128	0.81	ppb		98
9) Ethanol	5.36	45	9495	0.60	ppb		85
10) Acrolein	5.92	56	10682	0.80	ppb	#	75
11) Chloroethane	5.19	64	19782	0.82	ppb		97
12) Vinyl Bromide	5.51	106	55728	0.78	ppb		99
13) Freon 11	5.78	101	233215	0.80	ppb		95
14) Acetone	6.04	58	15127	0.50	ppb	#	44
15) Isopropyl alcohol	6.16	45	48968	0.81	ppb	#	32
16) 1,1-dichloroethene	6.54	96	47331	0.84	ppb		97
17) Freon 113	6.72	101	113375	0.76	ppb	#	85
18) t-Butyl alcohol	6.88	59	75195	0.70	ppb	#	71
19) Methylene chloride	6.98	84	38839	0.77	ppb		97
20) Allyl chloride	6.97	41	36437	0.75	ppb		97
21) Carbon disulfide	7.13	76	127738	0.77	ppb		92
22) trans-1,2-dichloroethene	7.91	61	47505	0.87	ppb		81
23) methyl tert-butyl ether	8.01	73	67954	0.71	ppb		90
24) 1,1-dichloroethane	8.33	63	52761	0.73	ppb		97
25) Vinyl acetate	8.38	43	30375	0.62	ppb		97
26) Methyl Ethyl Ketone	8.93	72	8173	0.60	ppb	#	100
27) cis-1,2-dichloroethene	9.26	61	30034	0.70	ppb		97
28) Hexane	8.86	57	28083	0.72	ppb	#	85
29) Ethyl acetate	9.50	43	38219	0.64	ppb		96
30) Chloroform	9.86	83	79528	0.71	ppb		100
31) Tetrahydrofuran	10.15	42	16696m	0.75	ppb		
32) 1,2-dichloroethane	10.98	62	56530	0.72	ppb		96
34) 1,1,1-trichloroethane	10.68	97	102008	0.80	ppb		100
35) Cyclohexane	8.87	56	15574	0.76	ppb	#	81
36) Carbon tetrachloride	11.32	117	121593	0.80	ppb		93
37) Benzene	11.30	78	69786	0.80	ppb		98
38) Methyl methacrylate	12.87	41	16065	0.62	ppb		86
39) 1,4-dioxane	13.00	88	10655m	0.80	ppb		
40) 2,2,4-trimethylpentane	12.14	57	84271	0.74	ppb		96
41) Heptane	12.47	43	26486	0.74	ppb		96
42) Trichloroethene	12.59	130	36518	0.76	ppb		98
43) 1,2-dichloropropane	12.68	63	25502	0.81	ppb		97
44) Bromodichloromethane	12.99	83	88009	0.75	ppb		100
45) cis-1,3-dichloropropene	13.77	75	32831	0.68	ppb		98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112308.D Vial: 5
Acq On : 23 Nov 2012 2:15 pm Operator: RJP
Sample : A1UG_0.75 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:01:26 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_TO15

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.48	75	38047m	0.84	ppb		
47)	1,1,2-trichloroethane	14.76	97	35844	0.80	ppb		97
49)	Toluene	14.54	92	47720	0.73	ppb		90
50)	Methyl Isobutyl Ketone	13.77	43	40780m	0.74	ppb		
51)	Dibromochloromethane	15.41	129	82186	0.77	ppb		98
52)	Methyl Butyl Ketone	15.02	43	30519m	0.63	ppb		
53)	1,2-dibromoethane	15.65	107	49338	0.73	ppb		96
54)	Tetrachloroethylene	15.49	164	43402	0.77	ppb		99
55)	Chlorobenzene	16.39	112	71765	0.75	ppb		98
56)	Ethylbenzene	16.63	91	101996	0.73	ppb		97
57)	m&p-xylene	16.81	91	177310	1.40	ppb		96
58)	Styrene	17.20	104	51633	0.68	ppb		93
59)	Bromoform	17.31	173	78794	0.74	ppb		98
60)	o-xylene	17.23	91	117178	0.68	ppb		97
62)	1,1,2,2-tetrachloroethane	17.63	83	69742	0.72	ppb		94
63)	2-Chlorotoluene	18.25	91	78764	0.63	ppb		94
64)	4-ethyltoluene	18.36	105	92098m	0.60	ppb		
65)	1,3,5-trimethylbenzene	18.41	105	121124m	0.64	ppb		
66)	1,2,4-trimethylbenzene	18.80	105	89111	0.65	ppb		94
67)	1,3-dichlorobenzene	19.05	146	66720	0.68	ppb		99
68)	benzyl chloride	19.10	91	62153	0.63	ppb		99
69)	1,4-dichlorobenzene	19.16	146	63492	0.66	ppb		98
70)	1,2-dichlorobenzene	19.43	146	67546	0.69	ppb		98
71)	1,2,4-trichlorobenzene	20.97	180	37295m	0.65	ppb		
72)	Naphthalene	21.13	128	65693m	0.59	ppb		
73)	Hexachloro-1,3-butadiene	21.20	225	63553	0.67	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

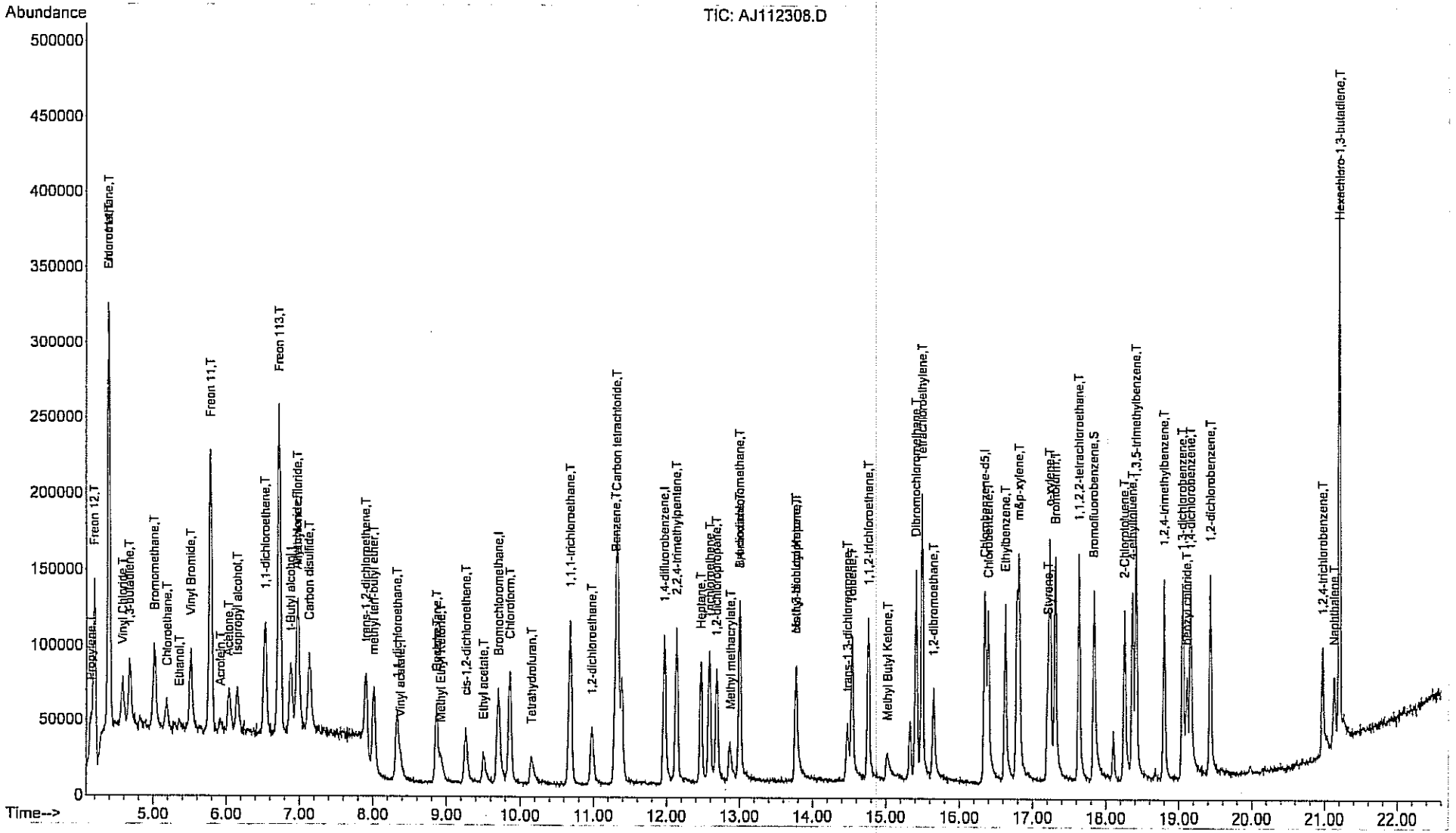
Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112308.D
Acq On : 23 Nov 2012 2:15 pm
Sample : A1UG_0.75
Misc : AN06_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 27 15:55 2012

Vial: 5
Operator: RJP
Inst : MSD #1
Multiplr: 1.00

Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



AJ112308.D AN23_1UG.M Fri Dec 14 12:45:31 2012 MSD1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112309.D Vial: 6
Acq On : 23 Nov 2012 2:52 pm Operator: RJP
Sample : A1UG_0.50 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:02:01 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.71	128	25050	1.00	ppb		-0.01
33) 1,4-difluorobenzene	11.97	114	98995	1.00	ppb		-0.01
48) Chlorobenzene-d5	16.35	117	89217	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.84	95	51634	0.90	ppb		0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 90.00%				
Target Compounds							Qvalue
2) Propylene	4.15	41	16657	0.59	ppb		96
3) Freon 12	4.20	85	107908	0.54	ppb		99
4) Chloromethane	4.39	50	32516	0.59	ppb		92
5) Freon 114	4.40	85	98344	0.56	ppb		94
6) Vinyl Chloride	4.58	62	25983	0.52	ppb		89
7) 1,3-butadiene	4.69	39	20670	0.56	ppb		87
8) Bromomethane	5.03	94	33003	0.53	ppb		95
9) Ethanol	5.37	45	9538	0.66	ppb	#	37
10) Acrolein	5.93	56	5437	0.44	ppb	#	54
11) Chloroethane	5.19	64	12483	0.57	ppb		84
12) Vinyl Bromide	5.53	106	33342	0.51	ppb		98
13) Freon 11	5.79	101	145330	0.55	ppb		95
14) Acetone	6.05	58	9176m	0.33	ppb		
15) Isopropyl alcohol	6.15	45	26889	0.49	ppb	#	32
16) 1,1-dichloroethene	6.54	96	29459	0.57	ppb		91
17) Freon 113	6.73	101	73306	0.54	ppb	#	82
18) t-Butyl alcohol	6.90	59	44938	0.46	ppb	#	61
19) Methylene chloride	6.98	84	23268	0.50	ppb	#	85
20) Allyl chloride	6.98	41	30147m	0.68	ppb		
21) Carbon disulfide	7.14	76	85036	0.56	ppb		95
22) trans-1,2-dichloroethene	7.92	61	27445	0.55	ppb	#	70
23) methyl tert-butyl ether	8.04	73	38188	0.44	ppb		92
24) 1,1-dichloroethane	8.34	63	34629	0.53	ppb		96
25) Vinyl acetate	8.39	43	23238m	0.52	ppb		
26) Methyl Ethyl Ketone	8.95	72	5286m	0.42	ppb		
27) cis-1,2-dichloroethene	9.27	61	18666	0.48	ppb		93
28) Hexane	8.88	57	15369	0.43	ppb	#	72
29) Ethyl acetate	9.52	43	21098	0.39	ppb		91
30) Chloroform	9.87	83	50967	0.50	ppb		100
31) Tetrahydrofuran	10.18	42	10737m	0.53	ppb		
32) 1,2-dichloroethane	10.98	62	33874	0.47	ppb		98
34) 1,1,1-trichloroethane	10.69	97	67750	0.55	ppb		97
35) Cyclohexane	8.87	56	10061	0.50	ppb		89
36) Carbon tetrachloride	11.33	117	75687	0.51	ppb		94
37) Benzene	11.30	78	43132	0.51	ppb		99
38) Methyl methacrylate	12.87	41	13149m	0.52	ppb		
39) 1,4-dioxane	13.04	88	6679m	0.52	ppb		
40) 2,2,4-trimethylpentane	12.14	57	52263	0.47	ppb		91
41) Heptane	12.47	43	15809	0.45	ppb		94
42) Trichloroethene	12.59	130	23770	0.51	ppb		93
43) 1,2-dichloropropane	12.69	63	16416	0.54	ppb		95
44) Bromodichloromethane	13.00	83	56896	0.50	ppb		99
45) cis-1,3-dichloropropene	13.77	75	21364m	0.46	ppb		

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112309.D Vial: 6
Acq On : 23 Nov 2012 2:52 pm Operator: RJP
Sample : A1UG_0.50 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:02:01 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.48	75	21338	0.49	ppb		97
47)	1,1,2-trichloroethane	14.76	97	23143	0.53	ppb		99
49)	Toluene	14.54	92	29133	0.47	ppb		93
50)	Methyl Isobutyl Ketone	13.78	43	24885m	0.47	ppb		
51)	Dibromochloromethane	15.41	129	51337	0.50	ppb		95
52)	Methyl Butyl Ketone	15.02	43	21247m	0.45	ppb		
53)	1,2-dibromoethane	15.65	107	31266	0.48	ppb		97
54)	Tetrachloroethylene	15.49	164	28143	0.52	ppb		97
55)	Chlorobenzene	16.39	112	46199	0.50	ppb		97
56)	Ethylbenzene	16.63	91	61092	0.46	ppb		98
57)	m&p-xylene	16.80	91	102052	0.84	ppb		93
58)	Styrene	17.21	104	31587	0.43	ppb		86
59)	Bromoform	17.31	173	49954	0.49	ppb		97
60)	o-xylene	17.24	91	66089	0.40	ppb		96
62)	1,1,2,2-tetrachloroethane	17.63	83	42255	0.46	ppb		91
63)	2-Chlorotoluene	18.25	91	47268	0.39	ppb		96
64)	4-ethyltoluene	18.36	105	50166m	0.34	ppb		
65)	1,3,5-trimethylbenzene	18.41	105	70757m	0.39	ppb		
66)	1,2,4-trimethylbenzene	18.79	105	48175	0.37	ppb		87
67)	1,3-dichlorobenzene	19.05	146	40589	0.43	ppb		93
68)	benzyl chloride	19.11	91	32576	0.35	ppb		98
69)	1,4-dichlorobenzene	19.16	146	34653	0.38	ppb		97
70)	1,2-dichlorobenzene	19.43	146	41396	0.44	ppb		97
71)	1,2,4-trichlorobenzene	20.97	180	21807m	0.40	ppb		
72)	Naphthalene	21.13	128	41707m	0.39	ppb		
73)	Hexachloro-1,3-butadiene	21.20	225	40317	0.44	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

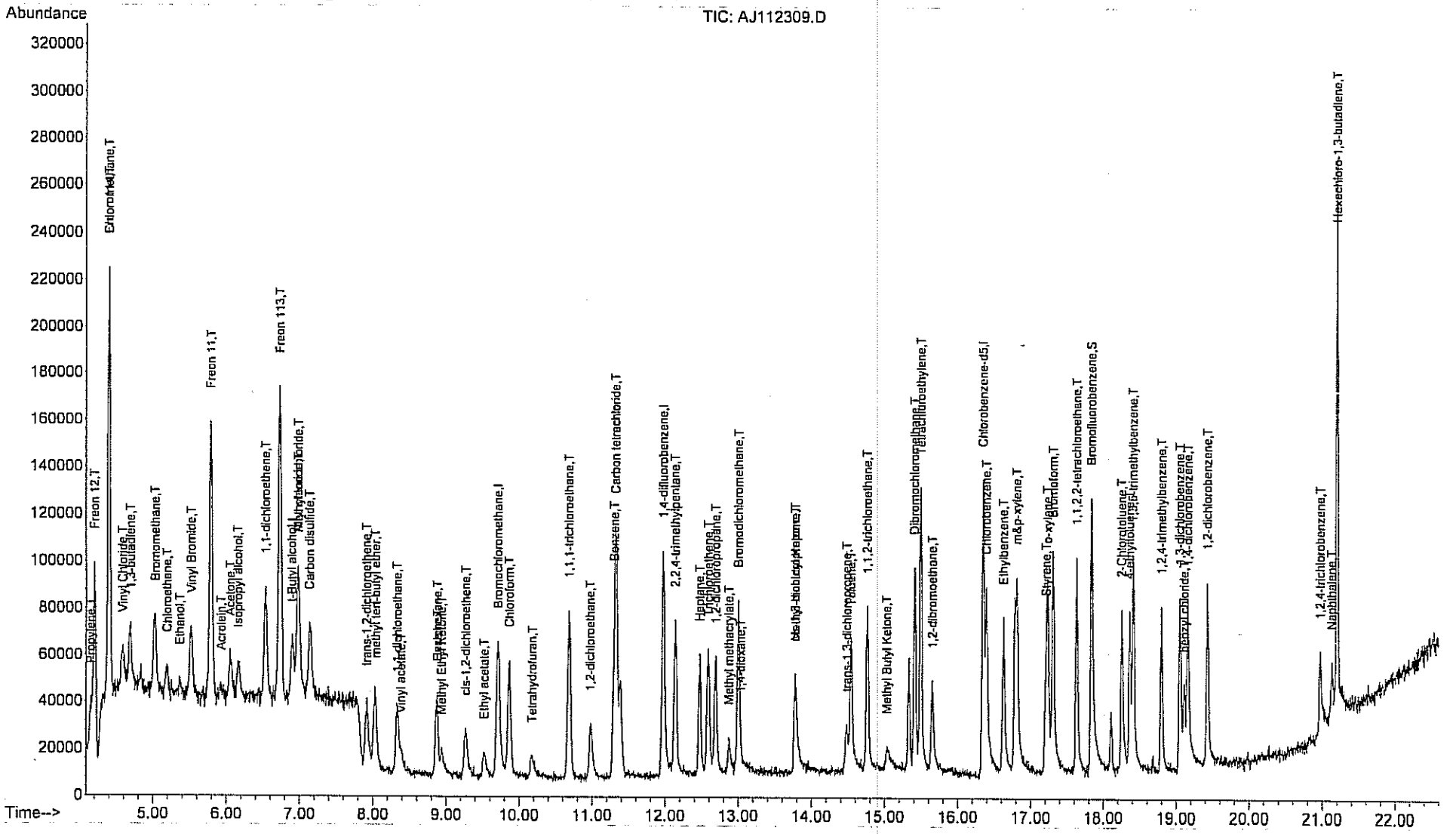
Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112309.D
Acq On : 23 Nov 2012 2:52 pm
Sample : A1UG_0.50
Misc : AN06_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 27 16:11 2012

Vial: 6
Operator: RJP
Inst : MSD #1
Multiplr: 1.00

Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



AJ112309.D AN23_1UG.M Fri Dec 14 12:45:34 2012 MSD1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112310.D Vial: 7
Acq On : 23 Nov 2012 3:28 pm Operator: RJP
Sample : A1UG_0.30 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:02:28 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.71	128	25414	1.00	ppb		-0.01
33) 1,4-difluorobenzene	11.97	114	96259	1.00	ppb		-0.01
48) Chlorobenzene-d5	16.35	117	84526	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	44573	0.82	ppb		-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 82.00%				
Target Compounds							Qvalue
2) Propylene	4.16	41	10635	0.37	ppb		75
3) Freon 12	4.20	85	71596	0.35	ppb		100
4) Chloromethane	4.39	50	19645	0.35	ppb		86
5) Freon 114	4.39	85	62707	0.35	ppb		91
6) Vinyl Chloride	4.58	62	17212	0.34	ppb		94
7) 1,3-butadiene	4.69	39	10826	0.29	ppb		96
8) Bromomethane	5.01	94	23640	0.38	ppb		95
9) Ethanol	5.37	45	5307	0.36	ppb		93
10) Acrolein	5.93	56	4250m	0.34	ppb		
11) Chloroethane	5.19	64	7792	0.35	ppb		81
12) Vinyl Bromide	5.51	106	21591	0.33	ppb		93
13) Freon 11	5.79	101	95760	0.36	ppb		94
14) Acetone	6.06	58	6623	0.24	ppb	#	45
15) Isopropyl alcohol	6.17	45	18539	0.33	ppb	#	32
16) 1,1-dichloroethene	6.54	96	19339	0.37	ppb		98
17) Freon 113	6.73	101	48265	0.35	ppb	#	84
18) t-Butyl alcohol	6.90	59	31448	0.31	ppb	#	73
19) Methylene chloride	6.99	84	16561	0.35	ppb		98
20) Allyl chloride	6.98	41	17815	0.39	ppb		80
21) Carbon disulfide	7.14	76	55606	0.36	ppb		87
22) trans-1,2-dichloroethene	7.93	61	16575	0.33	ppb	#	74
23) methyl tert-butyl ether	8.05	73	25145m	0.28	ppb		
24) 1,1-dichloroethane	8.33	63	21555	0.32	ppb		98
25) Vinyl acetate	8.38	43	13731	0.31	ppb		92
26) Methyl Ethyl Ketone	8.93	72	3491m	0.28	ppb		
27) cis-1,2-dichloroethene	9.27	61	11549	0.29	ppb		97
28) Hexane	8.87	57	11125m	0.31	ppb		
29) Ethyl acetate	9.53	43	15934m	0.29	ppb		
30) Chloroform	9.87	83	32222	0.31	ppb		96
31) Tetrahydrofuran	10.19	42	7403m	0.36	ppb		
32) 1,2-dichloroethane	10.99	62	22631	0.31	ppb		97
34) 1,1,1-trichloroethane	10.69	97	42105	0.35	ppb		100
35) Cyclohexane	8.87	56	6213	0.32	ppb	#	1
36) Carbon tetrachloride	11.32	117	51062	0.35	ppb		94
37) Benzene	11.30	78	26346	0.32	ppb		90
38) Methyl methacrylate	12.87	41	8411m	0.34	ppb		
39) 1,4-dioxane	13.04	88	5053m	0.40	ppb		
40) 2,2,4-trimethylpentane	12.14	57	32746	0.31	ppb		97
41) Heptane	12.48	43	9962	0.29	ppb		96
42) Trichloroethene	12.59	130	14118	0.31	ppb		93
43) 1,2-dichloropropane	12.69	63	10495	0.35	ppb		85
44) Bromodichloromethane	13.00	83	35713	0.32	ppb		97
45) cis-1,3-dichloropropene	13.78	75	12067	0.27	ppb		99

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112310.D Vial: 7
Acq On : 23 Nov 2012 3:28 pm Operator: RJP
Sample : A1UG_0.30 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:02:28 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

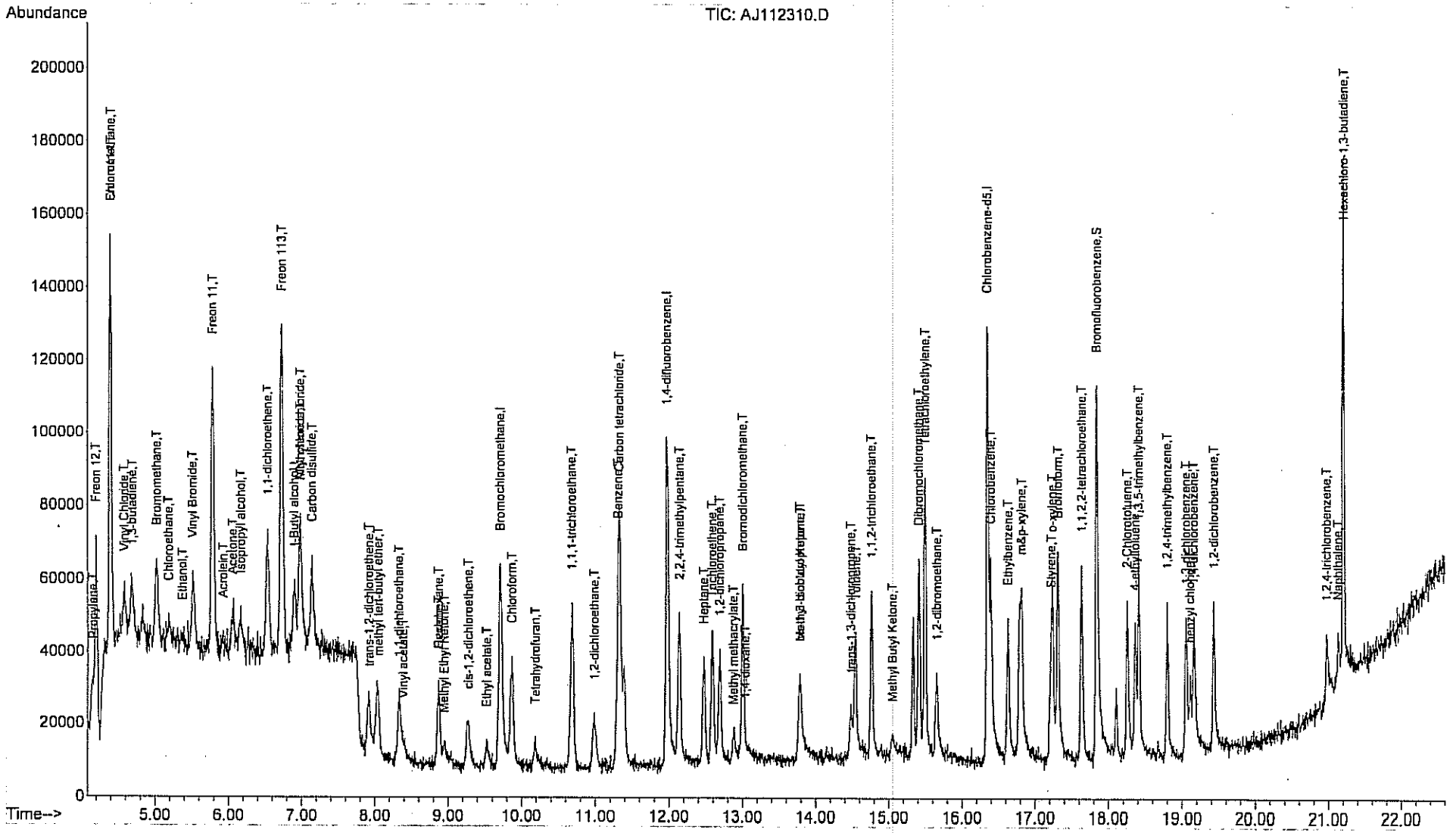
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.48	75	14406m	0.34	ppb		
47)	1,1,2-trichloroethane	14.76	97	14588	0.35	ppb		99
49)	Toluene	14.55	92	17894	0.30	ppb		94
50)	Methyl Isobutyl Ketone	13.79	43	17689m	0.35	ppb		
51)	Dibromochloromethane	15.41	129	32277	0.33	ppb		97
52)	Methyl Butyl Ketone	15.05	43	16002m	0.36	ppb		
53)	1,2-dibromoethane	15.65	107	19124	0.31	ppb		94
54)	Tetrachloroethylene	15.49	164	18423	0.36	ppb		95
55)	Chlorobenzene	16.40	112	28863	0.33	ppb		94
56)	Ethylbenzene	16.63	91	37690	0.30	ppb		97
57)	m&p-xylene	16.81	91	59813	0.52	ppb		89
58)	Styrene	17.21	104	19366	0.28	ppb		82
59)	Bromoform	17.30	173	30836	0.32	ppb		94
60)	o-xylene	17.24	91	42508m	0.27	ppb		
62)	1,1,2,2-tetrachloroethane	17.63	83	25893	0.30	ppb		94
63)	2-Chlorotoluene	18.25	91	28923	0.25	ppb		91
64)	4-ethyltoluene	18.36	105	32149m	0.23	ppb		
65)	1,3,5-trimethylbenzene	18.41	105	41584m	0.24	ppb		
66)	1,2,4-trimethylbenzene	18.79	105	29626	0.24	ppb		93
67)	1,3-dichlorobenzene	19.05	146	22101	0.25	ppb		100
68)	benzyl chloride	19.11	91	22746m	0.25	ppb		
69)	1,4-dichlorobenzene	19.16	146	24424m	0.28	ppb		
70)	1,2-dichlorobenzene	19.43	146	22390	0.25	ppb		94
71)	1,2,4-trichlorobenzene	20.98	180	15039m	0.29	ppb		
72)	Naphthalene	21.13	128	24312m	0.24	ppb		
73)	Hexachloro-1,3-butadiene	21.20	225	22644	0.26	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112310.D Vial: 7
Acq On : 23 Nov 2012 3:28 pm Operator: RJP
Sample : A1UG_0.30 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 27 15:59 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



AJ112310.D AN23_1UG.M Fri Dec 14 12:45:37 2012 MSD1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112311.D Vial: 8
Acq On : 23 Nov 2012 4:04 pm Operator: RJP
Sample : A1UG_0.15 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:02:56 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.72	128	25218	1.00	ppb		0.00
33) 1,4-difluorobenzene	11.98	114	92732	1.00	ppb		0.00
48) Chlorobenzene-d5	16.35	117	78802	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.83	95	43343	0.86	ppb		-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 86.00%				
Target Compounds							Qvalue
2) Propylene	4.15	41	5848	0.21	ppb		93
3) Freon 12	4.20	85	42106	0.21	ppb		98
4) Chloromethane	4.40	50	12327	0.22	ppb		83
5) Freon 114	4.39	85	36844	0.21	ppb		95
6) Vinyl Chloride	4.58	62	11146	0.22	ppb		96
7) 1,3-butadiene	4.69	39	6734m	0.18	ppb		
8) Bromomethane	5.02	94	11466	0.18	ppb		91
9) Ethanol	5.37	45	2852m	0.20	ppb		
10) Acrolein	5.91	56	1949m	0.16	ppb		
11) Chloroethane	5.18	64	4324m	0.19	ppb		
12) Vinyl Bromide	5.51	106	11850m	0.18	ppb		
13) Freon 11	5.79	101	59164	0.22	ppb		92
14) Acetone	6.05	58	4705m	0.17	ppb		
15) Isopropyl alcohol	6.17	45	12467	0.23	ppb	#	32
16) 1,1-dichloroethene	6.53	96	10271	0.20	ppb		88
17) Freon 113	6.73	101	29472	0.22	ppb	#	82
18) t-Butyl alcohol	6.90	59	24146	0.24	ppb		90
19) Methylene chloride	6.99	84	9496m	0.20	ppb		
20) Allyl chloride	6.96	41	7502	0.17	ppb	#	68
21) Carbon disulfide	7.14	76	34139	0.22	ppb		85
22) trans-1,2-dichloroethene	7.92	61	8893	0.18	ppb	#	63
23) methyl tert-butyl ether	8.04	73	14964	0.17	ppb		84
24) 1,1-dichloroethane	8.33	63	12440	0.19	ppb		97
25) Vinyl acetate	8.38	43	8013	0.18	ppb		79
26) Methyl Ethyl Ketone	8.94	72	2264m	0.18	ppb		
27) cis-1,2-dichloroethene	9.25	61	6283	0.16	ppb	#	59
28) Hexane	8.87	57	5027	0.14	ppb	#	55
29) Ethyl acetate	9.51	43	8369m	0.15	ppb		
30) Chloroform	9.87	83	19522	0.19	ppb		98
31) Tetrahydrofuran	10.18	42	3856	0.19	ppb	#	43
32) 1,2-dichloroethane	10.99	62	12556	0.17	ppb		98
34) 1,1,1-trichloroethane	10.68	97	25342	0.22	ppb		99
35) Cyclohexane	8.87	56	3480	0.19	ppb	#	1
36) Carbon tetrachloride	11.34	117	30241	0.22	ppb		93
37) Benzene	11.30	78	14725	0.19	ppb		99
38) Methyl methacrylate	12.88	41	4675m	0.20	ppb		
39) 1,4-dioxane	13.07	88	2411m	0.20	ppb		
40) 2,2,4-trimethylpentane	12.14	57	18332	0.18	ppb		90
41) Heptane	12.48	43	3684	0.11	ppb	#	20
42) Trichloroethene	12.59	130	8775	0.20	ppb		96
43) 1,2-dichloropropane	12.69	63	5367	0.19	ppb		85
44) Bromodichloromethane	13.00	83	21201	0.20	ppb		100
45) cis-1,3-dichloropropene	13.77	75	7572m	0.17	ppb		

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112311.D Vial: 8
Acq On : 23 Nov 2012 4:04 pm Operator: RJP
Sample : A1UG_0.15 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 23 20:02:56 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

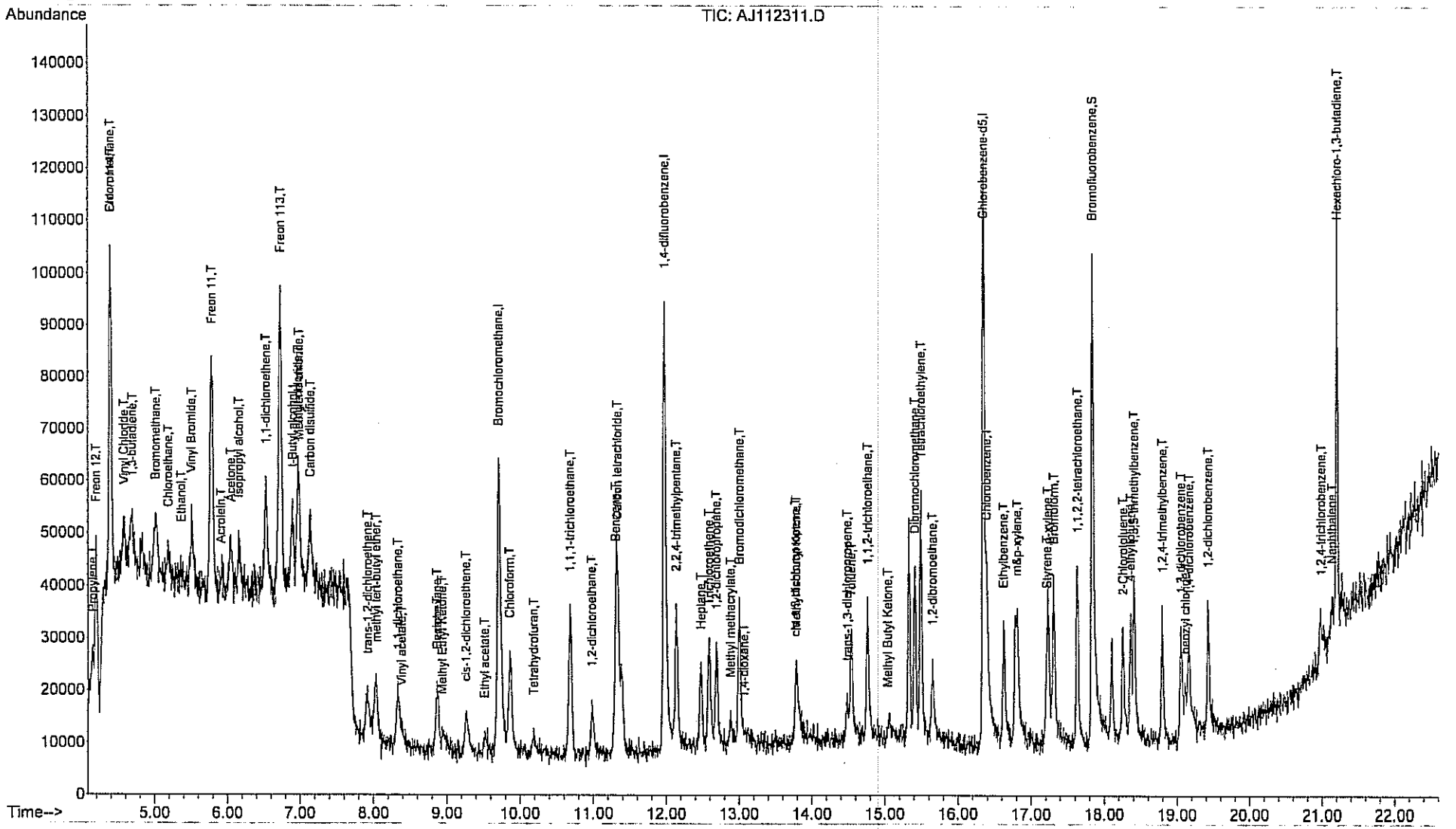
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.48	75	7055	0.17	ppb		95
47)	1,1,2-trichloroethane	14.77	97	8323	0.21	ppb		97
49)	Toluene	14.55	92	10444	0.19	ppb		98
50)	Methyl Isobutyl Ketone	13.79	43	8607	0.18	ppb	#	63
51)	Dibromochloromethane	15.41	129	19028m	0.21	ppb		
52)	Methyl Butyl Ketone	15.04	43	5506	0.13	ppb		91
53)	1,2-dibromoethane	15.65	107	10998	0.19	ppb		98
54)	Tetrachloroethylene	15.49	164	11008	0.23	ppb		99
55)	Chlorobenzene	16.40	112	16238	0.20	ppb		96
56)	Ethylbenzene	16.62	91	20736	0.18	ppb		96
57)	m&p-xylene	16.82	91	30466	0.28	ppb		84
58)	Styrene	17.21	104	7810	0.12	ppb		91
59)	Bromoform	17.31	173	16723	0.19	ppb		97
60)	o-xylene	17.23	91	22522	0.15	ppb		98
62)	1,1,2,2-tetrachloroethane	17.64	83	15901	0.19	ppb		97
63)	2-Chlorotoluene	18.26	91	18859	0.18	ppb		91
64)	4-ethyltoluene	18.36	105	16443m	0.13	ppb		
65)	1,3,5-trimethylbenzene	18.41	105	24720m	0.15	ppb		
66)	1,2,4-trimethylbenzene	18.80	105	18364	0.16	ppb		90
67)	1,3-dichlorobenzene	19.05	146	12257	0.15	ppb		98
68)	benzyl chloride	19.12	91	11458m	0.14	ppb		
69)	1,4-dichlorobenzene	19.16	146	12040	0.15	ppb		82
70)	1,2-dichlorobenzene	19.43	146	13982	0.17	ppb		95
71)	1,2,4-trichlorobenzene	20.99	180	8100m	0.17	ppb		
72)	Naphthalene	21.14	128	15253m	0.16	ppb		
73)	Hexachloro-1,3-butadiene	21.20	225	14114	0.18	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112311.D Vial: 8
Acq On : 23 Nov 2012 4:04 pm Operator: RJP
Sample : A1UG_0.15 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 27 16:12 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112314.D Vial: 11
Acq On : 23 Nov 2012 8:24 pm Operator: RJP
Sample : A1UG_0.10 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 27 16:02:33 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

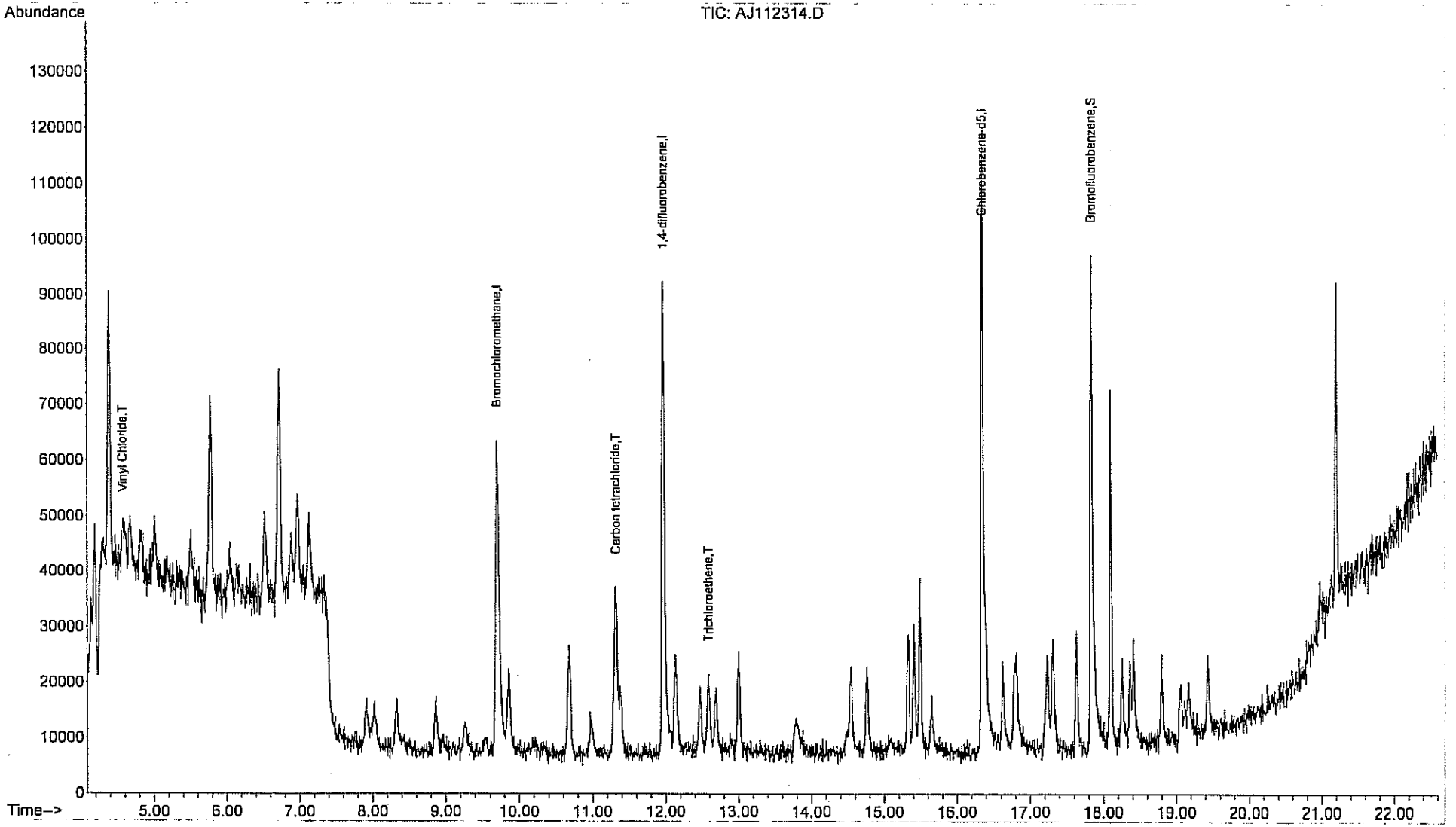
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.70	128	25298	1.00	ppb	-0.02
33) 1,4-difluorobenzene	11.97	114	90422	1.00	ppb	-0.01
48) Chlorobenzene-d5	16.34	117	77091	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.83	95	42188m	0.85	ppb	-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 85.00%			
Target Compounds						Qvalue
6) Vinyl Chloride	4.56	62	7182	0.14	ppb	88
36) Carbon tetrachloride	11.33	117	20328m	0.15	ppb	
42) Trichloroethene	12.58	130	5290	0.12	ppb	87

(#) = qualifier out of range (m) = manual integration (+) = signals summed
AJ112314.D AN23_1UG.M Fri Dec 14 12:45:43 2012 MSD1 Page 1

Data File : C:\HPCHEM\1\DATA\AJ112314.D
Acq On : 23 Nov 2012 8:24 pm
Sample : A1UG_0.10
Misc : AN06_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 27 16:04 2012

Vial: 11
Operator: RJP
Inst : MSD #1
Multiplr: 1.00
Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112315.D Vial: 12
Acq On : 23 Nov 2012 9:00 pm Operator: RJP
Sample : A1UG_0.04 Inst : MSD #1
Misc : AN06_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 27 16:03:06 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Nov 23 13:52:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.71	128	23410	1.00	ppb	-0.01
33) 1,4-difluorobenzene	11.97	114	87566	1.00	ppb	-0.01
48) Chlorobenzene-d5	16.35	117	74289	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.83	95	38370m	0.81	ppb	-0.01
Spiked Amount 1.000	Range 70 - 130		Recovery = 81.00%			
Target Compounds						Qvalue
6) Vinyl Chloride	4.57	62	2946m	0.06	ppb	
36) Carbon tetrachloride	11.32	117	10361m	0.08	ppb	
42) Trichloroethene	12.58	130	2819m	0.07	ppb	

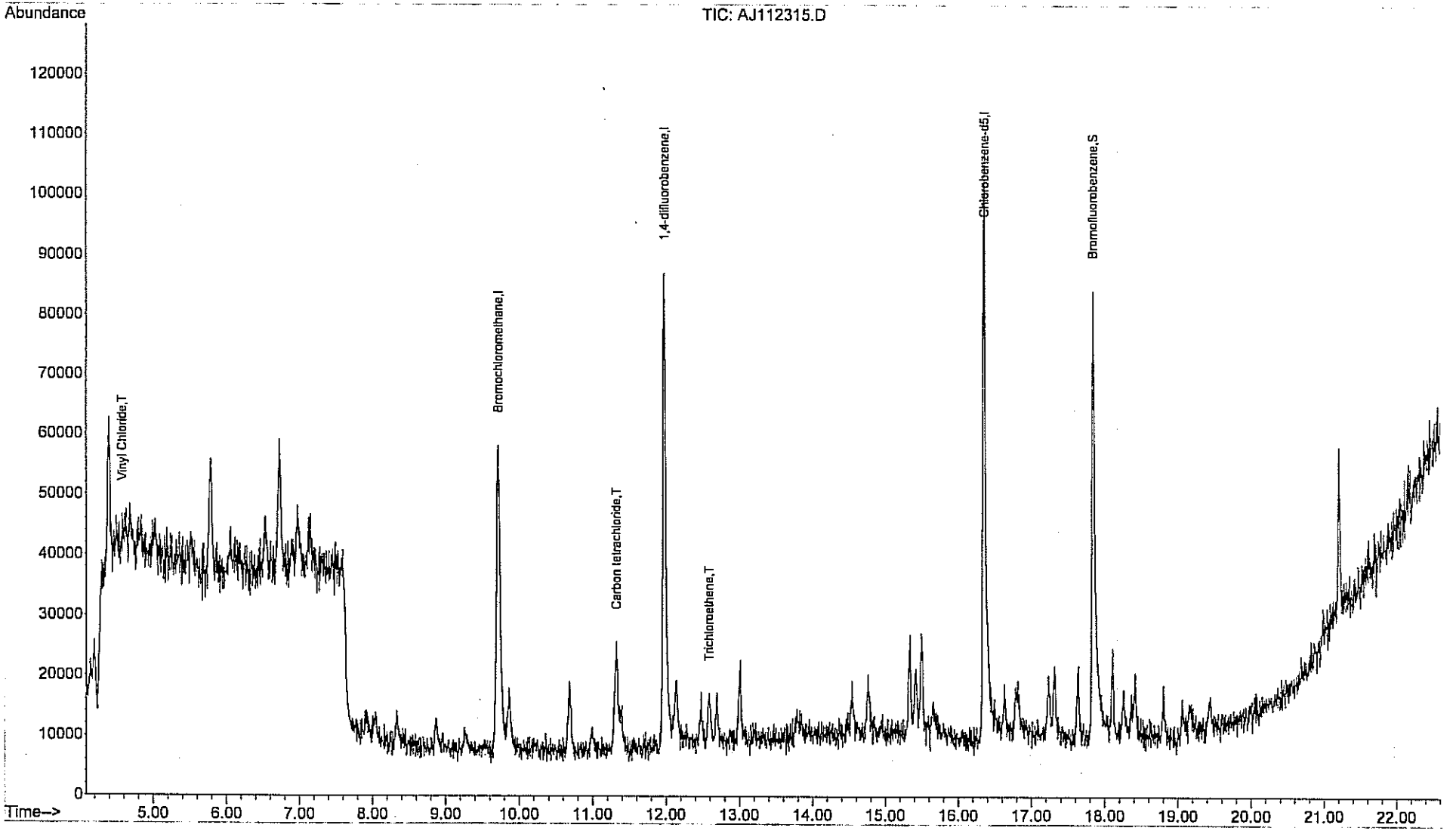
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112315.D
Acq On : 23 Nov 2012 9:00 pm
Sample : A1UG_0.04
Misc : AN06_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 27 16:05 2012

Vial: 12
Operator: RJP
Inst : MSD #1
Multiplr: 1.00
Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\AJ112303.D



GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

CALIBRATION VERIFICATION

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\AJ112802.D Vial: 2
Acq On : 28 Nov 2012 9:59 am Operator: RJP
Sample : A1UG_1.0 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Bromochloromethane	1.000	1.000	0.0	93	0.00
2	T	Propylene	1.244	1.333	-7.2	109	0.00
3	T	Freon 12	8.804	9.232	-4.9	107	0.00
4	T	Chloromethane	2.478	2.541	-2.5	103	0.00
5	T	Freon 114	7.725	8.035	-4.0	105	0.00
6	T	Vinyl Chloride	2.297	2.206	4.0	107	0.00
7	T	1,3-butadiene	1.473	1.370	7.0	98	0.00
8	T	Bromomethane	2.639	2.797	-6.0	109	0.00
9	T	Ethanol	0.620	0.544	12.3	97	0.00
10	T	Acrolein	0.506	0.459	9.3	84	0.00
11	T	Chloroethane	0.971	1.064	-9.6	108	0.00
12	T	Vinyl Bromide	2.653	2.872	-8.3	111	0.00
13	T	Freon 11	11.568	11.779	-1.8	106	0.00
14	T	Acetone	0.906	1.052	-16.1	115	0.00
15	T	Isopropyl alcohol	2.384	2.758	-15.7	116	0.00
16	T	1,1-dichloroethene	2.265	2.252	0.6	107	0.00
17	T	Freon 113	5.820	5.972	-2.6	108	0.00
18	t	t-Butyl alcohol	3.930	4.497	-14.4	123	0.00
19	T	Methylene chloride	1.936	1.926	0.5	101	0.00
20	T	Allyl chloride	2.030	2.178	-7.3	108	0.00
21	T	Carbon disulfide	6.557	6.452	1.6	106	0.00
22	T	trans-1,2-dichloroethene	2.128	1.919	9.8	79	0.00
23	T	methyl tert-butyl ether	3.437	3.359	2.3	90	0.00
24	T	1,1-dichloroethane	2.685	2.665	0.7	100	0.00
25	T	Vinyl acetate	1.807	1.683	6.9	88	0.00
26	T	Methyl Ethyl Ketone	0.477	0.474	0.6	102	0.00
27	T	cis-1,2-dichloroethene	1.518	1.581	-4.2	100	0.00
28	T	Hexane	1.369	1.447	-5.7	108	0.00
29	T	Ethyl acetate	2.001	1.999	0.1	99	0.00
30	T	Chloroform	4.087	4.259	-4.2	107	0.00
31	T	Tetrahydrofuran	0.846	0.707	16.4	89	0.00
32	T	1,2-dichloroethane	2.842	2.945	-3.6	101	0.00
33	I	1,4-difluorobenzene	1.000	1.000	0.0	95	0.00
34	T	1,1,1-trichloroethane	1.388	1.385	0.2	103	0.00
35	T	Cyclohexane	0.214	0.210	1.9	94	0.00
36	T	Carbon tetrachloride	1.825	1.623	11.1	104	0.00
37	T	Benzene	0.905	0.939	-3.8	106	0.00
38	T	Methyl methacrylate	0.271	0.250	7.7	98	0.00
39	T	1,4-dioxane	0.147	0.140	4.8	98	0.00
40	T	2,2,4-trimethylpentane	1.159	1.211	-4.5	102	0.00
41	T	Heptane	0.346	0.380	-9.8	102	0.00
42	T	Trichloroethene	0.538	0.505	6.1	104	0.00
43	T	1,2-dichloropropane	0.337	0.347	-3.0	102	0.00
44	T	Bromodichloromethane	1.221	1.218	0.2	100	0.00
45	T	cis-1,3-dichloropropene	0.479	0.469	2.1	94	0.00
46	T	trans-1,3-dichloropropene	0.477	0.447	6.3	100	0.00
47	T	1,1,2-trichloroethane	0.490	0.494	-0.8	100	0.00
48	I	Chlorobenzene-d5	1.000	1.000	0.0	93	0.00
49	T	Toluene	0.722	0.740	-2.5	102	0.00

(#) = Out of Range

Data File : C:\HPCHEM\1\DATA\AJ112802.D Vial: 2
Acq On : 28 Nov 2012 9:59 am Operator: RJP
Sample : A1UG_1.0 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
50	T	Methyl Isobutyl Ketone	0.594	0.745	-25.4	147	0.00
51	T	Dibromochloromethane	1.217	1.163	4.4	93	0.00
52	T	Methyl Butyl Ketone	0.467	0.472	-1.1	103	0.00
53	T	1,2-dibromoethane	0.755	0.752	0.4	95	0.00
54	T	Tetrachloroethylene	0.672	0.692	-3.0	102	0.00
55	T	Chlorobenzene	1.099	1.079	1.8	94	0.00
56	T	Ethylbenzene	1.551	1.563	-0.8	97	0.00
57	T	m&p-xylene	1.342	1.393	-3.8	93	0.00
58	T	Styrene	0.793	0.821	-3.5	93	0.00
59	T	Bromoform	1.194	0.991	17.0	80	0.00
60	T	o-xylene	1.845	1.864	-1.0	92	0.00
61	S	Bromofluorobenzene	0.589	0.603	-2.4	92	0.00
62	T	1,1,2,2-tetrachloroethane	1.061	1.041	1.9	95	0.00
63	T	2-Chlorotoluene	1.267	1.434	-13.2	108	0.00
64	T	4-ethyltoluene	1.455	1.464	-0.6	96	0.00
65	T	1,3,5-trimethylbenzene	1.972	2.041	-3.5	94	0.00
66	T	1,2,4-trimethylbenzene	1.426	1.384	2.9	93	0.00
67	T	1,3-dichlorobenzene	1.040	1.085	-4.3	94	0.00
68	T	benzyl chloride	0.999	0.939	6.0	85	0.00
69	T	1,4-dichlorobenzene	1.015	1.012	0.3	94	0.00
70	T	1,2-dichlorobenzene	1.047	1.000	4.5	89	0.00
71	T	1,2,4-trichlorobenzene	0.582	0.517	11.2	91	0.00
72	T	Naphthalene	1.099	1.008	8.3	98	0.00
73	T	Hexachloro-1,3-butadiene	0.998	1.040	-4.2	99	0.00

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112802.D Vial: 2
Acq On : 28 Nov 2012 9:59 am Operator: RJP
Sample : A1UG_1.0 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 28 10:24:56 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_TO15

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.72	128	26582	1.00	ppb		0.00
33) 1,4-difluorobenzene	11.98	114	101349	1.00	ppb		0.00
48) Chlorobenzene-d5	16.35	117	90677	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.84	95	54639	1.02	ppb		0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 102.00%				
Target Compounds							Qvalue
2) Propylene	4.16	41	35426	1.07	ppb		83
3) Freon 12	4.21	85	245416	1.05	ppb		99
4) Chloromethane	4.40	50	67548	1.03	ppb		96
5) Freon 114	4.40	85	213576	1.04	ppb		93
6) Vinyl Chloride	4.59	62	58638	0.96	ppb		100
7) 1,3-butadiene	4.70	39	36409	0.93	ppb		95
8) Bromomethane	5.03	94	74339	1.06	ppb		99
9) Ethanol	5.40	45	14467	0.88	ppb		81
10) Acrolein	5.94	56	12188	0.91	ppb		90
11) Chloroethane	5.20	64	28284	1.10	ppb		95
12) Vinyl Bromide	5.53	106	76335	1.08	ppb		100
13) Freon 11	5.80	101	313103	1.02	ppb		95
14) Acetone	6.07	58	27958	1.16	ppb		87
15) Isopropyl alcohol	6.18	45	73322	1.16	ppb	#	32
16) 1,1-dichloroethene	6.55	96	59858	0.99	ppb		94
17) Freon 113	6.74	101	158754	1.03	ppb	#	84
18) t-Butyl alcohol	6.92	59	119537	1.14	ppb	#	75
19) Methylene chloride	6.99	84	51194	1.00	ppb		92
20) Allyl chloride	6.98	41	57889m	1.07	ppb		
21) Carbon disulfide	7.15	76	171509	0.98	ppb		96
22) trans-1,2-dichloroethene	7.92	61	51012	0.90	ppb	#	76
23) methyl tert-butyl ether	8.04	73	89288	0.98	ppb		91
24) 1,1-dichloroethane	8.34	63	70851	0.99	ppb		97
25) Vinyl acetate	8.40	43	44741	0.93	ppb		97
26) Methyl Ethyl Ketone	8.94	72	12597	0.99	ppb	#	100
27) cis-1,2-dichloroethene	9.27	61	42015	1.04	ppb		95
28) Hexane	8.89	57	38467	1.06	ppb		90
29) Ethyl acetate	9.52	43	53142	1.00	ppb		96
30) Chloroform	9.88	83	113211	1.04	ppb		99
31) Tetrahydrofuran	10.19	42	18792	0.84	ppb		98
32) 1,2-dichloroethane	10.98	62	78296	1.04	ppb		97
34) 1,1,1-trichloroethane	10.69	97	140379	1.00	ppb		99
35) Cyclohexane	8.88	56	21296	0.98	ppb		91
36) Carbon tetrachloride	11.33	117	164497	0.89	ppb		94
37) Benzene	11.31	78	95194	1.04	ppb		95
38) Methyl methacrylate	12.87	41	25372	0.92	ppb	#	90
39) 1,4-dioxane	13.02	88	14208	0.95	ppb		86
40) 2,2,4-trimethylpentane	12.15	57	122774	1.05	ppb		96
41) Heptane	12.48	43	38557	1.10	ppb		97
42) Trichloroethene	12.59	130	51163	0.94	ppb		97
43) 1,2-dichloropropane	12.69	63	35164	1.03	ppb		100
44) Bromodichloromethane	13.01	83	123474	1.00	ppb		98
45) cis-1,3-dichloropropene	13.78	75	47553	0.98	ppb		98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112802.D Vial: 2
Acq On : 28 Nov 2012 9:59 am Operator: RJP
Sample : A1UG_1.0 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 28 10:24:56 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

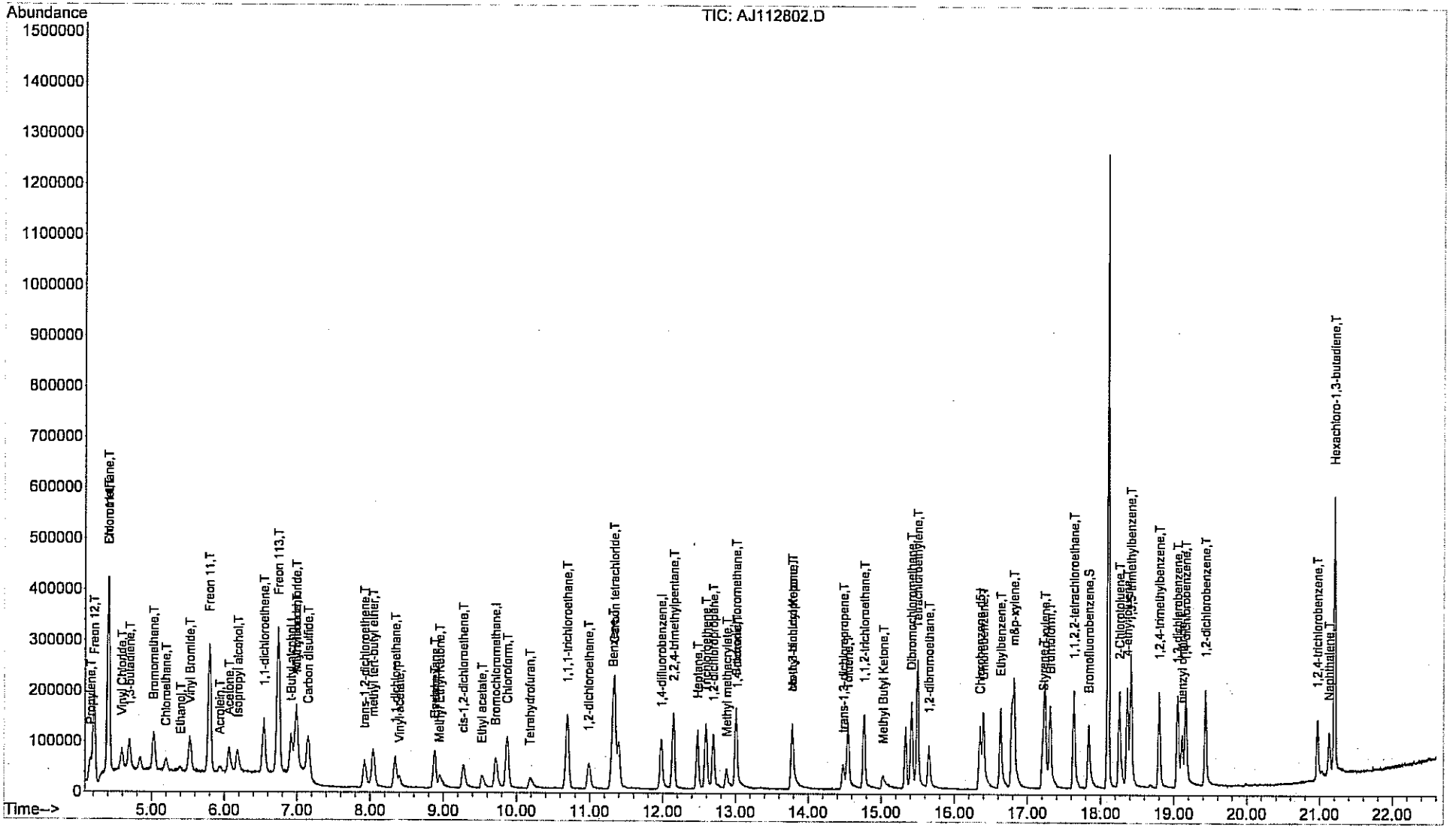
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.48	75	45348	0.94	ppb		91
47)	1,1,2-trichloroethane	14.77	97	50066	1.01	ppb		98
49)	Toluene	14.55	92	67060	1.02	ppb		94
50)	Methyl Isobutyl Ketone	13.78	43	67550	1.25	ppb		69
51)	Dibromochloromethane	15.41	129	105414	0.96	ppb		95
52)	Methyl Butyl Ketone	15.03	43	42820m	1.01	ppb		
53)	1,2-dibromoethane	15.65	107	68229	1.00	ppb		96
54)	Tetrachloroethylene	15.50	164	62706	1.03	ppb		94
55)	Chlorobenzene	16.39	112	97799	0.98	ppb		99
56)	Ethylbenzene	16.63	91	141754	1.01	ppb		97
57)	m&p-xylene	16.81	91	252607	2.08	ppb		91
58)	Styrene	17.21	104	74462	1.03	ppb		86
59)	Bromoform	17.31	173	89826	0.83	ppb		96
60)	o-xylene	17.24	91	169043	1.01	ppb		95
62)	1,1,2,2-tetrachloroethane	17.63	83	94429	0.98	ppb		95
63)	2-Chlorotoluene	18.26	91	130056	1.13	ppb		97
64)	4-ethyltoluene	18.36	105	132743m	1.01	ppb		
65)	1,3,5-trimethylbenzene	18.41	105	185088m	1.03	ppb		
66)	1,2,4-trimethylbenzene	18.80	105	125485	0.97	ppb		94
67)	1,3-dichlorobenzene	19.05	146	98343	1.04	ppb		97
68)	benzyl chloride	19.11	91	85159	0.94	ppb		99
69)	1,4-dichlorobenzene	19.16	146	91810	1.00	ppb		99
70)	1,2-dichlorobenzene	19.43	146	90712	0.96	ppb		94
71)	1,2,4-trichlorobenzene	20.97	180	46857	0.89	ppb	#	1
72)	Naphthalene	21.13	128	91372	0.92	ppb		94
73)	Hexachloro-1,3-butadiene	21.20	225	94271	1.04	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112802.D Vial: 2
Acq On : 28 Nov 2012 9:59 am Operator: RJP
Sample : A1UG_1.0 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 28 10:25 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration



AJ112802.D AN23_1UG.M Fri Dec 14 14:38:16 2012 MSD1 Page 3

GC/MS VOLATILES-WHOLE AIR

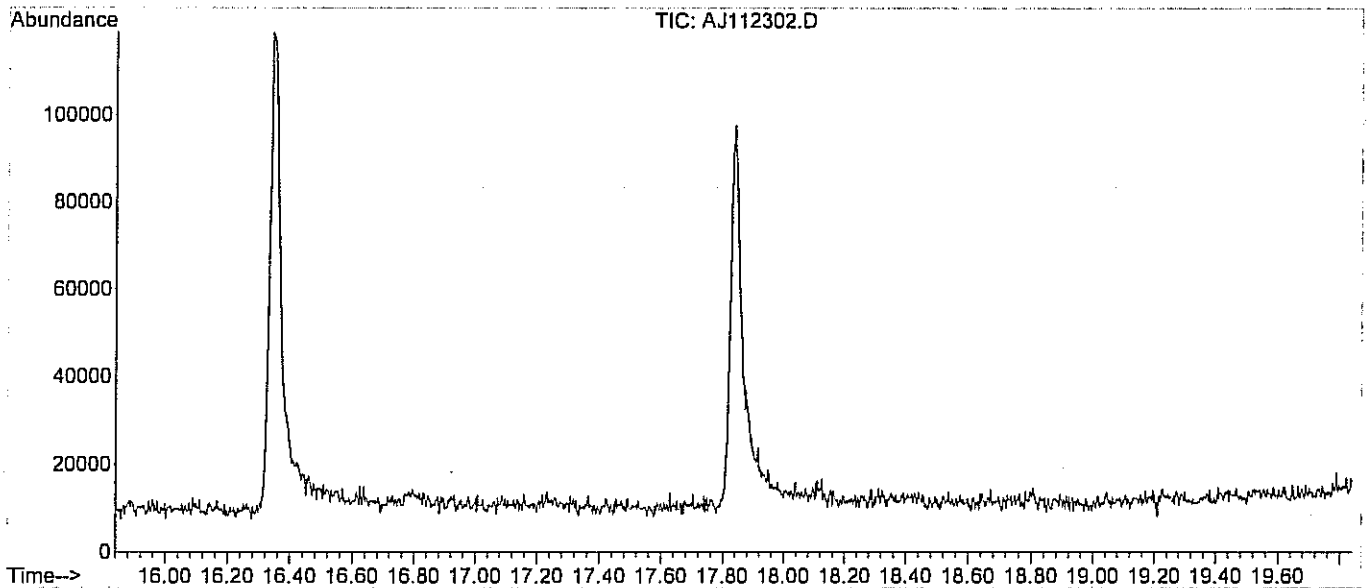
METHOD TO-15

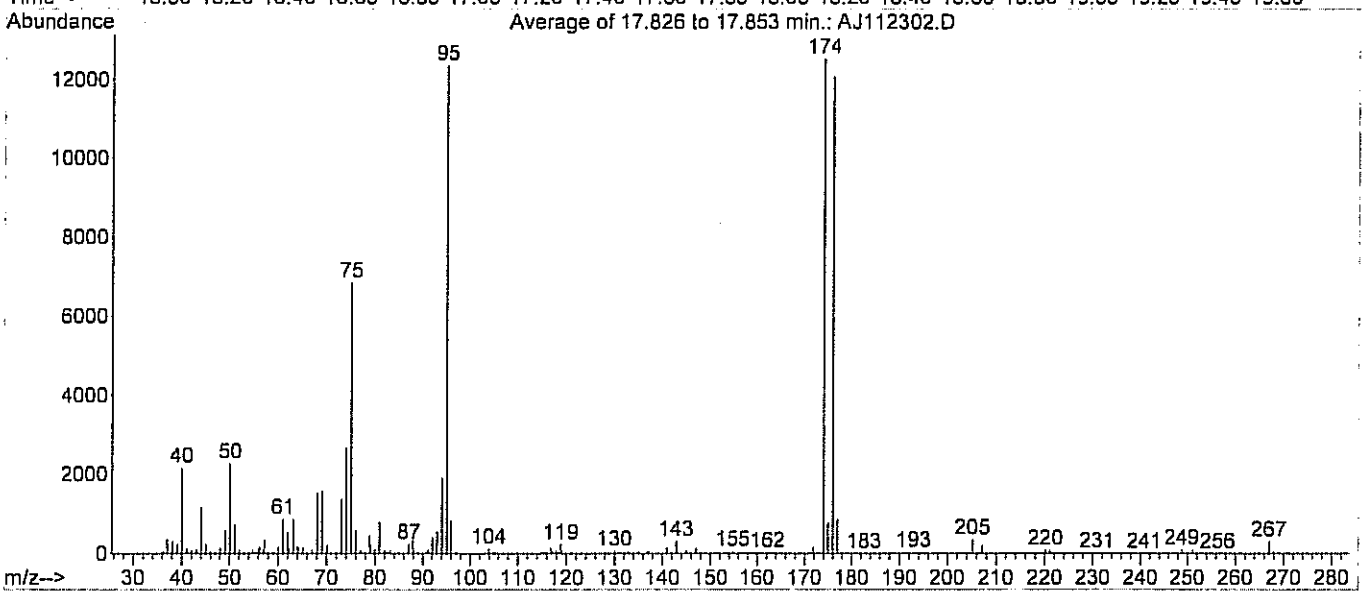
RAW DATA

BFB

Data File : C:\HPCHEM\1\DATA\AJ112302.D
Acq On : 23 Nov 2012 10:23 am
Sample : BFB1UG
Misc : AN06_1UG
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration

Vial: 3
Operator: RJP
Inst : MSD #1
Multiplr: 1.00





Spectrum Information: Average of 17.826 to 17.853 min.

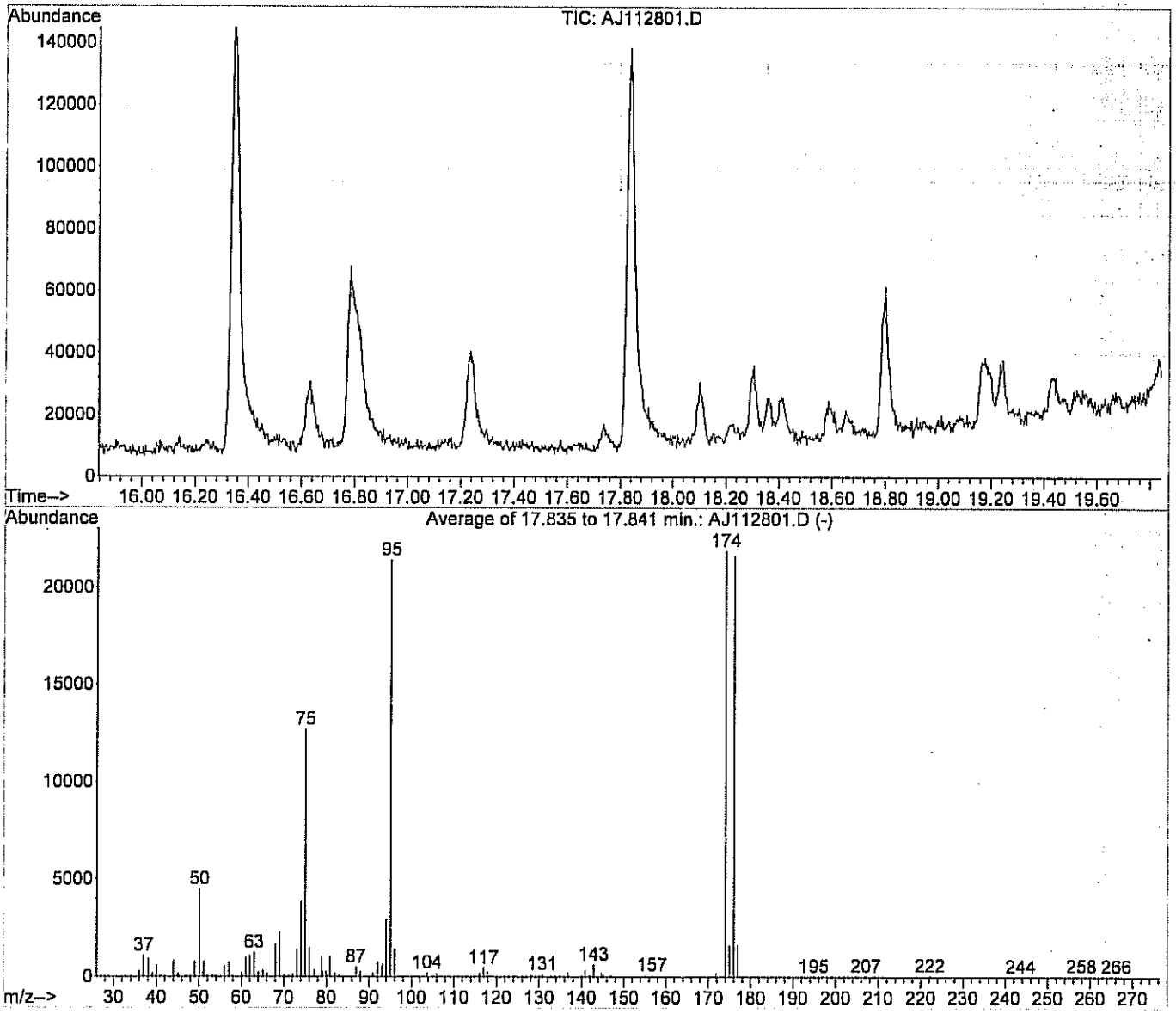
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	18.5	2287	PASS
75	95	30	66	55.5	6864	PASS
95	95	100	100	100.0	12368	PASS
96	95	5	9	6.7	825	PASS
173	174	0.00	2	0.3	34	PASS
174	95	50	120	101.4	12536	PASS
175	174	4	9	6.2	782	PASS
176	174	95	101	96.5	12092	PASS
177	176	5	9	7.3	880	PASS

AJ112302.D AN23_1UG.M Fri Dec 14 12:44:28 2012 MSD1

BFB

Data File : C:\HPCHEM\1\DATA\AJ112801.D
Acq On : 28 Nov 2012 7:45 am
Sample : BFB1UG
Misc : AN06_1UG
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration

Vial: 1
Operator: RJP
Inst : MSD #1
Multiplr: 1.00



Spectrum Information: Average of 17.835 to 17.841 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	21.0	4508	PASS
75	95	30	66	59.3	12717	PASS
95	95	100	100	100.0	21434	PASS
96	95	5	9	6.7	1437	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	102.2	21906	PASS
175	174	4	9	7.4	1616	PASS
176	174	95	101	98.8	21640	PASS
177	176	5	9	7.6	1649	PASS

AJ112801.D AN23_1UG.M Fri Dec 14 14:37:32 2012 MSD1

GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

RAW QC DATA

CENTEK LABORATORIES, LLC

Date: *14-Dec-12*

ANALYTICAL QC SUMMARY REPORT

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID AMB1UG-112812	SampType: MBLK	TestCode: 1ugM3_TO15	Units: ppbV	Prep Date:	RunNo: 6410
Client ID: ZZZZZ	Batch ID: R6410	TestNo: TO-15		Analysis Date: 11/28/2012	SeqNo: 75162

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	< 0.15	0.15									
1,1,2,2-Tetrachloroethane	< 0.15	0.15									
1,1,2-Trichloroethane	< 0.15	0.15									
1,1-Dichloroethane	< 0.15	0.15									
1,1-Dichloroethene	< 0.15	0.15									
1,2,4-Trichlorobenzene	< 0.15	0.15									
1,2,4-Trimethylbenzene	< 0.15	0.15									
1,2-Dibromoethane	< 0.15	0.15									
1,2-Dichlorobenzene	< 0.15	0.15									
1,2-Dichloroethane	< 0.15	0.15									
1,2-Dichloropropane	< 0.15	0.15									
1,3,5-Trimethylbenzene	< 0.15	0.15									
1,3-butadiene	< 0.15	0.15									
1,3-Dichlorobenzene	< 0.15	0.15									
1,4-Dichlorobenzene	< 0.15	0.15									
1,4-Dioxane	< 0.30	0.30									
2,2,4-trimethylpentane	< 0.15	0.15									
4-ethyltoluene	< 0.15	0.15									
Acetone	< 0.30	0.30									
Allyl chloride	< 0.15	0.15									
Benzene	< 0.15	0.15									
Benzyl chloride	< 0.15	0.15									
Bromodichloromethane	< 0.15	0.15									
Bromoform	< 0.15	0.15									
Bromomethane	< 0.15	0.15									

Qualifiers:

.	Results reported are not blank corrected	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected at or below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits				

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID AMB1UG-112812	SampType: MBLK	TestCode: 1ugM3_TO15	Units: ppbV	Prep Date:	RunNo: 6410
Client ID: ZZZZZ	Batch ID: R6410	TestNo: TO-15		Analysis Date: 11/28/2012	SeqNo: 75162

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon disulfide	< 0.15	0.15									
Carbon tetrachloride	< 0.15	0.15									
Chlorobenzene	< 0.15	0.15									
Chloroethane	< 0.15	0.15									
Chloroform	< 0.15	0.15									
Chloromethane	< 0.15	0.15									
cis-1,2-Dichloroethene	< 0.15	0.15									
cis-1,3-Dichloropropene	< 0.15	0.15									
Cyclohexane	< 0.15	0.15									
Dibromochloromethane	< 0.15	0.15									
Ethyl acetate	< 0.25	0.25									
Ethylbenzene	< 0.15	0.15									
Freon 11	< 0.15	0.15									
Freon 113	< 0.15	0.15									
Freon 114	< 0.15	0.15									
Freon 12	< 0.15	0.15									
Heptane	< 0.15	0.15									
Hexachloro-1,3-butadiene	< 0.15	0.15									
Hexane	< 0.15	0.15									
Isopropyl alcohol	< 0.15	0.15									
m&p-Xylene	< 0.30	0.30									
Methyl Butyl Ketone	< 0.30	0.30									
Methyl Ethyl Ketone	< 0.30	0.30									
Methyl Isobutyl Ketone	< 0.30	0.30									
Methyl tert-butyl ether	< 0.15	0.15									
Methylene chloride	< 0.15	0.15									
o-Xylene	< 0.15	0.15									
Propylene	< 0.15	0.15									
Styrene	< 0.15	0.15									
Tetrachloroethylene	< 0.15	0.15									
Tetrahydrofuran	< 0.15	0.15									

Qualifiers:

.	Results reported are not blank corrected	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected at or below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits				

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID	AMB1UG-112812	SampType:	MBLK	TestCode:	1ugM3_TO15	Units:	ppbV	Prep Date:		RunNo:	6410
Client ID:	ZZZZZ	Batch ID:	R6410	TestNo:	TO-15			Analysis Date:	11/28/2012	SeqNo:	75162

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	< 0.15	0.15									
trans-1,2-Dichloroethene	< 0.15	0.15									
trans-1,3-Dichloropropene	< 0.15	0.15									
Trichloroethene	< 0.15	0.15									
Vinyl acetate	< 0.15	0.15									
Vinyl Bromide	< 0.15	0.15									
Vinyl chloride	< 0.15	0.15									

Qualifiers:

.	Results reported are not blank corrected	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected at or below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits				

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112804.D Vial: 4
Acq On : 28 Nov 2012 11:15 am Operator: RJP
Sample : AMB1UG-112812 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 14:21:25 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.73	128	23038	1.00	ppb	0.00
33) 1,4-difluorobenzene	11.99	114	88115	1.00	ppb	0.00
48) Chlorobenzene-d5	16.36	117	69769	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.84	95	34803	0.85	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 85.00%			
Target Compounds						Qvalue

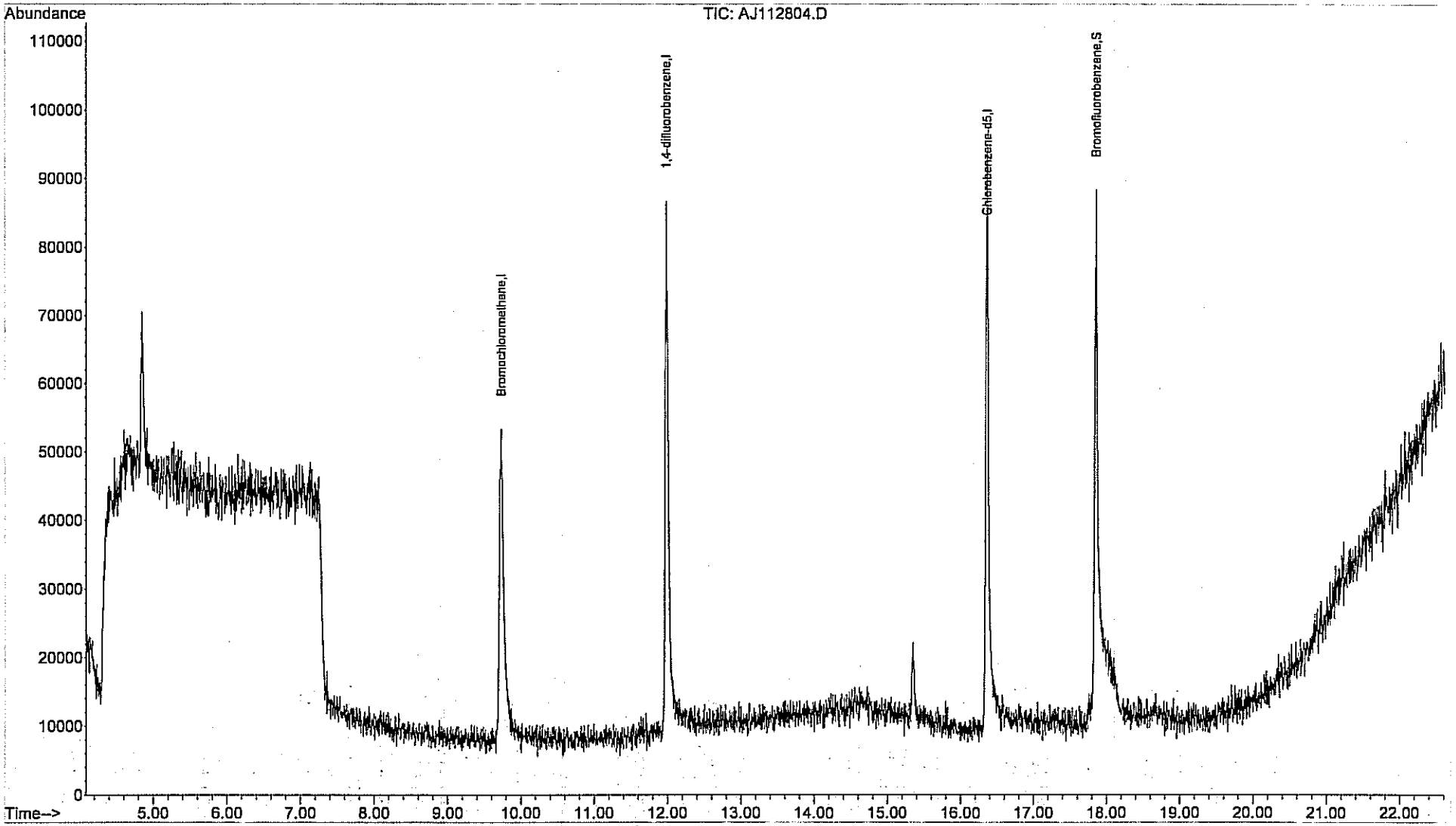
(#) = qualifier out of range (m) = manual integration (+) = signals summed
AJ112804.D AN23_1UG.M Fri Dec 14 14:36:52 2012 MSD1 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112804.D
Acq On : 28 Nov 2012 11:15 am
Sample : AMB1UG-112812
Misc : AN23_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 29 14:21 2012

Vial: 4
Operator: RJP
Inst : MSD #1
Multiplr: 1.00
Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration



CENTEK LABORATORIES, LLC

Date: *14-Dec-12*

ANALYTICAL QC SUMMARY REPORT

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID ALCS1UG-112812	SampType: LCS	TestCode: 1ugM3_TO15	Units: ppbV	Prep Date:	RunNo: 6410
Client ID: ZZZZZ	Batch ID: R6410	TestNo: TO-15		Analysis Date: 11/28/2012	SeqNo: 75163

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	0.9600	0.15	1	0	96.0	70	130				
1,1,2,2-Tetrachloroethane	0.9500	0.15	1	0	95.0	70	130				
1,1,2-Trichloroethane	0.9600	0.15	1	0	96.0	70	130				
1,1-Dichloroethane	0.9400	0.15	1	0	94.0	70	130				
1,1-Dichloroethene	1.060	0.15	1	0	106	70	130				
1,2,4-Trichlorobenzene	0.8100	0.15	1	0	81.0	70	130				
1,2,4-Trimethylbenzene	0.9500	0.15	1	0	95.0	70	130				
1,2-Dibromoethane	0.9500	0.15	1	0	95.0	70	130				
1,2-Dichlorobenzene	0.9100	0.15	1	0	91.0	70	130				
1,2-Dichloroethane	1.000	0.15	1	0	100	70	130				
1,2-Dichloropropane	1.000	0.15	1	0	100	70	130				
1,3,5-Trimethylbenzene	1.030	0.15	1	0	103	70	130				
1,3-butadiene	1.010	0.15	1	0	101	70	130				
1,3-Dichlorobenzene	0.9400	0.15	1	0	94.0	70	130				
1,4-Dichlorobenzene	0.9700	0.15	1	0	97.0	70	130				
1,4-Dioxane	0.9200	0.30	1	0	92.0	70	130				
2,2,4-trimethylpentane	0.9800	0.15	1	0	98.0	70	130				
4-ethyltoluene	1.040	0.15	1	0	104	70	130				
Acetone	1.110	0.30	1	0	111	70	130				
Allyl chloride	1.080	0.15	1	0	108	70	130				
Benzene	1.020	0.15	1	0	102	70	130				
Benzyl chloride	0.9100	0.15	1	0	91.0	70	130				
Bromodichloromethane	0.9600	0.15	1	0	96.0	70	130				
Bromoform	0.7900	0.15	1	0	79.0	70	130				
Bromomethane	1.050	0.15	1	0	105	70	130				

Qualifiers:

.	Results reported are not blank corrected	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected at or below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits				

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID ALCS1UG-112812	SampType: LCS	TestCode: 1ugM3_TO15	Units: ppbV	Prep Date:	RunNo: 6410
Client ID: ZZZZZ	Batch ID: R6410	TestNo: TO-15		Analysis Date: 11/28/2012	SeqNo: 75163

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon disulfide	0.7300	0.15	1	0	73.0	70	130				
Carbon tetrachloride	0.8700	0.15	1	0	87.0	70	130				
Chlorobenzene	0.9700	0.15	1	0	97.0	70	130				
Chloroethane	1.020	0.15	1	0	102	70	130				
Chloroform	1.000	0.15	1	0	100	70	130				
Chloromethane	1.060	0.15	1	0	106	70	130				
cis-1,2-Dichloroethene	1.040	0.15	1	0	104	70	130				
cis-1,3-Dichloropropene	0.9500	0.15	1	0	95.0	70	130				
Cyclohexane	0.9400	0.15	1	0	94.0	70	130				
Dibromochloromethane	0.9400	0.15	1	0	94.0	70	130				
Ethyl acetate	0.9800	0.25	1	0	98.0	70	130				
Ethylbenzene	0.9800	0.15	1	0	98.0	70	130				
Freon 11	1.030	0.15	1	0	103	70	130				
Freon 113	1.010	0.15	1	0	101	70	130				
Freon 114	1.070	0.15	1	0	107	70	130				
Freon 12	1.050	0.15	1	0	105	70	130				
Heptane	0.9900	0.15	1	0	99.0	70	130				
Hexachloro-1,3-butadiene	0.9500	0.15	1	0	95.0	70	130				
Hexane	1.040	0.15	1	0	104	70	130				
Isopropyl alcohol	1.110	0.15	1	0	111	70	130				
m&p-Xylene	2.070	0.30	2	0	104	70	130				
Methyl Butyl Ketone	0.8500	0.30	1	0	85.0	70	130				
Methyl Ethyl Ketone	0.9400	0.30	1	0	94.0	70	130				
Methyl Isobutyl Ketone	0.9000	0.30	1	0	90.0	70	130				
Methyl tert-butyl ether	0.9700	0.15	1	0	97.0	70	130				
Methylene chloride	0.8700	0.15	1	0	87.0	70	130				
o-Xylene	0.9900	0.15	1	0	99.0	70	130				
Propylene	1.040	0.15	1	0	104	70	130				
Styrene	1.000	0.15	1	0	100	70	130				
Tetrachloroethylene	1.000	0.15	1	0	100	70	130				
Tetrahydrofuran	0.8300	0.15	1	0	83.0	70	130				

Qualifiers:
. Results reported are not blank corrected
J Analyte detected at or below quantitation limits
S Spike Recovery outside accepted recovery limits
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

CLIENT: Arcadis - Newtown
Work Order: C1211047
Project: LMC Utica

TestCode: 1ugM3_TO15

Sample ID **ALCS1UG-112812** SampType: **LCS** TestCode: **1ugM3_TO15** Units: **ppbV** Prep Date: RunNo: **6410**
Client ID: **ZZZZZ** Batch ID: **R6410** TestNo: **TO-15** Analysis Date: **11/28/2012** SeqNo: **75163**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	0.9800	0.15	1	0	98.0	70	130				
trans-1,2-Dichloroethene	0.8500	0.15	1	0	85.0	70	130				
trans-1,3-Dichloropropene	0.9200	0.15	1	0	92.0	70	130				
Trichloroethene	0.9100	0.15	1	0	91.0	70	130				
Vinyl acetate	0.9700	0.15	1	0	97.0	70	130				
Vinyl Bromide	1.060	0.15	1	0	106	70	130				
Vinyl chloride	1.010	0.15	1	0	101	70	130				

Qualifiers:

.	Results reported are not blank corrected	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected at or below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits				

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112803.D Vial: 3
Acq On : 28 Nov 2012 10:41 am Operator: RJP
Sample : ALCS1UG-112812 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 28 11:04:51 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.72	128	25336	1.00	ppb		0.00
33) 1,4-difluorobenzene	11.99	114	100153	1.00	ppb		0.00
48) Chlorobenzene-d5	16.35	117	89043	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.84	95	52267	1.00	ppb		0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 100.00%				
Target Compounds							Qvalue
2) Propylene	4.16	41	32775	1.04	ppb		88
3) Freon 12	4.21	85	234865	1.05	ppb		99
4) Chloromethane	4.41	50	66593	1.06	ppb		99
5) Freon 114	4.40	85	209922	1.07	ppb		90
6) Vinyl Chloride	4.59	62	58613	1.01	ppb		98
7) 1,3-butadiene	4.69	39	37684	1.01	ppb		100
8) Bromomethane	5.03	94	70170	1.05	ppb		99
9) Ethanol	5.39	45	14541	0.93	ppb		88
10) Acrolein	5.95	56	12394	0.97	ppb		84
11) Chloroethane	5.20	64	25089	1.02	ppb		98
12) Vinyl Bromide	5.53	106	71432	1.06	ppb		98
13) Freon 11	5.80	101	301522	1.03	ppb		95
14) Acetone	6.07	58	25517	1.11	ppb		92
15) Isopropyl alcohol	6.18	45	67167	1.11	ppb	#	32
16) 1,1-dichloroethene	6.54	96	60669	1.06	ppb		98
17) Freon 113	6.74	101	149502	1.01	ppb	#	83
18) t-Butyl alcohol	6.92	59	103543	1.04	ppb	#	72
19) Methylene chloride	7.00	84	42730	0.87	ppb		90
20) Allyl chloride	6.98	41	55343m	1.08	ppb		
21) Carbon disulfide	7.16	76	121743m	0.73	ppb		
22) trans-1,2-dichloroethene	7.92	61	46074	0.85	ppb	#	77
23) methyl tert-butyl ether	8.04	73	84038	0.97	ppb		90
24) 1,1-dichloroethane	8.34	63	63722	0.94	ppb		99
25) Vinyl acetate	8.40	43	44333	0.97	ppb		94
26) Methyl Ethyl Ketone	8.95	72	11367	0.94	ppb	#	100
27) cis-1,2-dichloroethene	9.28	61	40184	1.04	ppb		99
28) Hexane	8.88	57	35903	1.04	ppb		88
29) Ethyl acetate	9.53	43	49795	0.98	ppb		97
30) Chloroform	9.87	83	104059	1.00	ppb		100
31) Tetrahydrofuran	10.19	42	17777	0.83	ppb	#	66
32) 1,2-dichloroethane	11.00	62	72360	1.00	ppb		98
34) 1,1,1-trichloroethane	10.70	97	133782	0.96	ppb		99
35) Cyclohexane	8.89	56	20199	0.94	ppb		88
36) Carbon tetrachloride	11.34	117	159530	0.87	ppb		93
37) Benzene	11.31	78	92850	1.02	ppb		96
38) Methyl methacrylate	12.88	41	22774	0.84	ppb		95
39) 1,4-dioxane	13.05	88	13537m	0.92	ppb		
40) 2,2,4-trimethylpentane	12.14	57	113974	0.98	ppb		97
41) Heptane	12.48	43	34393	0.99	ppb		94
42) Trichloroethene	12.60	130	48968	0.91	ppb		98
43) 1,2-dichloropropane	12.70	63	33832	1.00	ppb		97
44) Bromodichloromethane	13.01	83	117000	0.96	ppb		97
45) cis-1,3-dichloropropene	13.77	75	45530	0.95	ppb		95

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112803.D Vial: 3
Acq On : 28 Nov 2012 10:41 am Operator: RJP
Sample : ALCS1UG-112812 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 28 11:04:51 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

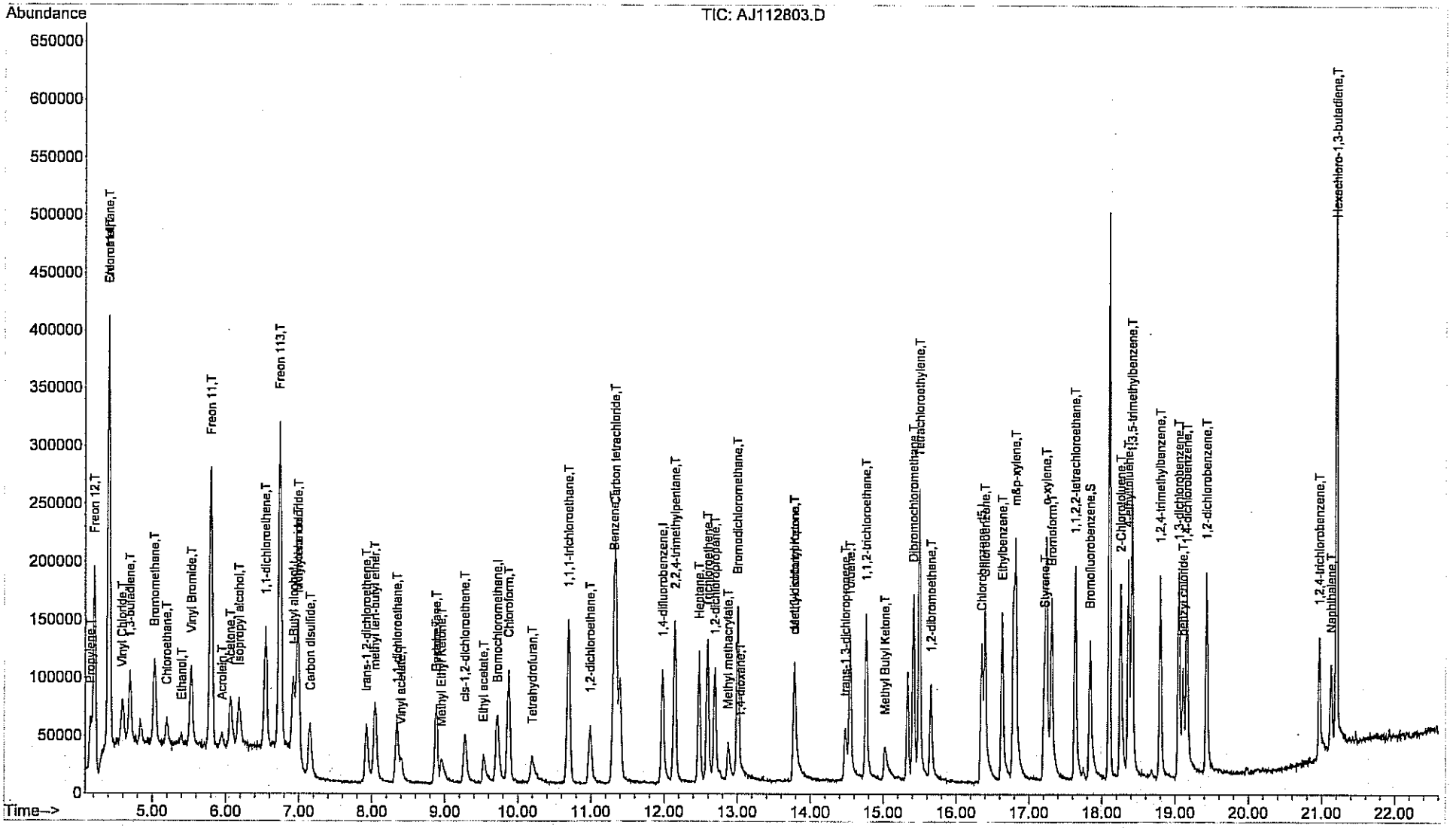
	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.48	75	43978	0.92	ppb		94
47)	1,1,2-trichloroethane	14.76	97	47359	0.96	ppb		96
49)	Toluene	14.54	92	63235	0.98	ppb		97
50)	Methyl Isobutyl Ketone	13.78	43	47577	0.90	ppb		76
51)	Dibromochloromethane	15.41	129	101772	0.94	ppb		97
52)	Methyl Butyl Ketone	15.02	43	35175	0.85	ppb	#	28
53)	1,2-dibromoethane	15.65	107	64197	0.95	ppb		98
54)	Tetrachloroethylene	15.49	164	60077	1.00	ppb		94
55)	Chlorobenzene	16.39	112	94665	0.97	ppb		98
56)	Ethylbenzene	16.63	91	135104	0.98	ppb		95
57)	m&p-xylene	16.81	91	247135	2.07	ppb		93
58)	Styrene	17.21	104	70402	1.00	ppb		89
59)	Bromoform	17.31	173	84266	0.79	ppb		95
60)	o-xylene	17.23	91	161874	0.99	ppb		96
62)	1,1,2,2-tetrachloroethane	17.63	83	89648	0.95	ppb		97
63)	2-Chlorotoluene	18.25	91	119288	1.06	ppb		99
64)	4-ethyltoluene	18.36	105	134417m	1.04	ppb		
65)	1,3,5-trimethylbenzene	18.41	105	181062m	1.03	ppb		
66)	1,2,4-trimethylbenzene	18.79	105	120122	0.95	ppb		93
67)	1,3-dichlorobenzene	19.05	146	87009	0.94	ppb		99
68)	benzyl chloride	19.10	91	80724	0.91	ppb		95
69)	1,4-dichlorobenzene	19.16	146	87485	0.97	ppb		96
70)	1,2-dichlorobenzene	19.43	146	84657	0.91	ppb		97
71)	1,2,4-trichlorobenzene	20.97	180	42218	0.81	ppb	#	1
72)	Naphthalene	21.13	128	77982	0.80	ppb		96
73)	Hexachloro-1,3-butadiene	21.20	225	84457	0.95	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112803.D Vial: 3
Acq On : 28 Nov 2012 10:41 am Operator: RJP
Sample : ALCS1UG-112812 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 28 11:05 2012 Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112836.D Vial: 57
Acq On : 29 Nov 2012 6:03 am Operator: RJP
Sample : ALCS1UGD-112812 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:31 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane	9.70	128	21995	1.00	ppb		-0.02
33) 1,4-difluorobenzene	11.97	114	85116	1.00	ppb		-0.01
48) Chlorobenzene-d5	16.35	117	73497	1.00	ppb		0.00
System Monitoring Compounds							
61) Bromofluorobenzene	17.84	95	42641	0.99	ppb		0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 99.00%				
Target Compounds							Qvalue
2) Propylene	4.16	41	26196	0.96	ppb		81
3) Freon 12	4.20	85	206040	1.06	ppb		99
4) Chloromethane	4.40	50	64575	1.18	ppb		96
5) Freon 114	4.41	85	190733	1.12	ppb		93
6) Vinyl Chloride	4.59	62	52768	1.04	ppb		99
7) 1,3-butadiene	4.69	39	32615	1.01	ppb		90
8) Bromomethane	5.03	94	63938	1.10	ppb		97
9) Ethanol	5.39	45	11693	0.86	ppb	#	42
10) Acrolein	5.95	56	11532	1.04	ppb	#	75
11) Chloroethane	5.20	64	25573	1.20	ppb		97
12) Vinyl Bromide	5.53	106	66763	1.14	ppb		98
13) Freon 11	5.79	101	295669	1.16	ppb		96
14) Acetone	6.08	58	20089	1.01	ppb		94
15) Isopropyl alcohol	6.19	45	44355	0.85	ppb	#	32
16) 1,1-dichloroethene	6.55	96	55665	1.12	ppb		93
17) Freon 113	6.74	101	147843	1.15	ppb	#	84
18) t-Butyl alcohol	6.95	59	50869m	0.59	ppb		
19) Methylene chloride	6.99	84	48636	1.14	ppb		95
20) Allyl chloride	6.98	41	52451m	1.17	ppb		
21) Carbon disulfide	7.14	76	161035	1.12	ppb		96
22) trans-1,2-dichloroethene	7.91	61	43161	0.92	ppb	#	72
23) methyl tert-butyl ether	8.05	73	70823	0.94	ppb	#	44
24) 1,1-dichloroethane	8.34	63	61273	1.04	ppb		95
25) Vinyl acetate	8.39	43	35065	0.88	ppb		98
26) Methyl Ethyl Ketone	8.96	72	9796m	0.93	ppb		
27) cis-1,2-dichloroethene	9.27	61	34833	1.04	ppb		97
28) Hexane	8.87	57	27058	0.90	ppb	#	73
29) Ethyl acetate	9.53	43	33411	0.76	ppb		94
30) Chloroform	9.87	83	93542	1.04	ppb		97
31) Tetrahydrofuran	10.19	42	15616	0.84	ppb		97
32) 1,2-dichloroethane	10.98	62	65222	1.04	ppb		99
34) 1,1,1-trichloroethane	10.68	97	125130	1.06	ppb		99
35) Cyclohexane	8.88	56	17756	0.97	ppb		91
36) Carbon tetrachloride	11.33	117	152276	0.98	ppb		91
37) Benzene	11.30	78	79254	1.03	ppb		98
38) Methyl methacrylate	12.87	41	21269m	0.92	ppb		
39) 1,4-dioxane	13.15	88	5313m	0.42	ppb		
40) 2,2,4-trimethylpentane	12.14	57	100973	1.02	ppb		92
41) Heptane	12.47	43	31457	1.07	ppb		98
42) Trichloroethene	12.59	130	43772	0.96	ppb		99
43) 1,2-dichloropropane	12.69	63	27847	0.97	ppb		97
44) Bromodichloromethane	13.00	83	107626	1.04	ppb		99
45) cis-1,3-dichloropropene	13.77	75	36415	0.89	ppb		95

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112836.D Vial: 57
Acq On : 29 Nov 2012 6:03 am Operator: RJP
Sample : ALCS1UGD-112812 Inst : MSD #1
Misc : AN23_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 29 07:37:31 2012 Quant Results File: AN23_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Tue Nov 27 16:12:35 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
46)	trans-1,3-dichloropropene	14.47	75	39453	0.97	ppb		97
47)	1,1,2-trichloroethane	14.76	97	40647	0.97	ppb		95
49)	Toluene	14.54	92	56852	1.07	ppb		93
50)	Methyl Isobutyl Ketone	13.81	43	26186m	0.60	ppb		
51)	Dibromochloromethane	15.41	129	88648m	0.99	ppb		
52)	Methyl Butyl Ketone	15.03	43	43732m	1.27	ppb		
53)	1,2-dibromoethane	15.65	107	56338	1.01	ppb		96
54)	Tetrachloroethylene	15.49	164	52764	1.07	ppb		99
55)	Chlorobenzene	16.39	112	85160	1.05	ppb		97
56)	Ethylbenzene	16.62	91	116765	1.02	ppb		99
57)	m&p-xylene	16.81	91	208587	2.11	ppb		92
58)	Styrene	17.21	104	62501	1.07	ppb		85
59)	Bromoform	17.31	173	74986	0.85	ppb		96
60)	o-xylene	17.24	91	135031	1.00	ppb		98
62)	1,1,2,2-tetrachloroethane	17.63	83	77522	0.99	ppb		94
63)	2-Chlorotoluene	18.25	91	99105	1.06	ppb		98
64)	4-ethyltoluene	18.36	105	94704m	0.89	ppb		
65)	1,3,5-trimethylbenzene	18.41	105	141559m	0.98	ppb		
66)	1,2,4-trimethylbenzene	18.79	105	102777	0.98	ppb		95
67)	1,3-dichlorobenzene	19.05	146	76114	1.00	ppb		98
68)	benzyl chloride	19.10	91	65355	0.89	ppb		98
69)	1,4-dichlorobenzene	19.16	146	71707	0.96	ppb		99
70)	1,2-dichlorobenzene	19.42	146	72658	0.94	ppb		92
71)	1,2,4-trichlorobenzene	20.96	180	30672	0.72	ppb	#	1
72)	Naphthalene	21.13	128	39788	0.49	ppb		95
73)	Hexachloro-1,3-butadiene	21.20	225	67197	0.92	ppb	#	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

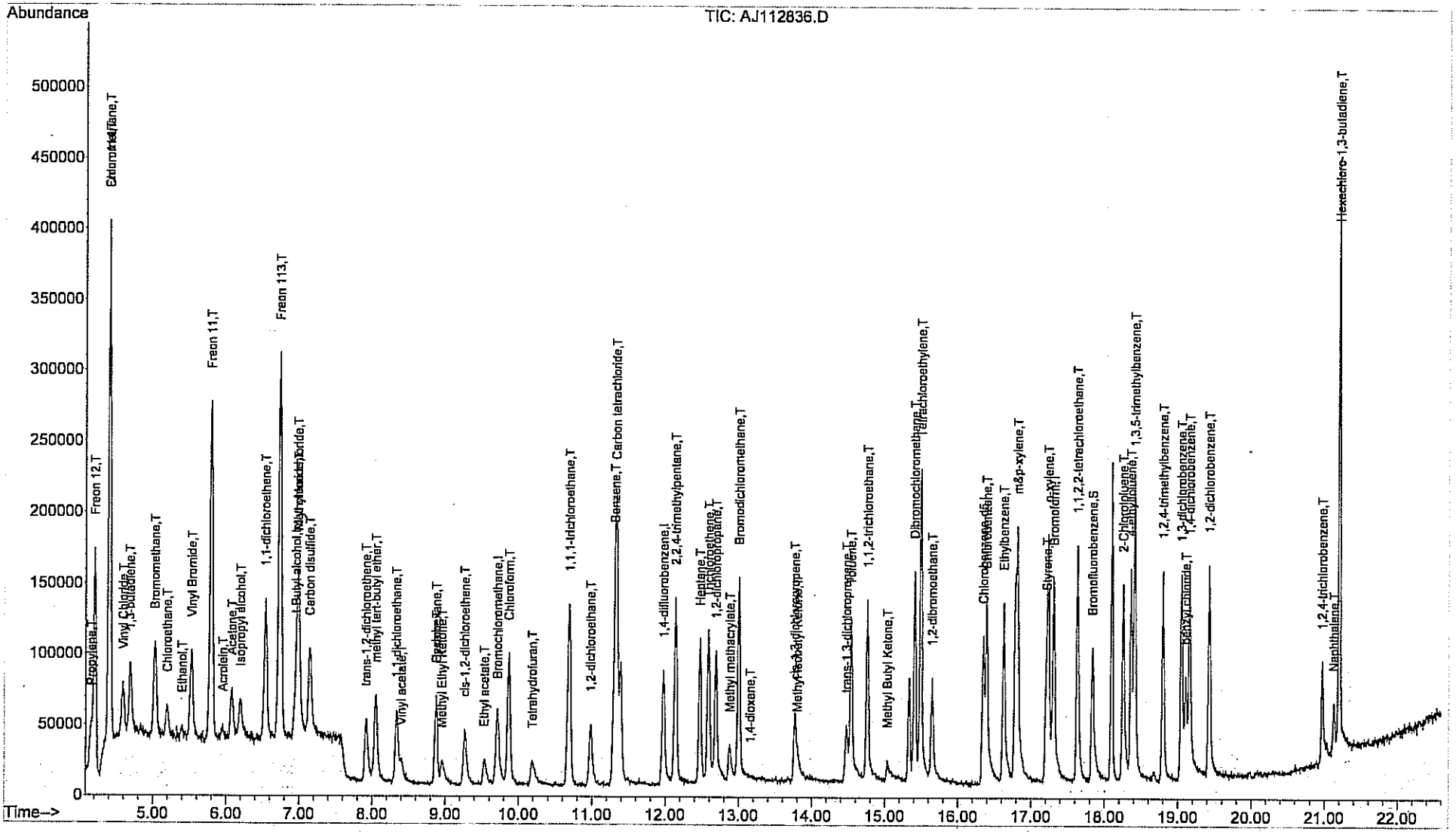
Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\AJ112836.D
Acq On : 29 Nov 2012 6:03 am
Sample : ALCS1UGD-112812
Misc : AN23_1UG
MS Integration Params: RTEINT.P
Quant Time: Nov 29 14:37 2012

Vial: 57
Operator: RJP
Inst : MSD #1
Multiplr: 1.00

Quant Results File: AN23_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Fri Dec 14 12:49:10 2012
Response via : Initial Calibration



GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

INJECTION LOG

Centek Laboratories, LLC

Injection Log

Directory: C:\HPCHEM\1\DATA2\2012nov

Instrument #: 1
Internal Standard Stock #: 5322 5332
Standard Stock #: 5323 33
LCS Stock #: 5324 34
Method Ref: EPA Injected Jan. 1999

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
276	2	Aj111911.d	1.	C1211036-002A	AN06_1UG	19 Nov 2012 17:06
277	3	Aj111912.d	1.	C1211036-003A	AN06_1UG	19 Nov 2012 17:41
278	4	Aj111913.d	1.	C1211036-005A	AN06_1UG	19 Nov 2012 18:16
279	5	Aj111914.d	1.	C1211036-006A	AN06_1UG	19 Nov 2012 18:51
280	6	Aj111915.d	1.	C1211036-007A	AN06_1UG	19 Nov 2012 19:27
281	7	Aj111916.d	1.	C1211036-008A	AN06_1UG	19 Nov 2012 20:02
282	8	Aj111917.d	1.	C1211036-004A 10X	AN06_1UG	19 Nov 2012 20:37
283	9	Aj111918.d	1.	C1211036-004A 40X	AN06_1UG	19 Nov 2012 21:12
284	10	Aj111919.d	1.	C1211036-001A 10X	AN06_1UG	19 Nov 2012 21:46
285	11	Aj111920.d	1.	C1211036-001A 40X	AN06_1UG	19 Nov 2012 22:21
286	12	Aj111921.d	1.	C1211036-002A 10X	AN06_1UG	19 Nov 2012 22:56
287	13	Aj111922.d	1.	C1211036-002A 40X	AN06_1UG	19 Nov 2012 23:31
288	14	Aj111923.d	1.	C1211036-003A 10X	AN06_1UG	20 Nov 2012 00:06
289	15	Aj111924.d	1.	C1211036-003A 40X	AN06_1UG	20 Nov 2012 00:41
290	16	Aj111925.d	1.	C1211036-005A 10X	AN06_1UG	20 Nov 2012 01:15
291	17	Aj111926.d	1.	C1211036-005A 40X	AN06_1UG	20 Nov 2012 01:50
292	18	Aj111927.d	1.	C1211036-006A 10X	AN06_1UG	20 Nov 2012 02:25
293	19	Aj111928.d	1.	C1211036-006A 40X	AN06_1UG	20 Nov 2012 03:00
294	20	Aj111929.d	1.	C1211036-007A 10X	AN06_1UG	20 Nov 2012 03:34
295	21	Aj111930.d	1.	C1211036-007A 40X	AN06_1UG	20 Nov 2012 04:09
296	22	Aj111931.d	1.	C1211036-008A 10X	AN06_1UG	20 Nov 2012 04:44
297	23	Aj111932.d	1.	C1211036-008A 40X	AN06_1UG	20 Nov 2012 05:19
298	24	Aj111933.d	1.	ALCS1UGD-111912	AN06_1UG	20 Nov 2012 05:54
299	25	Aj111934.d	1.		AN06_1UG	20 Nov 2012 06:30
300		Aj111935.d	1.	No MS or GC data present		
301	1	Aj112101.d	1.	BFB1UG	AN06_1UG	21 Nov 2012 12:14
302	1	Aj112102.d	1.	A1UG	AN06_1UG	21 Nov 2012 13:01
303	2	Aj112103.d	1.	A1UG	AN06_1UG	21 Nov 2012 15:22
304	2	Aj112301.d	1.	BFB1UG	AN06_1UG	23 Nov 2012 09:45
305	3	Aj112302.d	1.	BFB1UG	AN06_1UG	23 Nov 2012 10:23
306	4	Aj112303.d	1.	A1UG	AN06_1UG	23 Nov 2012 11:08
307	1	Aj112304.d	1.	A1UG_2.0	AN06_1UG	23 Nov 2012 11:44
308	2	Aj112305.d	1.	A1UG_1.5	AN06_1UG	23 Nov 2012 12:22
309	3	Aj112306.d	1.	A1UG_1.25	AN06_1UG	23 Nov 2012 13:01
310	4	Aj112307.d	1.	A1UG_1.0	AN06_1UG	23 Nov 2012 13:38
311	5	Aj112308.d	1.	A1UG_0.75	AN06_1UG	23 Nov 2012 14:15
312	6	Aj112309.d	1.	A1UG_0.50	AN06_1UG	23 Nov 2012 14:52
313	7	Aj112310.d	1.	A1UG_0.30	AN06_1UG	23 Nov 2012 15:28
314	8	Aj112311.d	1.	A1UG_0.15	AN06_1UG	23 Nov 2012 16:04
315	9	Aj112312.d	1.	A1UG	AN06_1UG	23 Nov 2012 16:40
316	10	Aj112313.d	1.	A1UG	AN06_1UG	23 Nov 2012 17:16
317	11	Aj112314.d	1.	A1UG_0.10	AN06_1UG	23 Nov 2012 20:24
318	12	Aj112315.d	1.	A1UG_0.04	AN06_1UG	23 Nov 2012 21:00
319		Aj112316.d	1.	No MS or GC data present		
320	1	Aj112801.d	1.	BFB1UG	AN06_1UG	28 Nov 2012 07:45
321	2	Aj112802.d	1.	A1UG_1.0	AN23_1UG	28 Nov 2012 09:59
322	3	Aj112803.d	1.	ALCS1UG-112812	AN23_1UG	28 Nov 2012 10:41
323	4	Aj112804.d	1.	AMB1UG-112812	AN23_1UG	28 Nov 2012 11:15
324	1	Aj112805.d	1.	WAC112812A	AN23_1UG	28 Nov 2012 11:58
325	2	Aj112806.d	1.	WAC112812B	AN23_1UG	28 Nov 2012 12:33
326	3	Aj112807.d	1.	WAC112812C N	AN23_1UG	28 Nov 2012 13:10
327	4	Aj112808.d	1.	WAC112812D N	AN23_1UG	28 Nov 2012 13:44
328	5	Aj112809.d	1.	WAC112812E	AN23_1UG	28 Nov 2012 14:19
329	6	Aj112810.d	1.	WAC112812F	AN23_1UG	28 Nov 2012 14:54
330	7	Aj112811.d	1.	WAC112812G	AN23_1UG	28 Nov 2012 15:29

Centek Laboratories, LLC

Injection Log

Directory: C:\HPCHEM\1\DATA2\2012nov

Instrument # 1
Internal Standard Stock # 9332
Standard Stock # 9333
LCS Stock # Injected 9334
Method Ref: EPA TO-15 / Jan. 1999

Line	Vial	FileName	Multiplier	SampleName	Misc Info		
331	8	Aj112812.d	1.	WAC112812H	AN23_1UG		28 Nov 2012 16:04
332	9	Aj112813.d	1.	WAC112812I	AN23_1UG		28 Nov 2012 16:39
333	10	Aj112814.d	1.	WAC112812J	AN23_1UG		28 Nov 2012 17:15
334	11	Aj112815.d	1.	WAC112812K	AN23_1UG		28 Nov 2012 17:50
335	12	Aj112816.d	1.	WAC112812L	AN23_1UG		28 Nov 2012 18:24
336	10	Aj112817.d	1.	C1211047-001A	AN23_1UG		28 Nov 2012 18:58
337	11	Aj112818.d	1.	C1211047-002A	AN23_1UG		28 Nov 2012 19:33
338	12	Aj112819.d	1.	C1211047-003A	AN23_1UG		28 Nov 2012 20:09
339	41	Aj112820.d	1.	C1211047-004A	AN23_1UG		28 Nov 2012 20:46
340	42	Aj112821.d	1.	C1211051-001A	AN23_1UG		28 Nov 2012 21:22
341	43	Aj112822.d	1.	C1211051-002A	AN23_1UG		28 Nov 2012 21:58
342	44	Aj112823.d	1.	C1211051-003A	AN23_1UG		28 Nov 2012 22:33
343	45	Aj112824.d	1.	C1211051-004A	AN23_1UG		28 Nov 2012 23:09
344	46	Aj112825.d	1.	C1211045-001A 10X	AN23_1UG		28 Nov 2012 23:42
345	47	Aj112826.d	1.	C1211045-002A 10X	AN23_1UG		29 Nov 2012 00:17
346	48	Aj112827.d	1.	C1211045-003A 10X	AN23_1UG		29 Nov 2012 00:53
347	49	Aj112828.d	1.	C1211047-001A 10X	AN23_1UG		29 Nov 2012 01:27
348	50	Aj112829.d	1.	C1211047-001A 40X	AN23_1UG		29 Nov 2012 02:01
349	51	Aj112830.d	1.	C1211047-002A 10X	AN23_1UG		29 Nov 2012 02:35
350	52	Aj112831.d	1.	C1211047	AN23_1UG	-002A 40X	29 Nov 2012 03:10
351	53	Aj112832.d	1.	C1211047-003A 10X	AN23_1UG		29 Nov 2012 03:45
352	54	Aj112833.d	1.	C1211047	AN23_1UG	-003A 40X	29 Nov 2012 04:20
353	55	Aj112834.d	1.	C1211047-004A 10X	AN23_1UG		29 Nov 2012 04:55
354	56	Aj112835.d	1.	C1211047	AN23_1UG	-004A 40X	29 Nov 2012 05:28
355	57	Aj112836.d	1.	ALCS1UGD-112812	AN23_1UG		29 Nov 2012 06:03
356	58	Aj112837.d	1.	C1211051-001A 10X	AN23_1UG		29 Nov 2012 06:39
357	59	Aj112838.d	1.	C1211051-001A 40X	AN23_1UG		29 Nov 2012 07:14
358		Aj112839.d	1.	No MS or GC data present			
359	2	Aj112901.d	1.	BFB1UG	AN23_1UG		29 Nov 2012 09:31
360	3	Aj112902.d	1.	A1UG_1.0	AN23_1UG		29 Nov 2012 10:07
361	4	Aj112903.d	1.	ALCS1UG-112912	AN23_1UG		29 Nov 2012 10:51
362	5	Aj112904.d	1.	AMB1UG-112912	AN23_1UG		29 Nov 2012 12:59
363	1	Aj112905.d	1.	C1211051-002A 5X	AN23_1UG		29 Nov 2012 13:57
364	2	Aj112906.d	1.	C1211051-003A 5X	AN23_1UG		29 Nov 2012 14:31
365	3	Aj112907.d	1.	C1211051-004A 5X	AN23_1UG		29 Nov 2012 15:06
366	4	Aj112908.d	1.	C1211045-001A	AN23_1UG		29 Nov 2012 15:41
367	5	Aj112909.d	1.	C1211045-001A 40X	AN23_1UG		29 Nov 2012 16:16
368	6	Aj112910.d	1.	C1211045-002A	AN23_1UG		29 Nov 2012 16:50
369	7	Aj112911.d	1.	C1211045-002A 40X	AN23_1UG		29 Nov 2012 17:24
370	8	Aj112912.d	1.	C1211045-003A	AN23_1UG		29 Nov 2012 18:00
371	9	Aj112913.d	1.	C1211045-003A 40X	AN23_1UG		29 Nov 2012 18:33
372	10	Aj112914.d	1.	C1211057-001A	AN23_1UG		29 Nov 2012 19:08
373	11	Aj112915.d	1.	C1211057-002A	AN23_1UG		29 Nov 2012 19:42
374	12	Aj112916.d	1.	C1211057-003A	AN23_1UG		29 Nov 2012 20:16
375	13	Aj112917.d	1.	C1211057-001A 10X	AN23_1UG		29 Nov 2012 20:50
376	14	Aj112918.d	1.	C1211057-001A 40X	AN23_1UG		29 Nov 2012 21:23
377	15	Aj112919.d	1.	C1211057-002A 10X	AN23_1UG		29 Nov 2012 21:57
378	16	Aj112920.d	1.	C1211057-002A 40X	AN23_1UG		29 Nov 2012 22:30
379	17	Aj112921.d	1.	C1211057-003A 10X	AN23_1UG		29 Nov 2012 23:04
380	18	Aj112922.d	1.	C1211057	AN23_1UG	-003A 40X	29 Nov 2012 23:37
381	19	Aj112923.d	1.	ALCS1UGD-112912	AN23_1UG		30 Nov 2012 00:11
382	2	Aj112924.d	1.	C1211051-003A 5X	AN23_1UG		30 Nov 2012 09:13
383		Aj112925.d	1.	No MS or GC data present			

GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

STANDARDS LOG

Centek Laboratories, LLC

GC/MS Calibration Standards Logbook

Std #	Date Prep	Date exp	Description	Stock #	Stock conc	Initial vol	finial vol	Final conc/ppbV	Prep by	Chkd by
8963	3/19/12	3/26/12	TO15 STD	8345/8346	1 ppm	1.5 psig	30 psiA	50 ppb	WD	
8964	↓	↓	TO15 LCS	7617/7618	↓	↓	↓	↓	↓	
8965			4PCH	7384	↓	↓	↓	↓		
8966			FORM	8895	38.2%	1.0 µl	50 psig	10 ppm		
8967			FORMSO	8966	10 ppm	0.23 psig	45 psiA	50 ppb		
8968			↓ SILOX/SULF	6194/8615	1 ppm	1.5 psig	30 psiA	50 ppb		
8969			TO15 LL IS(A)	8962	50 ppb	0.9 psig	45 psiA	1 ppb		
8970			STD(A)	8963						
8971	↓	↓	↓ LCS(A)	8964	↓	↓	↓	↓	↓	
8972	3/22/12	3/22/13	TO15 MIX	AB-7810	1 ppm	1800 psig	LINDE GAS		WD	
8973	3/22/12	3/26/12	TO15 STD	8972	1 ppm	1.5 psig	30 psiA	50 ppb		
8974	↓	↓	TO15 LCS	8345/8346	↓	↓	↓	↓		
8975			TO15 LL STD(A)	8973	50 ppb	0.9 psig	45 psiA	1 ppb		
8976	↓	↓	↓ LCS(A)	8974	↓	↓	↓	↓	↓	
8977	3/23/12	3/30/12	TO15 APH STD	7961	1 ppm	1.5 psig	30 psiA	50 ppb	WD	
8978	3/26/12	4/2/12	TO15 IS	8826	1 ppm	1.5 psig	30 psiA	50 ppb	WD	
8979	↓	↓	STD	8972	↓	↓	↓	↓	↓	
8980			LCS	8345/8346						
8981			4PCH	7384	↓	↓	↓	↓		
8982			FORM	8895	38.2%	1.0 µl	50 psig	10 ppm		
8983	↓	↓	↓ FORMSO	8982	10 ppm	0.23 psig	45 psiA	50 ppb	↓	

Centek Laboratories, LLC

Centek Laboratories, LLC

GC/MS Calibration Standards Logbook

Std #	Date Prep	Date exp	Description	Stock #	Stock conc	Initial vol	finial vol	Final conc/ppbV	Prep by	Chkd by
9047	5/7/12	5/14/12	TO15 1uG LCS	9040	50 ppb	0.9psig	45 psiA	1 ppb	WD	
9048	5/8/12	5/8/13	NEW TO15 IS	AB-8099	1 ppm	1800psig	LINDE GAS		WD	
9049	5/14/12	5/21/12	TO15 IS	9048	1ppm	1.5psig	30 psiA	50 ppb	WD	
9050	↓	↓	STD	8972	↓	↓	↓	↓	↓	
9051			LCS	8345/8346						
9052			4PCH	7384						
9053			FORM	8895	38.2%	1.0uL	50 psig	10 ppm		
9054			FORM50	9053	10ppm	0.23psig	45psiA	50 ppb		
9055			SILOX/SULF	6194/8615	1 ppm	1.5psig	30psiA	50 ppb		
9056			TO15 1uG IS	9049	50ppb	0.9psig	45 psiA	1 ppb		
9057			STD	9050						
9058	↓	↓	LCS	9051	↓	↓	↓	↓	↓	
9059	5/17/12	5/17/13	FIXED GASES	109-24-07533-E5	% VARIES	10 L	MATHESON TRI-GAS		WD	
9060	5/22/12	5/22/13	TO15 IS	AB 8125	LINDE GAS			1 ppm	MP	
9061	↓	↓	TO15 STD	AB 100713	↓	↓	↓	↓	↓	
9062	5/22/12	5/28/12	TO15 IS	9060	1ppm	1.5psig	30 psiA	50 ppb	WD	
9063			STD	9061						
9064			LCS	8972						
9065			4PCH	7384						
9066			FORM	8895	38.2%	1.0 uL	50 psig	10 ppm		
9067	↓	↓	FORM50	9066	10 ppm	0.23psig	45psiA	50ppb	↓	

Page # 37

GC/MS Calibration Standards Logbook

Std #	Date Prep	Date exp	Description	Stock #	Stock conc	Initial vol	finial vol	Final conc/ppbV	Prep by	Chkd by
9068	5/22/12	5/28/12	TO15 SILOX/SULF	6194/8615	1 ppm	1.5 psig	30 psia	50 ppb	WD	
9069	↓	↓	TO15 14G IS	9062	50 ppb	0.9 psig	45 psia	1 ppb	↓	
9070	↓	↓	↓ STD	9063	↓	↓	↓	↓	↓	
9071	↓	↓	↓ LCS	9064	↓	↓	↓	↓	↓	
9072	5/28/12	6/5/12	TO15 IS	9060	1 ppm	1.5 psig	30 psia	50 ppb	WD	
9073	↓	↓	↓ STD	9061	↓	↓	↓	↓	↓	
9074	↓	↓	↓ LCS	8972	↓	↓	↓	↓	↓	
9075	↓	↓	↓ 4PCH	7384	↓	↓	↓	↓	↓	
9076	↓	↓	↓ FORM	8895	38.2%	1.0 uL	50 psig	10 ppm	↓	
9077	↓	↓	↓ FORMSD	9076	10 ppm	0.23 psig	45 psia	50 ppb	↓	
9078	↓	↓	↓ SILOX/SULF	6194/8615	1 ppm	1.5 psig	30 psia	50 ppb	↓	
9079	↓	↓	TO15 14G IS	9072	50 ppb	0.9 psig	45 psia	1 ppb	↓	
9080	↓	↓	↓ STD	9073	↓	↓	↓	↓	↓	
9081	↓	↓	↓ LCS	9074	↓	↓	↓	↓	↓	
9082	6/6/12	6/6/13	TO15 STD	AB 8195	LINDE	GAS		1 ppm	LL	
9083	6/6/12	6/13/12	TO15 IS	9060	1 ppm	1.5 psig	30 psia	50 ppb	WD	
9084	↓	↓	↓ STD	9082	↓	↓	↓	↓	↓	
9085	↓	↓	↓ LCS	8972	↓	↓	↓	↓	↓	
9086	↓	↓	↓ 4PCH	7384	↓	↓	↓	↓	↓	
9087	↓	↓	↓ FORM	8895	38.2%	1.0 uL	50 psig	10 ppm	↓	
9088	↓	↓	↓ FORMSD	9087	10 ppm	0.23 psig	45 psia	50 ppb	↓	

Centek Laboratories, LLC

GC/MS Calibration Standards Logbook

Std #	Date Prep	Date exp	Description	Stock #	Stock conc	Initial vol	finial vol	Final conc/ppbV	Prep by	Chkd by
9321	11/14/12	11/21/12	TO15 SILCO/SULF	6194/8615	1 ppm	1.5 psig	30 psiA	50 ppb	WD	
9322	↓	↓	TO15 1uG IS	9315	50 ppb	6.9 psig	45 psiA	1 ppb	↓	
9323	↓	↓	↓ STD	9316	↓	↓	↓	↓	↓	
9324	↓	↓	↓ LCS	9317	↓	↓	↓	↓	↓	
9325	11/21/12	11/28/12	TO15 IS	9253	1 ppm	1.5 psig	30 psiA	50 ppb	WD	
9326	↓	↓	↓ STD	9082	↓	↓	↓	↓	↓	
9327	↓	↓	↓ LCS	8972	↓	↓	↓	↓	↓	
9328	↓	↓	↓ 4-PCH	7384	↓	↓	↓	↓	↓	
9329	↓	↓	↓ FORM	8895	38.2%	1.0 uL	50 psig	10 ppm	↓	
9330	↓	↓	↓ FORM50	9329	10 ppm	0.23 psig	45 psiA	50 ppb	↓	
9331	↓	↓	↓ SILCO/SULF	6194/8615	1 ppm	1.5 psig	30 psiA	50 ppb	↓	
9332	↓	↓	TO15 1uG IS	9325	50 ppb	0.9 psig	45 psiA	1 ppb	↓	
9333	↓	↓	↓ STD	9326	↓	↓	↓	↓	↓	
9334	↓	↓	↓ LCS	9327	↓	↓	↓	↓	↓	
9335	11/28/12	12/5/12	TO15 IS	9253	1 ppm	1.5 psig	30 psiA	50 ppb	WD	
9336	↓	↓	↓ STD	9082	↓	↓	↓	↓	↓	
9337	↓	↓	↓ LCS	8972	↓	↓	↓	↓	↓	
9338	↓	↓	↓ 4-PCH	7384	↓	↓	↓	↓	↓	
9339	↓	↓	↓ Form	8895	38.2%	1.0 uL	50 psig	10 ppm	↓	
9340	↓	↓	↓ Form50	9339	10 ppm	0.23 psig	45 psiA	50 ppb	↓	
9341	↓	↓	↓ SILCO/SULF	6194/8615	1 ppm	1.5 psig	30 psiA	↓	↓	

GC/MS VOLATILES-WHOLE AIR

METHOD TO-15

CANISTER CLEANING LOG

Centek Laboratories, LLC

QC Canister Cleaning Logbook

Instrument: Entech 3100

Canister Number	QC Can Number	Number of Cycles	Date	QC Batch Number	Detection Limits	Leak Test 24hr (psig str/stp)	
465	353	30	11.03.12	WAC110312A	1ug/m3+0.25	+ 30	+ 30
363						+	+
107						+	+
360						+	+
353						+	+
221	141			WAC_110312 B		+	+
332						+	+
243						+	+
347						+	+
141						+	+
283	365			WAC110312C		+	+
571						+	+
237						+	+
106						+	+
365						+	+
553	4194			WAC110312D		+	+
285						+	+
562						+	+
481						+	+
4194						+	+
274	322			WAC110312E		+	+
468						+	+
459						+	+
364						+	+
322						+	+

Centek Laboratories, LLC

QC Canister Cleaning Logbook

Instrument: Entech 3100

Canister Number	QC Can Number	Number of Cycles	Date	QC Batch Number	Detection Limits	Leak Test 24hr (psig str/stp)	
359	130	30	11.03.12	WAC110312F	1ug/m3+0.25	+ 30	+ 30
232						+	+
325						+	+
240						+	+
130						+	+
566	541			WAC110312 G		+	+
4858						+	+
229						+	+
463						+	+
541						+	+
324	415			WAC 110312 H		+	+
555						+	+
203						+	+
171						+	+
415						+	+
317	98			WAC 110312 I		+	+
266						+	+
544						+	+
420						+	+
98						+	+
						+	+
						+	+
						+	+
						+	+
						+	+

Cleaned by: _____

Page # _____

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110310.D Vial: 7
Acq On : 3 Nov 2012 7:10 pm Operator: RJP
Sample : WAC110312D Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 05 11:49:37 2012 Quant Results File: AO02_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AO02_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Mon Oct 29 11:57:16 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

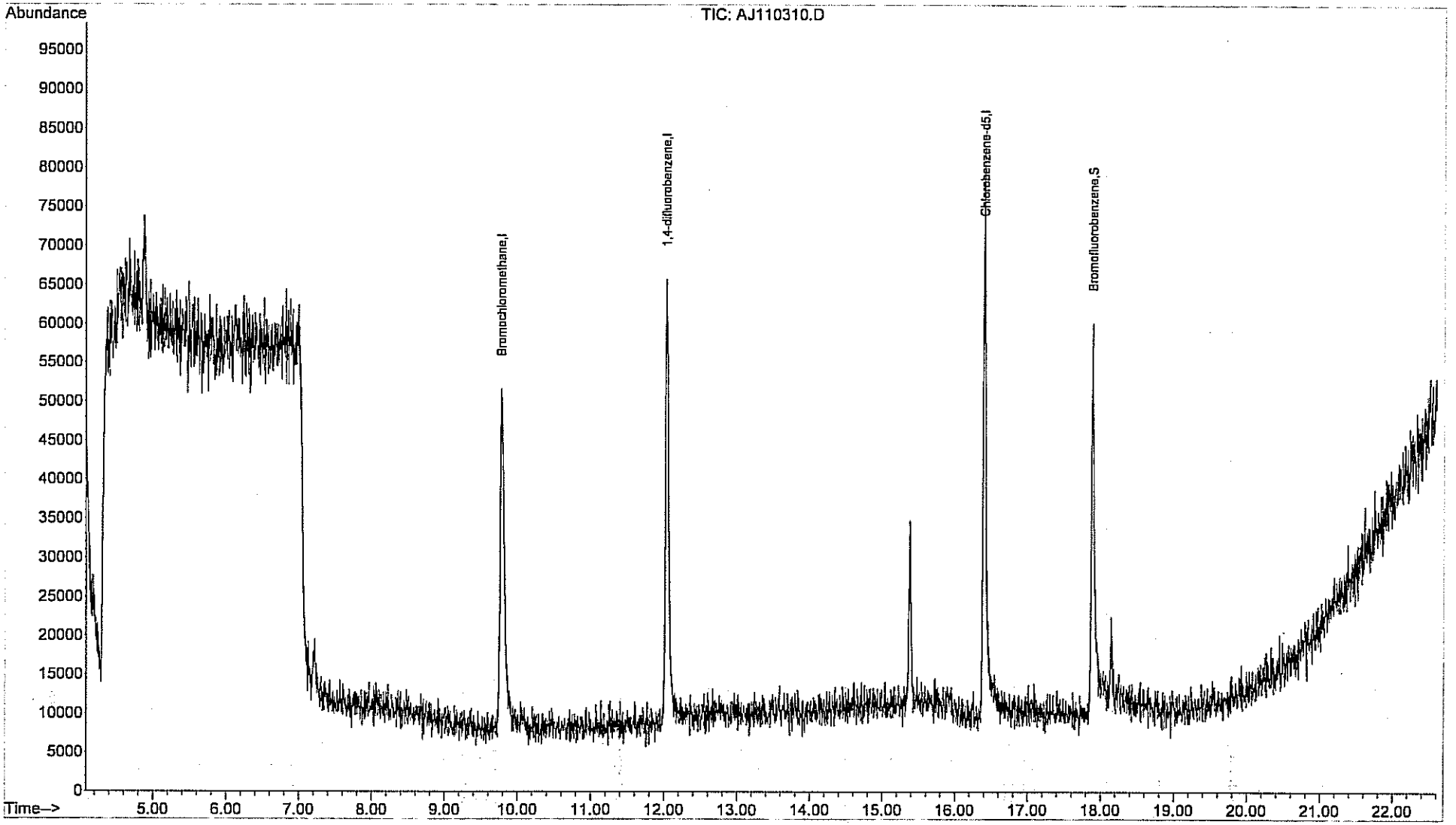
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.79	128	20327	1.00	ppb	0.00
33) 1,4-difluorobenzene	12.04	114	67005	1.00	ppb	0.00
48) Chlorobenzene-d5	16.40	117	55639	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.88	95	26834m	0.83	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 83.00%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed
AJ110310.D AN23_1UG.M Thu Dec 20 09:22:47 2012 MSD1 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110310.D Vial: 7
Acq On : 3 Nov 2012 7:10 pm Operator: RJP
Sample : WAC110312D Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 5 11:51 2012 Quant Results File: AO02_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110311.D Vial: 8
Acq On : 3 Nov 2012 7:46 pm Operator: RJP
Sample : WAC110312E Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 05 11:49:38 2012 Quant Results File: AO02_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AO02_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Mon Oct 29 11:57:16 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

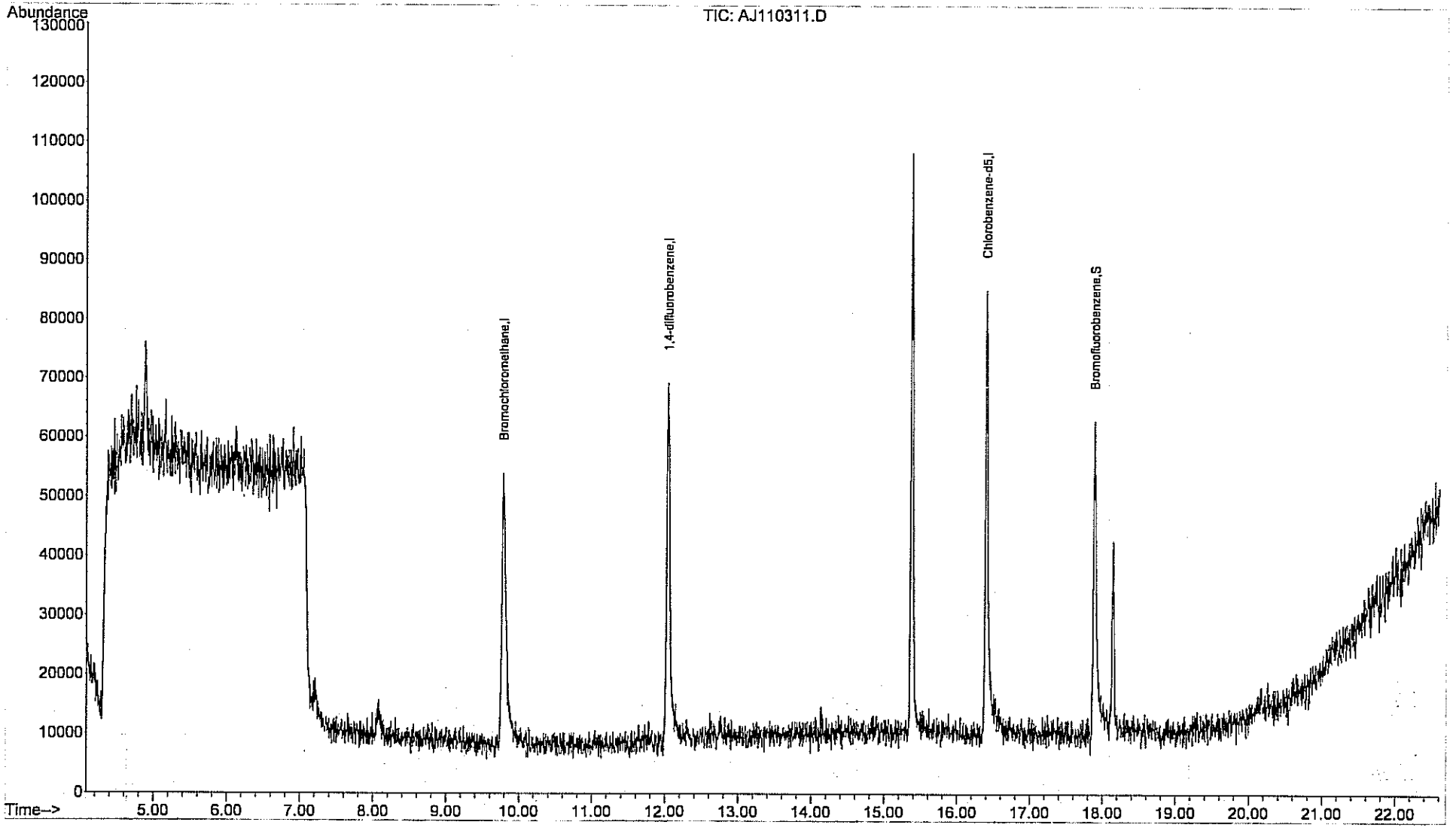
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.78	128	19554	1.00	ppb	0.00
33) 1,4-difluorobenzene	12.04	114	72138	1.00	ppb	0.00
48) Chlorobenzene-d5	16.39	117	62075	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.88	95	29031m	0.80	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 80.00%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed
AJ110311.D AN23_1UG.M Thu Dec 20 09:22:49 2012 MSD1 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110311.D Vial: 8
Acq On : 3 Nov 2012 7:46 pm Operator: RJP
Sample : WAC110312E Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 5 11:51 2012 Quant Results File: AO02_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Initial Calibration



AJ110311.D AN23_1UG.M Thu Dec 20 09:22:50 2012 MSD1 Page 2

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110312.D Vial: 9
Acq On : 3 Nov 2012 8:22 pm Operator: RJP
Sample : WAC110312F Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 05 11:49:39 2012 Quant Results File: AO02_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AO02_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Mon Oct 29 11:57:16 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

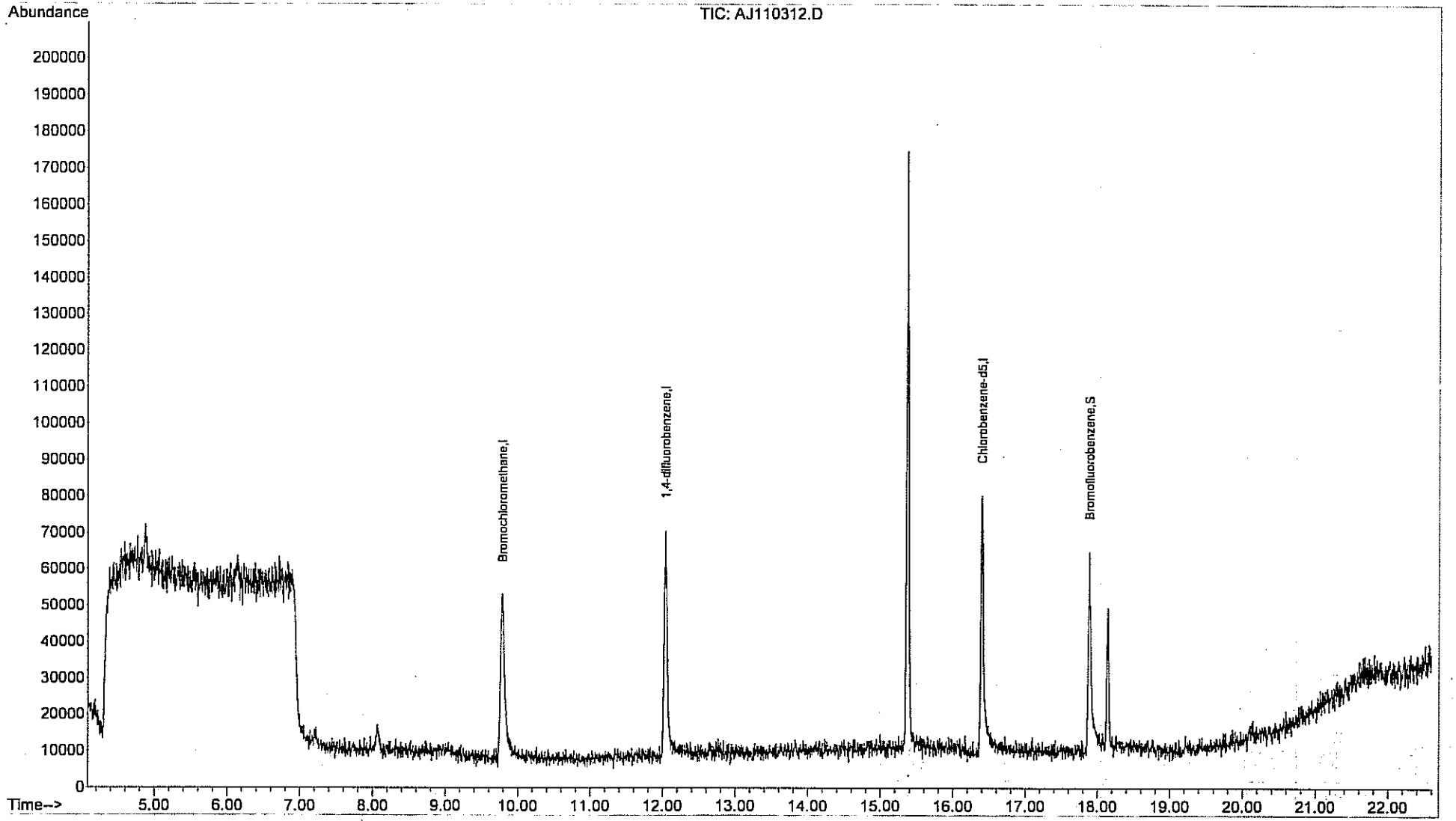
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.79	128	22002	1.00	ppb	0.02
33) 1,4-difluorobenzene	12.04	114	69746	1.00	ppb	0.00
48) Chlorobenzene-d5	16.39	117	59227	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.88	95	27690m	0.80	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 80.00%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed
AJ110312.D AN23_1UG.M Thu Dec 20 09:22:51 2012 MSD1 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110312.D Vial: 9
Acq On : 3 Nov 2012 8:22 pm Operator: RJP
Sample : WAC110312F Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 5 11:51 2012 Quant Results File: AO02_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110313.D Vial: 10
Acq On : 3 Nov 2012 8:56 pm Operator: RJP
Sample : WAC110312G Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 05 11:49:40 2012 Quant Results File: AO02_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AO02_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Mon Oct 29 11:57:16 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

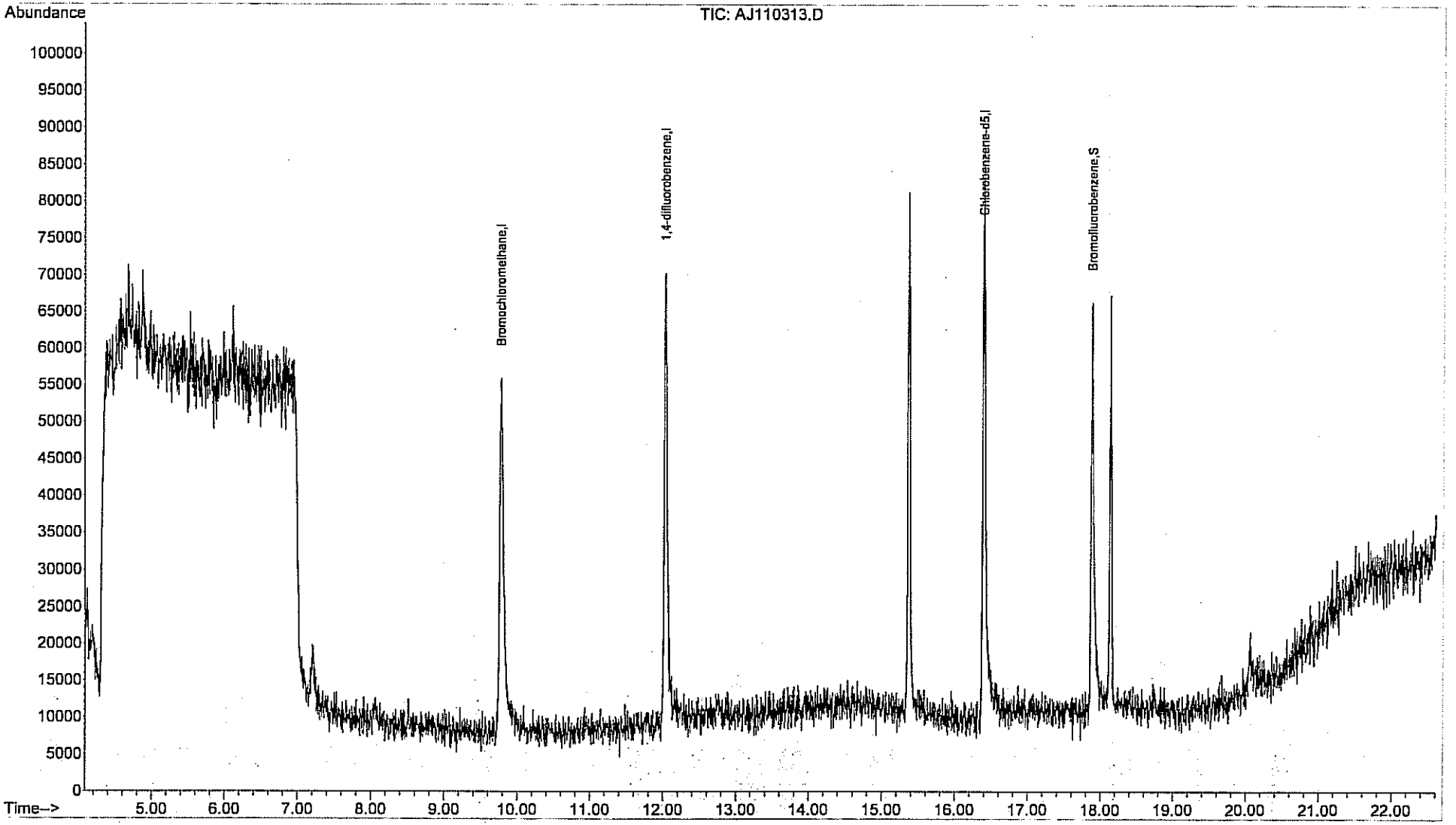
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.79	128	21557	1.00	ppb	0.00
33) 1,4-difluorobenzene	12.04	114	68377	1.00	ppb	0.00
48) Chlorobenzene-d5	16.40	117	58880	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.88	95	27884m	0.81	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 81.00%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110313.D Vial: 10
Acq On : 3 Nov 2012 8:56 pm Operator: RJP
Sample : WAC110312G Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 5 11:52 2012 Quant Results File: AO02_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Initial Calibration



AJ110313.D AN23_1UG.M Thu Dec 20 09:22:54 2012 MSD1 Page 2

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110314.D Vial: 11
Acq On : 3 Nov 2012 9:31 pm Operator: RJP
Sample : WAC110312H Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 05 11:49:41 2012 Quant Results File: AO02_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AO02_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Mon Oct 29 11:57:16 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

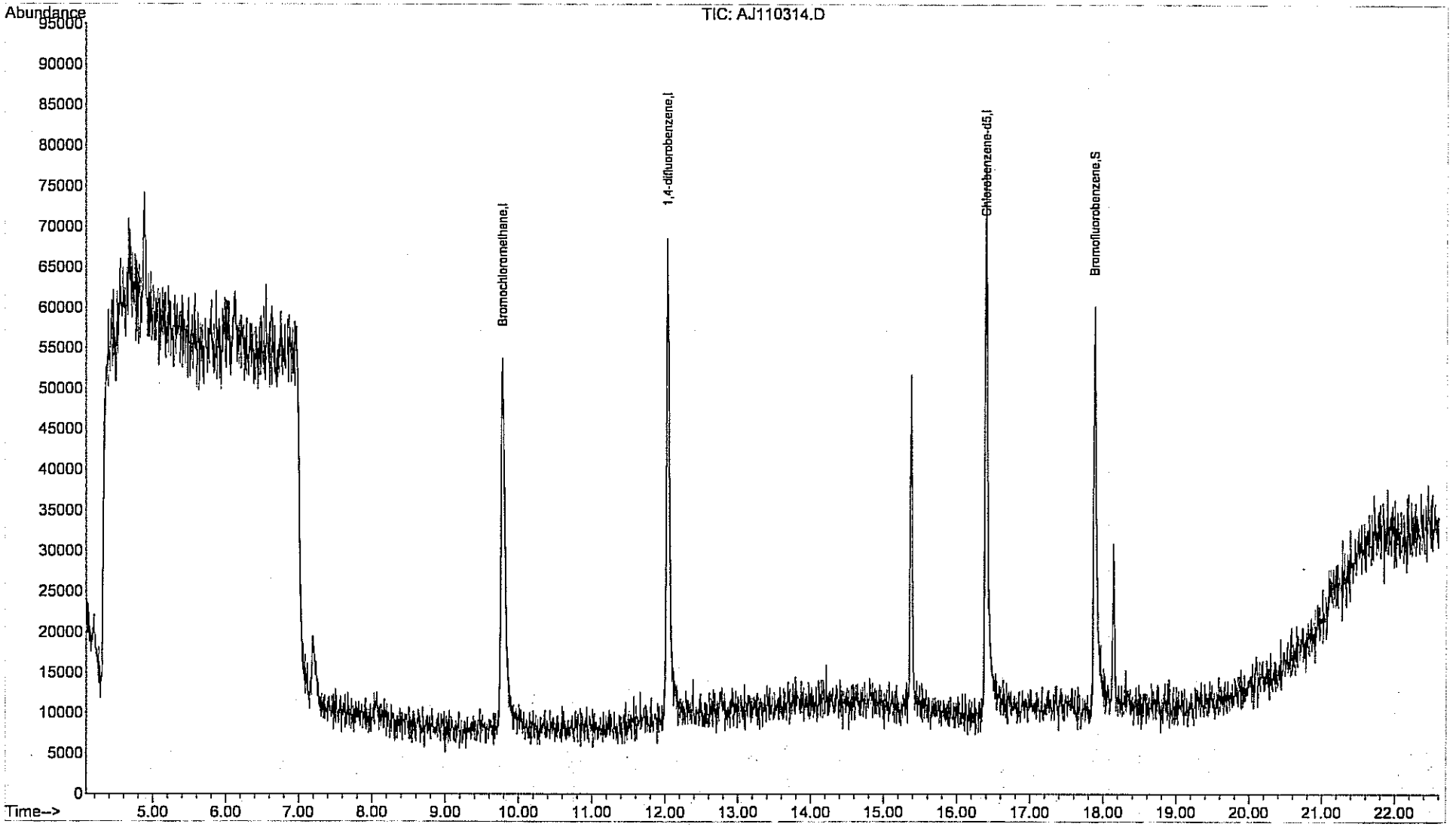
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.78	128	20417	1.00	ppb	0.00
33) 1,4-difluorobenzene	12.04	114	67573	1.00	ppb	0.00
48) Chlorobenzene-d5	16.39	117	55598	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.87	95	25973m	0.80	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 80.00%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed
AJ110314.D AN23_1UG.M Thu Dec 20 09:22:56 2012 MSD1 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110314.D Vial: 11
Acq On : 3 Nov 2012 9:31 pm Operator: RJP
Sample : WAC110312H Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 5 11:53 2012 Quant Results File: AO02_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110315.D Vial: 12
Acq On : 3 Nov 2012 10:06 pm Operator: RJP
Sample : WAC110312I Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 05 11:49:42 2012 Quant Results File: AO02_1UG.RES

Quant Method : C:\HPCHEM\1\METHODS\AO02_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Mon Oct 29 11:57:16 2012
Response via : Initial Calibration
DataAcq Meth : 1UG_T015

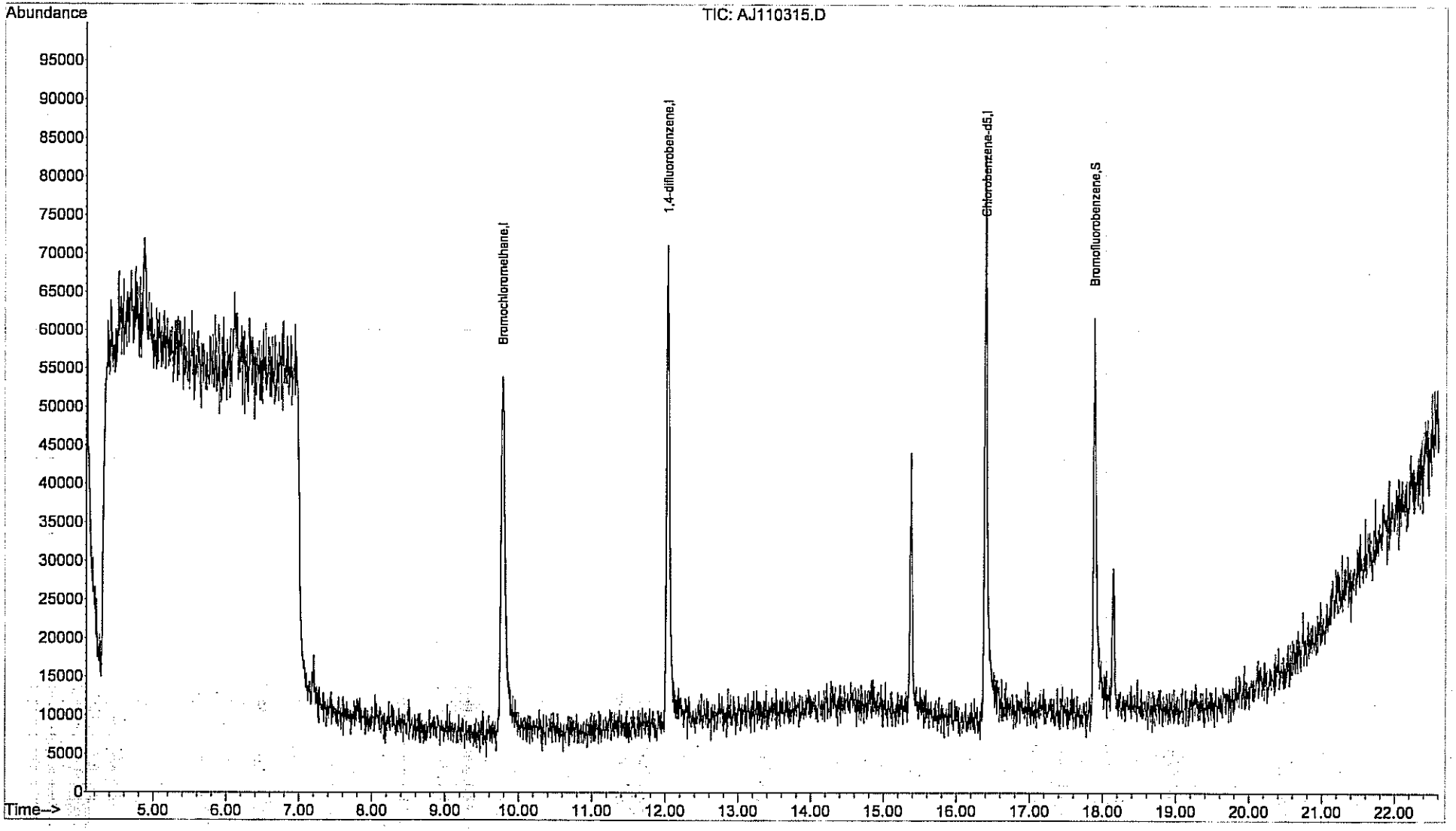
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane	9.78	128	22209	1.00	ppb	0.00
33) 1,4-difluorobenzene	12.04	114	68840	1.00	ppb	0.00
48) Chlorobenzene-d5	16.40	117	61149	1.00	ppb	0.00
System Monitoring Compounds						
61) Bromofluorobenzene	17.88	95	28174m	0.79	ppb	0.00
Spiked Amount 1.000	Range 70 - 130		Recovery = 79.00%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed
AJ110315.D AN23_1UG.M Thu Dec 20 09:22:59 2012 MSD1 Page 1

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA2\2012NOV\AJ110315.D Vial: 12
Acq On : 3 Nov 2012 10:06 pm Operator: RJP
Sample : WAC110312I Inst : MSD #1
Misc : AO02_1UG Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 5 11:53 2012 Quant Results File: AO02_1UG.RES

Method : C:\HPCHEM\1\METHODS\AN23_1UG.M (RTE Integrator)
Title : TO-15 VOA Standards for 5 point calibration
Last Update : Wed Dec 12 14:36:43 2012
Response via : Initial Calibration



ARCADIS

Appendix D

Lockheed Martin Corporation

Data Usability Summary Report

UTICA, NEW YORK

Volatile Analyses

SDG #C1211047

Analyses Performed By:
Centek Laboratories, LLC

Report: #18183R
Review Level: Tier III
Project: NJ001032.0001.00005

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # C1211047 for samples collected in association with the Lockheed Martin West Lot, Utica, New York Site. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	PCB	MET	MISC
C1211047-001A	SG-IND-1(ARC)	Air	11/20/2012		X				
C1211047-002A	SG-IND-2(ARC)	Air	11/20/2012		X				
C1211047-003A	SG-IND-3(ARC)	Air	11/20/2012		X				
C1211047-004A	AMB-112012	Air	11/20/2012		X				

ANALYTICAL DATA PACKAGE DOCUMENTATION
GENERAL INFORMATION

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Sample receipt condition		X		X	
Requested analyses and sample results		X		X	
Collection Technique (grab, composite, etc.)		X		X	
Methods of analysis		X		X	
Reporting limits		X		X	
Sample collection date		X		X	
Laboratory sample received date		X		X	
Sample preservation verification (as applicable)		X		X	
Sample preparation/extraction/analysis dates		X		X	
Fully executed Chain-of-Custody (COC) form completed		X		X	
Narrative summary of QA or sample problems provided		X		X	
Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999, USEPA Region II SOP HW-31- Validating Air Samples Volatile Organic Analysis of Ambient Air In Canister by Method TO-15 of October 2006, New York State DEC Analytical Method ASP 2005 TO-15 (QA/QC Criteria R9 TO-15), NYSDEC Modifications to R9 TO-15 QA/QC Criteria February 2008 and NYSDEC Proposed Change to the ASP Regarding Canister Vacuum June 26, 2009.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and

provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Method TO-15	Air	30 days storage from collection to analysis	Ambient temperature

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the RL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance and column resolution was acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 40% or less than 40% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Laboratory Control Sample /Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the established acceptance limits of 70% to 130%. The relative percent difference (RPD) between the LCS/LCSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibited recoveries within control limits.

8. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for air matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for air matrices.

Laboratory duplicates were not performed as part of this SDG.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 100% for air matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for air matrices.

A field duplicate was not collected in association with this SDG.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Sample results associated with compound that exhibited a concentration greater than the linear range of the instrument calibration are summarized in the following table.

Sample ID	Compound	Original Analysis	Diluted Analysis ug/m3	Reported Analysis ug/m3
SG-IND-1(ARC)	2,2,4-trimethylpentane	--	17 D	17 D
	Acetone	--	29 D	29 D
	Benzene	--	21 D	21 D
	Cyclohexane	--	160 D	160 D
	Heptane	--	24 D	24 D
	Hexane	--	130 D	130 D
	m&p Xylene	--	18 D	18 D
	Toluene	--	57 D	57 D
SG-IND-2(ARC)	Acetone	--	28 D	28 D
SG-IND-3(ARC)	Acetone	--	23 D	23 D
	Freon 12	--	110 D	110 D
	Tetrachloroethylene	--	15 D	15 D
AMB-112012	2,2,4-trimethylpentane	--	8.1 D	8.1 D
	Acetone	--	19 D	19 D
	Benzene	--	9.1 D	9.1 D
	Cyclohexane	--	30 D	30 D
	Heptane	--	9.6 D	9.6 D
	Hexane	--	30 D	30 D
	Isopropyl Alcohol	--	28 D	28 D
	m&p Xylene	--	15 D	15 D
	Toluene	--	26 D	26 D
	Trichloroethene	--	14 D	14 D

Note: In the instance where both the original analysis and the diluted analysis sample results exhibited a concentration greater than and/or less than the calibration linear range of the instrument; the sample result exhibiting the greatest concentration will be reported as the final result.

Sample results associated with compounds exhibiting concentrations greater than the linear range are qualified as documented in the table below when reported as the final reported sample result.

Reported Sample Results	Qualification
Diluted sample result within calibration range	D
Diluted sample result less than the calibration range	DJ
Diluted sample result greater than the calibration range	EDJ
Original sample result greater than the calibration range	EJ

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Canister return pressure/vacuum (>1"Hg)		X		X	
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks					X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)		X		X	
LCS/LCSD Precision (RPD)		X		X	
Field Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

VOCs: TO-15	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					

%RSD Relative standard deviation
%R Percent recovery
RPD Relative percent difference
%D Percent difference

SAMPLE COMPLIANCE REPORT

Sample Delivery Group (SDG)	Sampling Date	Protocol	Sample ID	Matrix	Compliancy[1]					Noncompliance
					VOC	SVOC	PCB	MET	MISC	
C1211047-001A	11/20/2012	TO-15	SG-IND-1(ARC)	Air	Yes	--	--	--	--	Dilutions
C1211047-002A	11/20/2012	TO-15	SG-IND-2(ARC)	Air	Yes	--	--	--	--	Dilutions
C1211047-003A	11/20/2012	TO-15	SG-IND-3(ARC)	Air	Yes	--	--	--	--	Dilutions
C1211047-004A	11/20/2012	TO-15	AMB-112012	Air	Yes	--	--	--	--	Dilutions

1 Samples which are compliant with no added validation qualifiers are listed as "yes". Samples which are non-compliant or which have added qualifiers are listed as "no". A "no" designation does not necessarily indicate that the data have been rejected or are otherwise unusable.

VALIDATION PERFORMED BY: Mary Ann Doyle

SIGNATURE: 

DATE: January 15, 2013

PEER REVIEW BY: Dennis Capria

DATE: January 16, 2013

CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS

1893R

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	CI211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	CI211047-001A	**Matrix:**	

Analyses	Result		**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15			TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.83		0.83		ug/m3	1	11/28/2012 6:58:00 PM
1,1,2,2-Tetrachloroethane	< 1.0		1.0		ug/m3	1	11/28/2012 6:58:00 PM
1,1,2-Trichloroethane	< 0.83		0.83		ug/m3	1	11/28/2012 6:58:00 PM
1,1-Dichloroethane	< 0.62		0.62		ug/m3	1	11/28/2012 6:58:00 PM
1,1-Dichloroethene	< 0.60		0.60		ug/m3	1	11/28/2012 6:58:00 PM
1,2,4-Trichlorobenzene	< 1.1		1.1		ug/m3	1	11/28/2012 6:58:00 PM
1,2,4-Trimethylbenzene	12		0.75		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dibromoethane	< 1.2		1.2		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dichlorobenzene	< 0.92		0.92		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dichloroethane	< 0.62		0.62		ug/m3	1	11/28/2012 6:58:00 PM
1,2-Dichloropropane	< 0.70		0.70		ug/m3	1	11/28/2012 6:58:00 PM
1,3,5-Trimethylbenzene	3.1		0.75		ug/m3	1	11/28/2012 6:58:00 PM
1,3-butadiene	< 0.34		0.34		ug/m3	1	11/28/2012 6:58:00 PM
1,3-Dichlorobenzene	< 0.92		0.92		ug/m3	1	11/28/2012 6:58:00 PM
1,4-Dichlorobenzene	< 0.92		0.92		ug/m3	1	11/28/2012 6:58:00 PM
1,4-Dioxane	< 1.1		1.1		ug/m3	1	11/28/2012 6:58:00 PM
2,2,4-trimethylpentane	17	D	7.1		ug/m3	10	11/29/2012 1:27:00 AM
4-ethyltoluene	4.1		0.75		ug/m3	1	11/28/2012 6:58:00 PM
Acetone	29	D	7.2		ug/m3	10	11/29/2012 1:27:00 AM
Allyl chloride	< 0.48		0.48		ug/m3	1	11/28/2012 6:58:00 PM
Benzene	21	D	4.9		ug/m3	10	11/29/2012 1:27:00 AM
Benzyl chloride	< 0.88		0.88		ug/m3	1	11/28/2012 6:58:00 PM
Bromodichloromethane	< 1.0		1.0		ug/m3	1	11/28/2012 6:58:00 PM
Bromoform	< 1.6		1.6		ug/m3	1	11/28/2012 6:58:00 PM
Bromomethane	< 0.59		0.59		ug/m3	1	11/28/2012 6:58:00 PM
Carbon disulfide	0.70		0.47		ug/m3	1	11/28/2012 6:58:00 PM
Carbon tetrachloride	< 0.96		0.96		ug/m3	1	11/28/2012 6:58:00 PM
Chlorobenzene	< 0.70		0.70		ug/m3	1	11/28/2012 6:58:00 PM
Chloroethane	< 0.40		0.40		ug/m3	1	11/28/2012 6:58:00 PM
Chloroform	< 0.74		0.74		ug/m3	1	11/28/2012 6:58:00 PM
Chloromethane	< 0.31		0.31		ug/m3	1	11/28/2012 6:58:00 PM
cis-1,2-Dichloroethene	< 0.60		0.60		ug/m3	1	11/28/2012 6:58:00 PM
cis-1,3-Dichloropropene	< 0.69		0.69		ug/m3	1	11/28/2012 6:58:00 PM
Cyclohexane	160	D	21		ug/m3	40	11/29/2012 2:01:00 AM
Dibromochloromethane	< 1.3		1.3		ug/m3	1	11/28/2012 6:58:00 PM
Ethyl acetate	< 0.92		0.92		ug/m3	1	11/28/2012 6:58:00 PM
Ethylbenzene	9.4		0.66		ug/m3	1	11/28/2012 6:58:00 PM
Freon 11	1.1		0.86		ug/m3	1	11/28/2012 6:58:00 PM
Freon 113	0.93		1.2	J	ug/m3	1	11/28/2012 6:58:00 PM
Freon 114	< 1.1		1.1		ug/m3	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-1 (ARC)
Lab Order:	C1211047	**Tag Number:**	458,342
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-001A	**Matrix:**	

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
Freon 12	2.0	0.75		ug/m3	1	11/28/2012 6:58:00 PM
Heptane	24 D	6.2		ug/m3	10	11/29/2012 1:27:00 AM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 6:58:00 PM
Hexane	130 D	21		ug/m3	40	11/29/2012 2:01:00 AM
Isopropyl alcohol	< 0.37	0.37		ug/m3	1	11/28/2012 6:58:00 PM
m&p-Xylene	18 D	13		ug/m3	10	11/29/2012 1:27:00 AM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 6:58:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 6:58:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 6:58:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 6:58:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 6:58:00 PM
o-Xylene	11	0.66		ug/m3	1	11/28/2012 6:58:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 6:58:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 6:58:00 PM
Tetrachloroethylene	3.8	1.0		ug/m3	1	11/28/2012 6:58:00 PM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 6:58:00 PM
Toluene	57 D	5.7		ug/m3	10	11/29/2012 1:27:00 AM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 6:58:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 6:58:00 PM
Trichloroethene	2.5	0.82		ug/m3	1	11/28/2012 6:58:00 PM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 6:58:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 6:58:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 6:58:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 7:33:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 7:33:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 7:33:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 7:33:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 7:33:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 7:33:00 PM
1,2,4-Trimethylbenzene	2.0	0.75		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 7:33:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 7:33:00 PM
1,3,5-Trimethylbenzene	0.50	0.75	J	ug/m3	1	11/28/2012 7:33:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 7:33:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 7:33:00 PM
2,2,4-trimethylpentane	0.57	0.71	J	ug/m3	1	11/28/2012 7:33:00 PM
4-ethyltoluene	0.65	0.75	J	ug/m3	1	11/28/2012 7:33:00 PM
Acetone	28 D	7.2		ug/m3	10	11/29/2012 2:35:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 7:33:00 PM
Benzene	1.3	0.49		ug/m3	1	11/28/2012 7:33:00 PM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 7:33:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 7:33:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 7:33:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 7:33:00 PM
Carbon disulfide	1.8	0.47		ug/m3	1	11/28/2012 7:33:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 7:33:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 7:33:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 7:33:00 PM
Chloroform	1.3	0.74		ug/m3	1	11/28/2012 7:33:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 7:33:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 7:33:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 7:33:00 PM
Cyclohexane	2.6	0.52		ug/m3	1	11/28/2012 7:33:00 PM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 7:33:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 7:33:00 PM
Ethylbenzene	1.1	0.66		ug/m3	1	11/28/2012 7:33:00 PM
Freon 11	1.1	0.86		ug/m3	1	11/28/2012 7:33:00 PM
Freon 113	1.1	1.2	J	ug/m3	1	11/28/2012 7:33:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 7:33:00 PM

Qualifiers:

- ** Reporting Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- JN Non-routine analyte. Quantitation estimated.
- S Spike Recovery outside accepted recovery limits
- . Results reported are not blank corrected
- E Value above quantitation range
- J Analyte detected at or below quantitation limits
- ND Not Detected at the Reporting Limit

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-2 (ARC)
Lab Order:	C1211047	**Tag Number:**	553,153
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-002A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: RJP
Freon 12	2.4	0.75		ug/m3	1	11/28/2012 7:33:00 PM
Heptane	1.3	0.62		ug/m3	1	11/28/2012 7:33:00 PM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 7:33:00 PM
Hexane	2.7	0.54		ug/m3	1	11/28/2012 7:33:00 PM
Isopropyl alcohol	< 0.37	0.37		ug/m3	1	11/28/2012 7:33:00 PM
m&p-Xylene	3.7	1.3		ug/m3	1	11/28/2012 7:33:00 PM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 7:33:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 7:33:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 7:33:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 7:33:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 7:33:00 PM
o-Xylene	1.1	0.66		ug/m3	1	11/28/2012 7:33:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 7:33:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 7:33:00 PM
Tetrachloroethylene	3.9	1.0		ug/m3	1	11/28/2012 7:33:00 PM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 7:33:00 PM
Toluene	6.8	0.57		ug/m3	1	11/28/2012 7:33:00 PM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 7:33:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 7:33:00 PM
Trichloroethene	0.66	0.82	J	ug/m3	1	11/28/2012 7:33:00 PM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 7:33:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 7:33:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 7:33:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:09:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:09:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:09:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:09:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:09:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 8:09:00 PM
1,2,4-Trimethylbenzene	2.2	0.75		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:09:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 8:09:00 PM
1,3,5-Trimethylbenzene	0.50	0.75	J	ug/m3	1	11/28/2012 8:09:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 8:09:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 8:09:00 PM
2,2,4-trimethylpentane	< 0.71	0.71		ug/m3	1	11/28/2012 8:09:00 PM
4-ethyltoluene	0.60	0.75	J	ug/m3	1	11/28/2012 8:09:00 PM
Acetone	23 D	7.2		ug/m3	10	11/29/2012 3:45:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 8:09:00 PM
Benzene	0.65	0.49		ug/m3	1	11/28/2012 8:09:00 PM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 8:09:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:09:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 8:09:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 8:09:00 PM
Carbon disulfide	< 0.47	0.47		ug/m3	1	11/28/2012 8:09:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 8:09:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 8:09:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 8:09:00 PM
Chloroform	< 0.74	0.74		ug/m3	1	11/28/2012 8:09:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 8:09:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:09:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:09:00 PM
Cyclohexane	< 0.52	0.52		ug/m3	1	11/28/2012 8:09:00 PM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 8:09:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 8:09:00 PM
Ethylbenzene	1.1	0.66		ug/m3	1	11/28/2012 8:09:00 PM
Freon 11	0.91	0.86		ug/m3	1	11/28/2012 8:09:00 PM
Freon 113	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 8:09:00 PM

Qualifiers:

- ** Reporting Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- JN Non-routine analyte. Quantitation estimated.
- S Spike Recovery outside accepted recovery limits
- . Results reported are not blank corrected
- E Value above quantitation range
- J Analyte detected at or below quantitation limits
- ND Not Detected at the Reporting Limit

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	SG-IND-3 (ARC)
Lab Order:	C1211047	**Tag Number:**	285,281
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-003A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
Freon 12	110 D	7.5		ug/m3	10	11/29/2012 3:45:00 AM
Heptane	< 0.62	0.62		ug/m3	1	11/28/2012 8:09:00 PM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 8:09:00 PM
Hexane	2.2	0.54		ug/m3	1	11/28/2012 8:09:00 PM
Isopropyl alcohol	< 0.37	0.37		ug/m3	1	11/28/2012 8:09:00 PM
m&p-Xylene	4.3	1.3		ug/m3	1	11/28/2012 8:09:00 PM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 8:09:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:09:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 8:09:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 8:09:00 PM
o-Xylene	1.3	0.66		ug/m3	1	11/28/2012 8:09:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 8:09:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 8:09:00 PM
Tetrachloroethylene	15 D	10		ug/m3	10	11/29/2012 3:45:00 AM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 8:09:00 PM
Toluene	6.7	0.57		ug/m3	1	11/28/2012 8:09:00 PM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:09:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:09:00 PM
Trichloroethene	< 0.82	0.82		ug/m3	1	11/28/2012 8:09:00 PM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 8:09:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 8:09:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 8:09:00 PM

NOTES:
Sample has large interfering compound in begging of run. Used 10x dilution for Freon 12.

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		TO-15				Analyst: RJP
1,1,1-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:46:00 PM
1,1,2,2-Tetrachloroethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:46:00 PM
1,1,2-Trichloroethane	< 0.83	0.83		ug/m3	1	11/28/2012 8:46:00 PM
1,1-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:46:00 PM
1,1-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:46:00 PM
1,2,4-Trichlorobenzene	< 1.1	1.1		ug/m3	1	11/28/2012 8:46:00 PM
1,2,4-Trimethylbenzene	7.5	0.75		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dibromoethane	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dichloroethane	< 0.62	0.62		ug/m3	1	11/28/2012 8:46:00 PM
1,2-Dichloropropane	< 0.70	0.70		ug/m3	1	11/28/2012 8:46:00 PM
1,3,5-Trimethylbenzene	2.6	0.75		ug/m3	1	11/28/2012 8:46:00 PM
1,3-butadiene	< 0.34	0.34		ug/m3	1	11/28/2012 8:46:00 PM
1,3-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
1,4-Dichlorobenzene	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
1,4-Dioxane	< 1.1	1.1		ug/m3	1	11/28/2012 8:46:00 PM
2,2,4-trimethylpentane	8.1	7.1	D	ug/m3	10	11/29/2012 4:55:00 AM
4-ethyltoluene	2.7	0.75		ug/m3	1	11/28/2012 8:46:00 PM
Acetone	19	7.2	D	ug/m3	10	11/29/2012 4:55:00 AM
Allyl chloride	< 0.48	0.48		ug/m3	1	11/28/2012 8:46:00 PM
Benzene	9.1	4.9	D	ug/m3	10	11/29/2012 4:55:00 AM
Benzyl chloride	< 0.88	0.88		ug/m3	1	11/28/2012 8:46:00 PM
Bromodichloromethane	< 1.0	1.0		ug/m3	1	11/28/2012 8:46:00 PM
Bromoform	< 1.6	1.6		ug/m3	1	11/28/2012 8:46:00 PM
Bromomethane	< 0.59	0.59		ug/m3	1	11/28/2012 8:46:00 PM
Carbon disulfide	< 0.47	0.47		ug/m3	1	11/28/2012 8:46:00 PM
Carbon tetrachloride	< 0.96	0.96		ug/m3	1	11/28/2012 8:46:00 PM
Chlorobenzene	< 0.70	0.70		ug/m3	1	11/28/2012 8:46:00 PM
Chloroethane	< 0.40	0.40		ug/m3	1	11/28/2012 8:46:00 PM
Chloroform	< 0.74	0.74		ug/m3	1	11/28/2012 8:46:00 PM
Chloromethane	< 0.31	0.31		ug/m3	1	11/28/2012 8:46:00 PM
cis-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:46:00 PM
cis-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:46:00 PM
Cyclohexane	30	5.2	D	ug/m3	10	11/29/2012 4:55:00 AM
Dibromochloromethane	< 1.3	1.3		ug/m3	1	11/28/2012 8:46:00 PM
Ethyl acetate	< 0.92	0.92		ug/m3	1	11/28/2012 8:46:00 PM
Ethylbenzene	5.2	0.66		ug/m3	1	11/28/2012 8:46:00 PM
Freon 11	1.4	0.86		ug/m3	1	11/28/2012 8:46:00 PM
Freon 113	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
Freon 114	< 1.1	1.1		ug/m3	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
JN	Non-routine analyte. Quantitation estimated.
S	Spike Recovery outside accepted recovery limits
.	Results reported are not blank corrected
E	Value above quantitation range
J	Analyte detected at or below quantitation limits
ND	Not Detected at the Reporting Limit

Centek Laboratories, LLC

Date: *14-Dec-12*

CLIENT:	Arcadis - Newtown	**Client Sample ID:**	AMB-112012
Lab Order:	C1211047	**Tag Number:**	322,263
Project:	LMC Utica	**Collection Date:**	11/20/2012
Lab ID:	C1211047-004A	**Matrix:**	AIR

Analyses	Result	**Limit	Qual	Units	DF	Date Analyzed
1UG/M3 BY METHOD TO15		**TO-15**				Analyst: RJP
Freon 12	2.6	0.75		ug/m3	1	11/28/2012 8:46:00 PM
Heptane	9.6 D	6.2		ug/m3	10	11/29/2012 4:55:00 AM
Hexachloro-1,3-butadiene	< 1.6	1.6		ug/m3	1	11/28/2012 8:46:00 PM
Hexane	30 D	5.4		ug/m3	10	11/29/2012 4:55:00 AM
Isopropyl alcohol	28 D	3.7		ug/m3	10	11/29/2012 4:55:00 AM
m&p-Xylene	15 D	13		ug/m3	10	11/29/2012 4:55:00 AM
Methyl Butyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
Methyl Ethyl Ketone	< 0.90	0.90		ug/m3	1	11/28/2012 8:46:00 PM
Methyl Isobutyl Ketone	< 1.2	1.2		ug/m3	1	11/28/2012 8:46:00 PM
Methyl tert-butyl ether	< 0.55	0.55		ug/m3	1	11/28/2012 8:46:00 PM
Methylene chloride	< 0.53	0.53		ug/m3	1	11/28/2012 8:46:00 PM
o-Xylene	6.6	0.66		ug/m3	1	11/28/2012 8:46:00 PM
Propylene	< 0.26	0.26		ug/m3	1	11/28/2012 8:46:00 PM
Styrene	< 0.65	0.65		ug/m3	1	11/28/2012 8:46:00 PM
Tetrachloroethylene	< 1.0	1.0		ug/m3	1	11/28/2012 8:46:00 PM
Tetrahydrofuran	< 0.45	0.45		ug/m3	1	11/28/2012 8:46:00 PM
Toluene	26 D	5.7		ug/m3	10	11/29/2012 4:55:00 AM
trans-1,2-Dichloroethene	< 0.60	0.60		ug/m3	1	11/28/2012 8:46:00 PM
trans-1,3-Dichloropropene	< 0.69	0.69		ug/m3	1	11/28/2012 8:46:00 PM
Trichloroethene	14 D	8.2		ug/m3	10	11/29/2012 4:55:00 AM
Vinyl acetate	< 0.54	0.54		ug/m3	1	11/28/2012 8:46:00 PM
Vinyl Bromide	< 0.67	0.67		ug/m3	1	11/28/2012 8:46:00 PM
Vinyl chloride	< 0.39	0.39		ug/m3	1	11/28/2012 8:46:00 PM

Qualifiers:

**	Reporting Limit	.	Results reported are not blank corrected
B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected at or below quantitation limits
JN	Non-routine analyte. Quantitation estimated.	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Centek Chain of Custody

Centek Laboratories
143 Midler Park Drive
Syracuse, NY 13206
315-431-9730
www.CentekLabs.com

Vapor Intrusion & IAQ

Site Name: LMC Utica
Project: Indium
PO#: NJ001032
Quote # Q-
Other:

Detection Limit	Report Level
☐ 5ppbv	☐ Level I
☐ 1ug/M3	☐ Level II
☐ 1ug/M3 +TCE .25	☐ Cat "B" Like

Turnaround Time:	Check One	Rush TAT Surcharge %	Due Date:
5 Business Days	☒	0%	
4 Business Days	☐	25%	
3 Business Days	☐	50%	
2 Business Days	☐	75%	
Next Day by 5pm	☐	100%	
Next Day by Noon	☐	150%	
Same Day	☐	200%	

Company: Arcadis
Report to: Jeff Bonsteel
Address: 10 Friends Lane Suite 200
City, State, Zip: Newtown, PA 18940
Email: JBonsteel@Arcadis-us.com
Phone: 267-685-1874

Company:
Check Here If Same: ☒
Invoice to:
Address:
City, State, Zip
Email:
Phone:

Sample ID	Date Sampled	Canister Number	Regulator Number	Analysis Request	Comments	Vacuum Start/Stop
SG-IND-1 (Arc)	11/20/12 1432	458	342	TO-15		-28.5/11.5
SG-IND-2 (Arc)	1340	553	153	TO-15		-30/-7.5
SG-IND-3 (Arc)	1245	285	281	TO-15		-29/-7.5
AMB-112012	1017	322	263	TO-15		-31/-18

Chain of Custody	Print Name	Signature	Date/Time	Courier: CIRCLE ONE
Sampled by:	Daniel Zuck		11/20/12 1740	FedEx / UPS / Pickup/Dropoff
Relinquished by:				For LAB USE ONLY
Received at Lab by:	Jan Szata		11/21/12	Work Order # C121047

*** By signing Centek Labs Chain of Custody, you are accepting Centek Labs Terms and Conditions listed on the reverse side.